Essays on the Information-Usefulness of Changes in Fair Values to Investors and Debtholders, and its Effect on Audit Fees: Evidence from Australian Real Estate Industry

Pinprapa Sangchan

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Pinprapa Sangchan

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Abstract

This research investigates the decision usefulness of changes in fair value (hereafter, CFV) of investment property reported under IAS 40 and IFRS 13 to capital providers (i.e., equity investors and debtholders), using Australian Real Estate Industry data.[1] The motivation for this study stems from the ongoing debate on the beneficial effects of fair value reporting and their associated reliability trade-off (Barth, 2018; Power, 2010). This research further investigates the effect of change in fair value (CFV) of investment property on the monitoring cost proxied by audit fees in order to picture the pros and cons of the subjectivity involved in the fair value accounting-model. The alert issued by the International Auditing and Assurance Standards Board (IAASB) to discuss challenges in auditing fair value accounting estimates, and inconsistent evidence on the effect of the fair value application on audit fees motivate me to study the association between fair value application and monitoring cost. The decision usefulness of CFV study and the effect of fair value reporting on audit fees are organised into three different research essays: (i) value relevance of CFV and measurement-related fair value disclosure to equity investors; (ii) the decision usefulness of CFV and cost of debt; and (iii) fair value exposure, CFV, and audit fees.

Essay One investigates the value-relevance of changes in fair values of investment property recorded under IAS 40 and IFRS 13. Using hand-collected data from the Australian Real Estate Industry, I find that changes in fair values of investment property are value-relevant for equity investors. I further find that the use of unobservable inputs in an active market (Level 3 inputs) does not diminish the fair value information content. I document that properties valued exclusively by directors have a significantly reduced value-relevance for their value changes, whereas property valuations made

[1] Decision-usefulness versus information usefulness are used interchangeably, in this thesis.

collectively by both directors and independent valuers have superior value relevance, possibly owing to the combination of inside knowledge and externally imposed monitoring. Collectively, the findings suggest that, in the real estate industry, where unobservable inputs are commonly used to determine fair values of properties, the fair values determined subjectively are perceived to be sufficiently informative and relevant. My findings have important implications for accounting standard-setters in considering whether an external valuation should be required and whether the extensive measurement-related fair value disclosure requirements are useful.

Essay Two examines the decision usefulness of CFV of investment property reported under IAS 40 and IFRS 13 to debtholders. Using hand-collected data, the findings suggest that CFV of investment property lowers the cost of debt, implying that the fair value information is decision-useful to debtholders. The effect is more pronounced when the CFV is recognised as a gain. The results further suggest that unobservable inputs used for fair value measurement in an active market (Level 3 inputs) do not necessarily damage fair value information content. I also document that using the stand-alone director valuation in fair value estimates for investment properties diminish the information content of such fair value changes, even though director valuation is insightful in terms of asset-specific knowledge. In addition, I report that an extensive fair value measurement-related disclosure does not enhance the information content of fair value changes. Collectively, the findings suggest that in the real estate industry, where unobservable inputs are predominantly used to measure fair values of properties, debtholders view fair values sufficiently faithful and decision useful.

Essay Three investigates the relationship between audit fees and both fair value exposure (the proportion of investment property to total assets), and changes in fair value, of investment properties. This study is motivated by the limited and inconclusive evidence

on the effect on audit fees of full fair value reporting for illiquid assets. Using hand-collected data from the Australian real estate industry, I find a negative (positive) association between audit fees and fair value exposure (changes in fair values of investment properties). Findings also indicate that the use of unobservable inputs in fair value estimates for investment properties does not significantly increase audit risk and audit fees. Further, I find that audit fees are higher for firms having fair values of investment properties estimated by external and mixed valuers, compared to firms having fair values estimated by directors alone. This study enriches the audit fee literature by documenting auditors' pricing decisions in an area that involves significant estimation and valuation risks.

Keywords: Fair value measurement, changes in fair values, value relevance, decision usefulness, cost of debt, audit fees, real estate industry, Australia.

"Dedicated to my beloved husband, family, and friends for their love, endless support, encouragement and sacrifices"

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List of Abbreviations

AASB	Australian Accounting Standards Board
AUASB	Australian Auditing and Assurance Standards Board
AREI	Australian Real Estate Industry
AREOCs	Australian Real Estate Operating Companies
AREITs	Australian Real Estate Investment Trusts
ASX	Australian Securities Exchange
CFV	Changes in fair values
DCF	Discounted Cash-flow model
GFC	Global Financial Crisis
IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
IASB	International Accounting Standards Board
IAASB	International Auditing and Assurance Standards Board
LTV	Loan-to-value ratio

CHAPTER ONE - INTRODUCTION

1.1 Motivations for the Research

This research aims to investigate the information-usefulness of CFV of investment property reported under IAS 40 and IFRS 13 to capital providers (i.e., equity investors and debtholders), using Australian Real Estate Industry data. My research further investigates the effect of CFV on investment property on the monitoring cost proxied by audit fees in order to picture the pros and cons of the subjectivity involved in the fair value accounting-model. Specifically, the research is divided into three essays: (i) the value relevance of CFV and measurement-related fair value disclosure to equity investors; (ii) the decision usefulness of CFV and cost of debt; and (iii) fair value exposure, CFV, and audit fees. The research is motivated by the present-day debate regardless of the advantages and disadvantages of fair value accounting-model.

The motivation to conduct this research in a real estate industry context and have the CFV information as the primary empirical subject stem from the following facts. *First*, to the best of my knowledge, investment property is the first non-financial asset category that can apply the fair value accounting-model. There is a claim that a property bubble, which is regarded as a product of fair value accounting model, accelerates to the financial crises (Laux & Leuz, 2001; Quigley, 2001). However, this claim particularly occurs when fair values of property are being measured with unobservable inputs due to the lack of a centralized market. *Second*, however, from industry perspective, CFV information can also inform risk and returns to capital providers when investing in real estate companies (Fortin, Tsang, & Dionne, 2008; Searfoss & Weiss, 1990). In other words, CFV of investment property can inform capital providers whether properties which are the primary operating

assets of real estate companies are attractive to the market and tenants. Altogether, CFV of investment property appears to be the perfect subject for researching the advantage and disadvantage of the fair value application on non-financial assets.

To be more specific, the motivation for Essay One stems, firstly, from the ongoing debate regarding the beneficial effects of fair value reporting and its associated reliability trade-offs (Barth, 2018; Power, 2010) and, secondly, from a call for additional evidence on the consequences of the fair value accounting standards encapsulated in IFRS (Chang, Jackson, & Wee, 2018). There has been an increasing trend towards the use of the fair value accounting model, which is considered providing more value-relevant and transparent information compared to the historical cost accounting model (Barth, 2018; Georgiou, 2017; Landsman, 2007). However, there are also concerns that opportunistic managers can abuse fair value accounting as a tool for undertaking accounting manipulation (Ramanna & Watts, 2012). This is particularly relevant in the context of non-financial assets because fair values of non-financial assets are difficult to verify due to the absence of market price information on identical assets from an active market (Sundgren, 2013). As a result, the faithful representation of fair values for investment property[2] may be questionable. Barth (2018) suggests that research investigate whether fair value reporting provides better information to investors, which may contribute to a more flourishing society. This research intends to fill in these gaps. Specifically, I investigate the relevance of CFV on investment property reporting and disclosed under IAS 40 Investment Property and IFRS 13 Fair Value Measurement, conditional on reliabilities differences (i.e., used unobservable inputs[3], the source of valuers and disclosure quality) from the equity investor's perspective.

[2] Under the International Accounting Standard (IAS) 40, Investment Property is defined as property acquired through construction, purchase or lease by an entity with the intention to earn rental income, gain from capital appreciation, or both.

[3] According to IFRS 13, fair value inputs are divided into three levels. The Level 1 inputs are unadjusted prices quoted in active markets for identical assets or liabilities. Level 2 inputs refer to adjusted observable

My study differs from existing evidence in several ways. *First*, while Danbolt and Rees (2008), and Israeli (2015) examine whether the value relevance of fair value income is superior to that of historic cost income, I focus on whether the valuation changes are informative to equity investors when investing in real estate companies. *Second*, Bandyopadhya, Chen, and Wofe (2017) focuses on the predictive value of fair value information of investment property, however, I examine the information-usefulness of CFV information using the relation between share price adjustments and CFV to infer such informativeness of the CFV from equity investors' perspective. *Third*, I extend the work of So and Smith (2009) by considering whether the value relevance of the CFV depends on the reliability differences (i.e. source of fair value inputs used in fair value measurement, source of valuers, and the quality of fair value measurment disclosure).

Investigating the value relevance and reliability attributes of CFV of investment property is important as the majority of the existing research on the fair value input hierarchy is focused primarily on financial instruments and the banking industry (e.g., Bagna, DiMartino, & Rossi, 2014; Ehalaiye, Tippett, & Van Zijl , 2017; Song, Thomas, & Yi, 2010). However, unlike financial instruments, investment properties are heterogeneous in nature, leading to low volumes of transactions (Ling & Archer, 2013), and, consequently, the usage of unobservable inputs for fair value estimation is relatively common. Thus, my study offers an alternative implication on the effect of fair value input choice on the value-relevance of accounting information. I further investigate whether an extensive fair value disclosure enhances the value-relevance of the CFV: an issue not investigated in the cited studies.

market inputs, while Level 3 inputs are unobservable inputs in active markets. The level of reliability of fair values is somewhat dependent on the level of inputs used in fair value estimates.

I hand collected the required data for the sample periods 2007 – 2015 and measure the value-relevance of CFV as the statistical association between share returns and CFV, following the accounting literature.[4] This approach is also consistent with the value-relevance notion proposed by Barth et al. (2001), which contends that accounting information is value-relevant if it has the explanatory power for share returns. Further, this method is in line with the IFRS conceptual framework (IASB, 2010), which states that the information is relevant if it has the capability to influence economic decision-making.

Motivated by the scant evidence regarding the value relevance of fair value information from debtholders' perspective, my second essay enquires into the effect of fair value reporting for an investment property on debt-pricing decision usefulness. The fair value accounting has been exclusively promoted for decades (Barth, 2018; He, Wright, & Evans, 2018) and is assumed to facilitate the investment decision making (Georgiou, 2018; Landsman, 2007). Mounting evidence on the information content of fair values mainly reflects the equity holders' perceptions (Ball, Li, & Shivakumar, 2015; Holthausen & Watts, 2001). On the other hand, research on the effect of fair value reporting in debtholder perspective is limited. I, therefore, study the relationship between the CFV of investment property and the cost of debt conditional on several factors, including gain versus loss, sources of fair value inputs, and types of valuers.

Essay Two is the first to investigate the effect of fair value application on the cost of debt with an exclusive focus on investment properties. Ball et al. (2015), Demerjian, Donovan, and Larson (2016), and Wang and Zhang (2017) investigate whether fair value information has debt-design contractibility, while my study examines the effect of CFV on the cost of debt. With data from the banking industry, Magnan, Wang, and Shi (2016)

[4] The return model which is commonly used in the value relevance research (Barth, 2001; Ota, 2003) serves the research aim in examining the relation between stock price changes, earnings and CFV which is used to infer the information-usefulness of CFV of investment property from equity investors' perspective.

report a positive relationship between the extensive use of fair value accounting and the cost of debt, and the effect of fair value hierarchy on such an association. This essay differs from the aforementioned study in that I focus on the effect of property price changes and the features of valuation changes (i.e., Gain versus loss on CFV, sources of inputs and values, as well as the quality of measurement-related disclosure) on the cost of debt of real estate firms. Unlike financial instruments, investment properties are heterogeneous, localised, and segmented, and are challenging for the application of fair value accounting standards due to the lack of identical items in the active markets (Hilbers, Zacho, & Lei, 2001; Ling & Archer, 2013). As a result, the use of unobservable inputs in the fair value estimates of investment properties is implicitly acceptable and has been a common practice in the real estate industry. This unique characteristic of real estate investment properties raises an interesting research question that whether fair value information affects information-based risks perceived by debtholders and the cost of capital. In addition, this study has also been extended by incorporating moderating factors including fair value hierarchy, the sources of valuers, and fair value disclosure.

I use hand-collected data from 2007 to 2015 and infer the decision-usefulness of CFV from the statistical association between cost of debt and CFV, following the accounting literature. The financial information is capable of predicting future cash flows of a borrowing firm, so lenders use the financial reports in determining whether the potential borrowers will generate sufficient cash flow to repay the debt (Libby, 1979; Maines & Wahlen, 2006). That is, the cost of debt charged by debtholders is a product of debtholders' debt pricing decisions (e.g. Kim, Simunic, Stein, & Yi, 2011; Minnis, 2011). Given the fact that investment properties are the key operating asset and primary collateral for debt in real estate firms, properties' value changes should be of debtholders' interest in financing decision making.

The first two essays noted above are driven by the positive aspect of fair value reporting. Essay Three, on the other hand, is motivated by the negative side of fair value application. The ever-increasing use of fair value reporting has introduced new challenges in obtaining and verifying fair value information for accountants and auditors (Bratten, Gaynor, McDaniel, Montague, & Sierra, 2013). However, the empirical research on the monitoring costs arising from the fair value measurement of non-financial assets characterised by valuation risks is limited and inconclusive. Ettredge, Xu, and Yi (2014) demonstrate that the relatively larger proportion of fair value asset held by banks contributes to higher audit fees. Likewise, Yao, Percy, and Hu (2015) document a positive association between fair value accounting for non-current assets and audit fees, while Goncharov, Riedl, and Sellhorn (2014) document a negative relationship between fair value exposure and audit fees in the real estate industry. Given facts motivate me to study the association between the fair value application and monitoring cost. Specifically, Essay Three examines the association between audit fees, which proxy for monitoring costs, and (i) the fair value exposure of investment properties, (ii) the reported changes in fair value (CFV) of investment property, and (iii) the sources of inputs and valuers, in the context of the real estate industry in the AREI.

Essay Three differs from prior studies in several aspects. First, this essay examines the effect of valuation changes on audit fees which is not captured by the work of Goncharov et al. (2014). Auditors are required by auditing standards to verify the accounting estimations and assumptions of those estimations (AUASB, 2015). This essay, therefore, measures the effect of valuation changes on audit fee pricing. Second, this investigation is the first empirical research examining the effect of fair value application for investment property in the Australian real estate context. Although Yao et al. (2015) investigate the effect of fair value accounting for non-current assets conditional on the

source of valuers on audit fees using Australian data; the effect of fair value inputs is not tested, and the effect of the full fair value application and revaluation model on audit fees is mixed. The fair value of land and buildings is generally obtained from market-based evidence by independent valuers (Cheng, 2018), while fair value measurement for real estate tend to be obtained from managements' estimates using adjusted market comparison (Level 2 inputs) and discounted estimated rental income (Level 3 inputs) (Ernst & Young, 2013). In addition, the revaluation is not required to be conducted periodically, implying that the impairment effect associated with the revaluation model may potentially drive audit complexity (Goncharov et al., 2014). Given the differences in the nature and risk between the two models, the effect of the full fair value application for an investment property on audit fees in the Australian context is worth investigating.

1.2 Institutional Environment of the Research

I focus on the CFV of investment property in the AREI for the following reasons. *First*, the fair value measurement under IAS 40 applies to investment properties, and investment properties are the primary operating assets of real estate companies (In the AREI, on average, they represent 70% of total assets).[5] *Second*, financial market conditions and the regulatory environment in Australia are different from those in other international settings (Faff, Gray, & Tan, 2016). The transparent financial environment of the AREI is known as the world's best practice structure for listed real estate entities (Steinert & Crowe, 2001). Such transparency could be a result of the 'Continuous Disclosure' regulation under the Australian Securities Exchange (hereafter, ASX) Listing Rules 3.1. This rule requires listed

[5] Real estate companies are defined as companies that majority-own a portfolio of stabilised real estate and earn significant operational revenue from property rental income (Ling & Archer, 2013; Standard & Poor's, 2018).

firms on the ASX to reveal information that would have material impact on the prices or values of securities in a timely manner (The ASX, 2013). Equity investors provide an important source of capital, as Australian firms can benefit from franking credit rebates.[6] This requirement, and the equity financing condition, may enhance the value-relevance of published accounting information to equity investors, especially in the real estate market, where capital providers generally suffer from imperfect information about the future demand for property (Hilbers et al., 2001; Ling & Archer, 2013). *Third*, the fair value information coverage in the AREI is extensive, as the current value reporting concept has been applied in the Australian market for decades (Cairns, Massoudi, Taplin, & Tarca, 2011; Yao et al., 2015). Therefore, these characteristics make the AREI a particularly suitable subject for investigating the value-relevance of accounting information, CFV, in particular.

Fourth, besides the aforementioned reasons, the bank-oriented environment and the correlation between property price changes and the debt capacity makes the AREI's debt market interesting. In the AREI, banks represent about 90% of the debt market (Deloitte, 2018). Bank loans have become an important source of debt finance for Australian firms since the 1990s (Cotter, 1999) as there has been downward trending of interest rate (The Urban Developer, 2018). [7] An attractive cost of debt can drive firms' leverage decisions and sources of financing. Cotter and Zimmer (1995) report that Australian firms attempt to signal borrowing capacity to debtholders by conducting the asset valuation for fixed assets. One of the most important creditability assessing factors from creditors' perspective is the loan-to-value ratio (LTV), defined as the ratio of a loan

[6] Franking credits or the imputation credit (dividend imputation system) is a type of tax credit permitting Australian companies to pass on the company income tax level to shareholders in order to avoid double taxation (Faff et al., 2016).

[7] Although the bank financing facility has been growing in the AREI, a comparison of levels of debt to total assets internationally reports that the AREI has one of the lowest gearing ratios (Steinert & Crowe, 2001): on average, it is about 32% - 38% during 2009 – 2010 (Cummins, 2010).

to the value of an asset purchased (Standard & Poor's, 2015). LTV is sensitive to property price changes: higher property value, lower LTV and better creditability. Collectively, the analysis suggests that in the AREI, where real estate is both the core business asset and primary collateral, valuation changes of real estate should be an important piece of information to banks. For these reasons, the AREI makes a particularly suitable subject for studying the information content of fair value reporting and debt market perceptions.

Fifth, the unique AREI firm structure and its nature of capital requirement introduce the interesting research setting in terms of auditors' role and audit fees in verifying property value changes. There are two main types of real estate entities in Australia: Australian Real Estate Investment Trust (AREIT) and Australian Real Estate Operating Companies (AREOC) (Einhorn et al., 2000). [8] The AREIT has been structured as unit trusts with the main benefit being access to 'flow-through tax treatment' (they gain this advantage by not engaging in active investments and activities). The AREOC, on the other hand, is not prohibited from conducting active real estate operations. There are no specific distribution requirements for AREITs, while in other countries, including the UK and the US, REITs are required to distribute at least 90% of their rental profits (PwC, 2011a). However, since the undistributed income may be subject to higher tax rates, the AREITs are less likely to use internal cash for investment activities and, instead, rely on external financing by issuing equity or debt instruments. Danielsen, Harrison, Van Ness, and Warr (2009) find that REITs relying on external financial sources have strong incentives to provide reliable and credible financial statements. Due to AREI's significant capital market presence, auditors, who are in a position to provide assurance of the credibility financial reports, play a crucial role in the real estate sector.

[8] In the US real estate industry, categories of real estate firms include publicly traded REIT, nontraded REIT, real estate fund managers, other private real estate owners and real estate services firms (KPMG, 2017). US publicly traded REIT have been researched more extensively in the literature (e.g., Goncharov et al., 2014).

1.3 Findings of the Research

In general, findings from this research shows that CFV of investment properties is decision-useful to both equity investors and debtholders. However, such value changes potentially drive audit workload and hence audit fees. In the real estate industry, fair value hierarchy does not moderate the information-usefulness of the CFV and audit fees, while the sources of valuers affect CFV information content and audit fees.

Pointedly, the results of Essay One show that CFV has a statistically positive relationship to the seven-day, one-month and three-month cumulative abnormal stock returns surrounding the preliminary earnings announcement dates. This suggests that investors consider CFV to be sufficiently reliable and relevant in making investment decisions. I further find that the use of unobservable inputs does not reduce the value-relevance of the CFV information, indicating that such inputs at least provide comparable information about property values for real estate firms, and hence useful to investors in economic decision making. As predicted, I find that the value-relevance of CFV is greater for firms employing external valuation or mixed valuation than for firms using standalone director valuation. [9] However, I fail to find any moderating effects of disclosure quality on the value-relevance of CFV. This could be explained by the fact that companies in the AREI are likely to disclose capitalisation rates, which seem to be the information most relevant to property values. As long as this piece of information is disclosed, equity investors can access the key indicators (i.e., capitalisation rates and tenant portfolios) related to CFV from other sections of annual reports.

Respectively, Essay Two demonstrates that CFV has a statistically negative relationship with the cost of debt. Using the statistical association between CFV and the

[9] External valuation, mixed valuation and standalone director valuation refer to the source of valuers that firms employ in fair value measurement for properties.

cost of debt to infer results; this finding suggests that CFV is decision-useful in debt pricing as it crystalises the relative desirability of the firms' properties and hence alleviates the information-based risk to uninformed debtholders on property values. The research further reports that the negative relationship between the CFV and the cost of debt is more pronounced when CFV of investment property is recognised as a gain. This is in line with the theory that positive shocks on expected future cash flow from the rental income lower the required rate of returns (Born & Pyhrr, 1994; Hilbers et al., 2001). Also, the findings reveal that the use of Level 3 inputs in fair value estimates for investment properties does not diminish the decision usefulness of the CFV. However, the exclusive use of director valuation in fair value estimates for investment properties decreases the decision usefulness of the CFV. In addition, the results show that higher quality of fair value measurement disclosure does not further reduce the cost of debt.

Moreover, the results from Essay Three show that, unexpectedly, there is a negative relationship between fair value exposure (calculated as the ratio of investment properties stated at fair values to total assets) and audit fees. However, this finding is consistent with that of Goncharov et al. (2014): auditors can benefit from audits where clients have high fair value exposure by simplifying the procedures used to validate investment property stated at fair values. As predicted, I find a positive relationship between the total CFV of investment properties and audit fees, suggesting that such changes in fair values can drive up audit production processes and fees. These results remain unchanged after excluding the GFC periods, controlling for bias arising from auditor choices, and using alternative settings. I further find that the use of Level 3 inputs in fair value estimates for investment property does not affect audit fees. In addition, I find that, inconsistent with my hypothesis, audit fees are lower for firms using management/directors-estimated fair values relative to those involving external valuers and

a mixed approach. This could be explained by the fact that auditors typically hire independent valuation specialists if a client utilises valuation specialists, and therefore incurring extra layer of cost to the audit engagement (Cannon & Bedard, 2017; Glover, Taylor, & Wu, 2016). Additionally, anecdotal evidence reports that auditors could have difficulties understanding and obtaining sufficient information from the proprietary models and assumptions used by external valuers and, hence, demand higher fee premiums.

1.4 Contributions of the Research

Overall, the current research contributes to accounting research and standard setting domain by providing insightful evidence on the decision usefulness of the reported CFV of non-financial assets to primary capital providers and its effect on the monitoring costs as this is limited and inconclusive. Further, this research answers to the call from accounting standard setters for additional evidence helping them to better understand the post-implementation of the IFRS 13.

Individually, the findings from the Essay One contribute to research and standard setting on fair value reporting in the real estate industry in multiple ways. First, this essay provides direct evidence that fair values of investment properties are useful, despite the subjectivity inherent in the fair value estimation because of the heterogeneous characteristics of the real estate market. Second, Barth et al. (2001) contend that the majority of the value-relevance research implications have joint implications for both relevance and reliability. I contribute to this insight by documenting that the use of Level 3 inputs in fair value estimates does not impair fair value information content in the real estate sector as it is the industry norm - implicitly acceptable. Third, Essay One also contributes to the accounting standard-setting domain. Based on the findings, we suggest

that accounting standard-setters consider requiring firms to at least employ the mixed valuers method to conduct fair value measurement for investment property, if the benefits of doing so outweigh the costs. In addition, the IASB has encouraged discussion on a better understanding of the post-implementation effects of the IFRS 13 (IASB, 2017). The findings from the value-relevance of additional disclosures imply that, in the real estate industry, where companies are most likely to reveal information about property value, the extensive disclosure requirements under this standard may be an uneconomical and wasteful practice and may even cause information overload.

The findings from the Essay Two also contribute to research, standard-setting, and regulations on fair value reporting in the real estate industry in several ways. First, the results of Essay Two enrich the value relevance research by providing empirical evidence on the decision usefulness of fair value information to debtholders, which is rather scant (Holthausen & Watts, 2001). Second, I further contribute to this research stream by reporting that the use of Level 3 inputs in fair value estimates is not always damaging. Third, this study contributes to the accounting standard setting. My findings should assist accounting standard-setters and ASX regulatory authorities to consider requiring firms to employ mixed valuation in fair value estimates, because of the information benefits of the mixed valuation method. Furthermore, my findings imply that extensive fair value disclosure appears to be a wasteful practice in the real estate industry, where firms typically disclose information on properties' portfolio and values. Thus, my study is a timely response to the call from the IASB.[10]

Peculiarly, the Essay Three findings further contribute to accounting research and professional bodies in multiple ways. First, the findings offer insightful evidence indicating

[10] The IASB calls for additional evidence for a better understanding of the post-implementation effect of IFRS 13 (IASB, 2017).

that auditors can benefit from their audit client firms having greater level of investment property stated at fair values, although audit workload and fees can be driven by valuation changes. Second, my study offers additional insights for regulators regarding the auditing implications of fair value reporting measurement classified as Level 3 in the real estate industry. Despite the joint call by the European Financial Reporting Advisory Group (EFRAG) and International Accounting Standards Board (IASB) (EFRAG, 2017; IASB, 2017) for additional research on understanding the post-implementation benefits of IFRS 13, related empirical studies remain scant and are inconclusive. Finally, the findings from this essay point out that, although independent valuers may appear to be the optimal choice at first glance, the additional costs, including valuation fees and auditors' efforts to understand and access propriety external valuations, may make such a choice less desirable. This finding indirectly reflects on the issue related to the impact of the use of specialists by auditors (Hux, 2017).

1.5 Implications of the Research

This research has essential implications for professional bodies, primary capital providers, auditors, and real estate companies. First, to access directors' specific asset knowledge and external valuers' creditability, I suggest accounting standard-setters to consider requiring firms to at least employ the mixed valuation approach if the benefits of doing so outweigh the costs. For example, the cost may arise from additional audit fees as the findings of Essay Three indicate that firms using mixed and independent valuation paid higher audit fees. Second, the IASB has encouraged discussions to better understand the post-implementation effects of the IFRS 13 (IASB, 2017). The findings relate to additional disclosures implying that the extensive disclosure requirements under this standard may be

an uneconomical and wasteful practice and may even cause information overload. Third, my results suggest that companies and auditors can be more liberal on adopting Level 3 inputs, as long as due diligence is carried out in selecting such inputs, because the use of Level 3 inputs in fair value estimates for investment property neither diminish the information-usefulness of such estimated values nor increase the cost of capital. Moreover, the findings indicate that auditors can benefit from auditing firms that have greater level of investment property stated at fair values, although audit workload and fees can be driven by valuation changes.

This study also provides suggestions for future research. As empirical evidence of this research suggests that fair value information is decision-useful to capital providers, it is important to conduct further investigations on whether such information enhances the information environment in the real estate context. For instance, investigating the effect of fair value accounting applied to investment properties on analysts' forecast accuracy and the deviation of share prices from firms' net asset values (NAV) could provide insightful evidence. This requires more comprehensive data accessible for this research.

1.6 Organisation of the Research

The remainder of the thesis is organised as follows: Chapters two, three and four report the three essays, titled "Value-relevance of reported changes in fair values and measurement-related fair value disclosures", "The decision usefulness of reported changes in fair values and cost of debt", and "Fair value exposure, changes in fair value and audit fees", respectively. Each essay includes an introduction, institutional background, literature and hypotheses development, research design, result discussion, conclusion, and footnotes.

Chapter five presents the conclusion of the thesis and reports the limitations, as well as the implications of this research and future research suggestions.

CHAPTER TWO- VALUE-RELEVANCE OF REPORTED CHANGES IN FAIR VALUES AND MEASUREMENT-RELATED FAIR VALUE DISCLOSURE (ESSAY ONE)

Motivated by the ongoing debate on the advantage and disadvantage of fair value application and the reliability trade-off relating to fair value accounting adoption, Essay One investigates the value-relevance of changes in fair value of investment property recorded under IAS 40 and IFRS 13. Using hand-collected data from the Australian Real Estate Industry, I find that changes in fair values of investment property are value-relevant to equity investors. I further find evidence that the use of unobservable inputs in an active market (Level 3 inputs) does not diminish fair value information content. This essay also documents that properties valued exclusively by directors have a significantly reduced value-relevance for their value changes, whereas property valuations made collectively by both directors and independent valuers have superior value relevance, possibly owing to the combination of inside knowledge and externally imposed monitoring. Collectively, the findings suggest that, in the real estate industry, where unobservable inputs are commonly used to determine fair values of properties, the fair values determined subjectively are perceived to be sufficiently informative and relevant. The findings have important implications for accounting standard-setters in considering whether an external valuation should be required, and whether the extensive measurement-related fair value disclosure requirements are useful.

2.1 The AREI and Australian Financial Information Environment

The Australian real estate industry (AREI) has a long history. The real estate association was established in 1923, signalling the growth of interest in the real estate sector (Real Estate Institute of Australia, 2017). Since the 1970s, the market has grown steadily at approximately 3% annually (Stapledon, 2010). Currently, the AREI includes approximately 84 publicly traded entities on the Australian Securities Exchange (ASX) as at 23 March 2017. AREI has a world top ranking given by foreign investors, as an attractive source of investment. It is considered to be a highly scrutinized market by the corporate regulators (i.e. Australian Securities and Investments Commission) (Australia and New Zealand Banking Group, 2017; Redman, 2017).

Unlike other countries, particularly, the US and the UK,[11] the classification and distribution requirements for the AREI firms are different. According to Einhorn et al. (2000), there are two main types of real estate companies in Australia: Australian Real Estate Investment Trusts (AREITs) and Australian Real Estate Operating Companies (AREOCs). Typically, AREITs are established as unit trusts aiming to have benefit of being able to access flow-through tax treatment: entities can pass income on to the owners and/ or investors by not engaging in active real estate investment activities.[12] On the other hand, the AREOCs are not prohibited from conducting active real estate operations. As for dividend distributions, REITs in the UK and the US are required to distribute at least 90% of their rental profits, while there is no such distribution requirement for AREITs (PwC, 2011). However, since the undistributed income may be subject to higher tax rates, the

[11] In the US real estate industry, categories of real estate firms include publicly traded REIT, nontraded REIT, real estate fund managers, other private real estate owners and real estate services firms (KPMG, 2017). US publicly traded REIT have been researched more extensively in the literature (e.g., Goncharov et al., 2014).
[12] Real estate operations refer to business activities associated with physical assets – evaluation, production, acquisition, disposal, and management of real property assets (Ling & Archer, 2013).

AREITs are less likely to retain earnings and, instead, tend to distribute dividends in order to avoid the associated tax. This necessitates AREITs to rely on external financing to generate funds for investment activities. Being dependent on external capital can drive firms to strive for financial transparency (Danielsen, Harrison, Van Ness, & Warr, 2014). Therefore, AREI managers have incentives to adopt prudent accounting policies and to report financial information in a transparent manner, to enhance information usefulness to investors.

The Australian stock market information environment is characterized by the continuous disclosure principle. ASX Listing Rule 3.1 "Continuous disclosures" requires listed entities to publicly disclose information that has the potential to materially affect the price or value of the firms' securities (ASX compliance, 2013). All material public information can be accessed freely by investors from the ASX website. Listing Rule 3.1 of the ASX is considered very important for integrity of the Australian stock market (Hsu, 2009). Russell (2015) reports that continuous disclosure has a significant association with stock price revisions, thus, indicating that continuous disclosure is informative about firm valuation to equity investors. Furthermore, all such material information is required to be disclosed to ASX directly, before its revelation to other information intermediaries (e.g., analysts, and media) (Beekes, Brown, & Zhang, 2015).

2.2 Literature Review and Hypotheses Development

2.2.1 Aggregate Valuation Changes and the Equity Investors' Decision Making

Real estate asset values tend to fluctuate widely, and historical cost reporting does not capture the relevant economic information about these assets sufficiently (Fortin et al.,

2008; Searfoss & Weiss, 1990). The fair value accounting model is desirable from the economic perspective, as it is based on current value reporting, providing up-to-date and relevant information (Barth, 2018; Sterling, 1970). The fair value accounting model for real estate assets provides users with information on potential financial resources that may be available to an entity through the use or sale of these assets, and reveals changes in the values of these assets from one reporting period to another (Barth, 2018; Georgiou, 2017; Landsman, 2007).

As a result of the current reporting concept, IAS 40 'Investment Property' was issued in 2000, and came into effect in the EU and many developed countries, including Australia, after 2005 (Cairns et al., 2011; Yao et al., 2015). The Australian Accounting Standards Board (hereafter, AASB) 140, the Australian implementation of IAS 40, was mandated in 2007. AASB 140 specifies the definition of investment properties and permits firms to apply fair value measurements to assets classified as investment properties. In AASB 140, investment properties are defined as properties held (by means of purchase, construction, or lease) to earn rental income, gain from capital appreciation, or both. In the fair value accounting model, investment properties are reported on the statement of financial position at fair value, and changes in those fair values are recognised as profit or loss.

However, owing to its illiquid nature, obtaining observable market inputs for fair value estimates on investment property is difficult. Consequently, AASB 140 allows firms to use valuation techniques based on managerial assumptions and inputs (i.e. rental income and discount rate) when observable inputs are not directly accessible from the market. Firms in the AREI have used four major valuation methods to measure fair values for investment properties (Ernst & Young, 2012). The first method is the Discounted Cashflow model (hereafter DCF), based on discounting expected future cash flows (see Appendix E,

for an example). The second method is the 'comparable method', which is typically used when comparable transactions in the active markets are available. The third method is the 'yield capitalization method'.[13] The yield capitalization method is also commonly used to estimate terminal values: an important input into methods, such as DCF (Geltner et al., 2001; Ling & Archer, 2013). The last method is known as the 'mixed approach', and generally blends the 'yield capitalization' method and the DCF method (Ernst & Young, 2012).

Providing timely and detailed accounting information as well as management's estimates of fair values may reduce the systematic information risk and enhance the information transparency (Barlev & Haddad, 2003; Sengupta, 1998). Equity investors evaluate the firm's risks according to accessible and available information when investing in the firms (Jacoby, Lee, Paseka, & Wang, 2018). That is, uninformed investors facing information-based systematic risk would compensate for that risk by discounting firms' share prices and charging a higher cost of capital (Francis, LaFond, Olsson, & Schipper, 2005). With the fair value paradigm, firms provide greater levels of information and more thorough disclosures (Barlev & Haddad, 2003), allowing managements to provide private information about future cash flows expected from their firms' investment properties. When fair values of real estate properties are changed, the new information that is conveyed as a result of the application of fair value accounting reduces information asymmetry and enhances the predictive usefulness of accounting information (Danbolt & Rees, 2008; Bandyopadhyay et al., 2017; Barlev & Haddad, 2003)

[13] This approach is the most frequently used in the real estate industry. This method represents the idea that property value can be determined by income generated from property divided by yield rate. The yield capitalization rate is the overall rate of returns on the entire portfolio of properties owned by an entity. Properties' values can be found if the buyer's expected income and rate of returns from an investment property portfolio are known. Therefore, the yield capitalization rate converts future monetary benefits generated from properties into a single percentage (Geltner et al., 2001; Ling & Archer, 2013).

Research examining the value-relevance of the fair value accounting model for investment properties documents that this accounting model is useful to financial report users.[14] Using data from US real estate companies, which comprises historical-cost based measurements in general, Fields, Lys, and Vincent (2001) report that recognition of impairment loss for investment property is incrementally associated with firms' share prices. However, with a sample from three European countries (i.e., France, Germany and Italy), where the revaluation model was not allowed before the IFRS adoption, Israeli (2015) finds that investors place a lesser weight on disclosed fair values relative to recognized fair values. In the UK, Dietrich, Harris, and Muller (2000) investigate the reliability of fair values for investment property by comparing pre- and post-IFRS periods, and find that estimated fair values are more accurate than historical costs. Likewise, So and Smith (2009) examine the value-relevance of fair value adjustments for investment properties recognized in the income statement using Hong Kong data, and find that the adjustments presented in the income statement as a profit and/or loss, are more value-relevant, compared to those presented in the revaluation reserve account as equity.

On the other side, the exclusive use of a management-estimated approach can introduce subjectivity in fair value estimation for investment properties leading to an inconsistency with the fair value definition specified by IFRS 13. Under IFRS 13, fair value is a market-based measurement instead of an entity-specific measurement (IASB, 2011,

[14] One stream of research on the value-relevance of fair values for financial assets and liabilities in the *banking industry* demonstrates that fair value measurements are informative to financial report users. For instance, Venkatachalam (1996) finds that the fair value of off-balance sheet derivatives is associated with equity values over and above the notional value of derivatives recognized in the balance sheet. Barth et al. (1996), Eccher et al. (1996), and Nelson (1996) also come to the same conclusion, after investigating the value-relevance of fair value disclosures required by Statement of Financial Accounting Standard (SFAS) No 107. A more recent study by Evans et al. (2014) shows that fair value adjustments for the Commercial Banks' investment securities are associated with future financial performance. Unlike financial assets, which are more likely to have quoted prices from the active market or observable market prices, non-financial asset valuation tends to rely on firm-specific assumptions. Therefore, the empirical findings of studies on financial assets do not necessarily apply to the non-financial asset context.

para. 2). Opponents of the fair value accounting argue that the IASB's goal of providing current value information based on current market conditions may not be met, when significant managerial discretions are embedded in the fair values (Gonçalves & Lopes, 2014; Marsh & Fischer, 2013). Dechow et al. (2010), too, suggest that opportunistic managements may use the flexibility given by the fair value accounting model to engage in earnings management. Even though fair value reporting is desirable from the economic perspective, this accounting model may come at a cost of reduced reliability and increased subjectivity. In turn, if up-to-date fair values are affected by managerial opportunism, such values may not be so reliable and value relevant.

I, however, posit that the unique characteristics of the AREI, with respect to dependence on external financing and its transparent environment, should encourage managers to be transparent and to provide fair value information that is value-relevant to equity investors. Although, fair value estimates are subject to the opportunism argument, managerial estimations are based on the stabilized vacancy rate and contractual tenants (Born & Pyhrr, 1994; Hilbers et al., 2001) and, hence, can be fairly verifiable. That is, the CFV is likely to indicate whether property is attractive to tenants or not. Consequently, the CFV of investment properties can reduce the information gap between managers and uninformed equity investors about property values. Therefore, my hypothesis is stated as follows:

H1: The reported changes in the fair values of investment properties are value-relevant to equity investors.

2.2.2 Aggregate Level 3 Inputs and the Accounting Information Content

Although the fair value accounting-model has been promoted from the value-relevance perspective, there is an ongoing debate on whether fair values of identical assets and/or liabilities are still value-relevant when such values are unobservable in the active market (Yao, Percy, Stewart, & Hu, 2018). As noted previously, owing to the illiquid characteristic, fair value estimates for investment property are most likely to rely on valuation techniques incorporating unobservable inputs in the active market (e.g., DCF with managements' assumptions). Arguably, the estimated fair values with unobservable inputs may lead to lower financial reporting quality that affects the fair value information content, since value-relevance is dependent on the reliability of fair values (Kadous et al., 2012; Koonce et al., 2011).

In order to help financial report users to differentiate and assess the quality of estimated fair values, IFRS 13 was issued and came into effect in 2011 and 2013, respectively (IASB, 2011). IFRS 13 requires firms to classify fair values according to the quality of inputs used in fair value estimates: the so-called fair value hierarchy of disclosures. Level 1 fair value inputs are the unadjusted quoted prices of identical assets and/or liabilities in an active market. Level 2 inputs refer to adjusted observable market inputs, while Level 3 inputs are unobservable inputs from active markets using valuation techniques with managements' judgments and assumptions. Among the three fair value hierarchies, the Level 3 fair values appear to be the least reliable and verifiable, which could lower financial information quality. Therefore, intuitively, they are considered as the least value-relevant information, since value-relevance is dependent on the reliability of fair values (Kadous et al., 2012; Koonce et al., 2011).

Using Level 3 inputs in fair value estimates can provide an opportunity for management to manage earnings (Ramanna & Watts, 2012; Yao et al., 2018) and, consequently, reduce information quality. Prior evidence on the value-relevance of fair values generally suggests that the information-usefulness of such values differs with respect to the input levels and suggest that investors consider Level 3 estimates as less reliable, and less useful, than the observable Levels 1 and 2 inputs. Bagna et al. (2014) report that the market assigns a material discount on fair values obtained using Level 3 inputs. Likewise, a prior study reflecting the debt capital market shows that greater use of Levels 2 and 3 fair value inputs is associated with a higher cost of debt (Magnan et al., 2016).

On the positive side, adopting unobservable inputs, or management assumptions, in fair value estimates for investment property could make financial reports more transparent. In the real estate industry, Vergauwe and Gaeremynck (2019) show that firms employing valuation models to estimate the fair value of their investment properties have provided higher levels of information related to model assumptions, and more accurate fair values. Likewise, Barron et al. (2016) and Altamuro and Zhang (2013) show that Level 3 fair values of mortgages can mitigate the uncertainty in analysts' information environments, and better reflect the persistence of future cash flows, than Level 2 inputs.

In the real estate context, where unobservable inputs are predominant, and there is no use of Level 1 inputs because of the lack of an active market (Ernst & Young, 2013; PwC, 2011), I hypothesize that the decision-usefulness of CFV of investment property may not be affected by the use of Level 3 inputs. Therefore, the null hypothesis is stated as follows:

H2: The value-relevance of reported CFV of investment property estimated with Level 3 inputs is not different from those estimated with Level 2 inputs.

2.2.3 The Director Valuation and the Accounting Information Content

Dietrich et al. (2000) find that external valuers provide less-biased and more-accurate estimates, relative to internal valuers or managements. Muller and Riedl (2002) report that the market perceives lower levels of information asymmetry (proxied by bid-ask spreads) when the firms employ external valuers rather than internal valuers. As an external appraisal is considered as relatively more credible (less biased) (Muller & Riedl, 2002), firms' choice of valuers to conduct fair value estimates for investment property can affect the reliability and value-relevance of such estimated values, accordingly.

Although the AASB 140 does not require fair values to be estimated by external valuers, this remains a preferred practice. Fair value estimates in the AREI can be conducted by independent valuers (the external valuation), internal valuers (the director valuation only) or a mixture of both (mixed valuation) (Ernst & Young, 2012). In the real estate industry, on average, 40% of firms employ the director valuation only to estimate properties' fair values (Erns & Young, 2012), although this option is perceived as comparatively biased and less reliable.

Defining reliability in terms of ex-post adjustments of recognized value increase and using a sample of Australian asset revaluations, Cotter and Richardson (2002) find that revaluations of plant and equipment that are valued by independent valuers are more reliable than those valued by directors, but this finding does not apply to revaluations of investment properties and identifiable intangible assets. The authors interpret this as evidence that directors of investment property and intangible asset-dependent firms have been chosen to ensure that asset-specific knowledge is embedded in their director valuations. As properties and intangible assets are typically heterogeneous in nature, the

knowledge specific to a given asset may be required for more accurate valuation. This explains the popularity of using director valuation in the AREI.

Considering the arguments from both sides, it is rational to presume that a mixed valuation approach would have an advantage, as it possesses the favourable characteristics of both the director valuation, and the external valuation, approaches. The mixed valuation approach benefits from directors' asset-specific knowledge, while still maintaining a degree of reliability, thanks to the incorporation of independent valuer opinions. Essentially, even though firms are involved in self-valuation when using the director valuation approach, firms using a mixed valuation approach have an extra layer of external assurance from independent valuers, and this may reduce the information-based risk of CFV. Therefore, we posit that the use of director valuation exclusively would reduce the reliability and value-relevance of fair value estimates.

H3: The reported change in fair value of investment properties is less value-relevant when the valuation of investment properties is carried out by director exclusively, ceteris paribus.

2.2.4 Extensive Measurement-Related Disclosure and the Accounting Information Content

Although AASB 140 requires firms using a fair value accounting-model to disclose information about fair value estimates, the disclosures made by firms are often insufficient to allow investors to make efficient economic decisions (Sundgren et al., 2018). In addition to fair value hierarchy disclosure, AASB 13 also requires firms to supply more detailed information about fair value estimates. For example, AASB 13 requires firms to disclose the discount rates, which are key inputs in present value calculation for DCF models, and

to conduct sensitivity analyses on the key unobservable inputs that may have significant effects on fair value measurements. Additional requirements under AASB 13, together with AASB 140 requirements (e.g., expected rental income and growth rate of rental income) would be helpful for equity investors to verify and assess the quality of fair values of investment properties.

Although there is concern over information overload caused by an additional volume of disclosure (Singh & Peters, 2015), additional disclosures are likely to be the key components for property valuations, and useful for equity investors. Real estate firms typically employ unobservable inputs to estimate the values of real estate holdings and, consequently, there might be a high level of information asymmetry. Therefore, additional disclosures required by AASB 13 would give equity investors the detailed information to estimate the future cash flows expected to be generated by the portfolio of investment properties. Consistent with this, Sundgren et al. (2018) report that firms complying with the disclosure requirements of IAS 40 and IFRS 13 are more likely to be followed by analysts, and tend to have higher market-liquidity. Therefore, I hypothesize that CFV could be more informative if such values are reported by firms providing high-quality disclosures about fair value valuation inputs, as opposed to firms providing low-quality disclosures. We hypothesize as follows:

H4: The reported change in the fair value of investment properties is more value-relevant when firms provide high-quality additional disclosures, ceteris paribus.

2.3 Research Design

I employ an event study approach to investigating the value-relevance of fair value application to investment properties. Specifically, we investigate the association between

cumulative abnormal stock returns with fair value of investment properties during the event windows around the event day: the preliminary earnings announcement date (day 0). I select three event windows, including seven-day window (-3 days, +3 days), a one-month window (0, +1 months), and a three-month window (0, +3 months).[15]

The ASX Listing Rules (2013) requires listed Australian companies to release their financial reports within four months following the end of the financial year. The preliminary results, which include, but are not limited to, the financial statements, however, are required to be published within two months after the end of an accounting period (ASX, 2013). Hence, the preliminary final report announcement dates are identified as the 'earnings announcement date' in conducting the empirical tests. Although the preliminary reports may contain other types of information, information regarding the fair value and the CFV of investment properties is expected to be of importance to investors, since these are the key operating assets for real estate firms. I hand-collected earnings announcement dates from the ASX website.

[15] The reason for starting 3 days before the preliminary results announcement date is to account for the possibility that there may be information leakage. However, this does not apply to the one – and three- month windows. In practice, the preliminary results announcement date ranges from 1.5 to 2 months after the accounting year ends. In order to prepare Appendix 4E-Preliminary final report according to the ASX Listing Rules, the (disclosing) committee and audit meetings need to be arranged. Besides, all material information is required to be released to the ASX directly, and that information can then be released to the media through the ASX (see discussion in Section 2). Even though, the management could use the social media (e.g. Twitter) to guide the announcing results and, consequently, affect stock returns (Liu et al., 2018), the guidance would not provide the actual CFV information, therefore, any information circulating in the market one to three months before the preliminary final report announcement date is more likely to be considered speculative, and information leakage is not likely.

2.3.1 Measurement of Variables

2.3.1.1 Dependent Variable

I use three different windows of the cumulative abnormal share returns as dependent variable of the study denoted as *RET*.[16] *RET(7d)*, *RET(1m)* and *RET(3m)* are the seven-day, one-month and three-month cumulative abnormal stock returns (adjusted for market returns), respectively, centred on the preliminary final report announcement date.

2.3.1.2 Independent Variables

The primary independent variable of interest in this study is the reported changes in fair values of investment property (*CFV*) measured by dividing the *CFV* by the total market value at the beginning of the year. In order to capture the reliability differences associated with *CFV*. I create three additional independent variables, namely, *LEVEL3*, *DIR_VAL*, and *DISCLOSE*. *LEVEL3* is a dummy variable coded 1 if firms used level 3 inputs in their fair value estimate, and zero otherwise. [17] *DIR_VAL* is measured as a dummy variable coded 1 if director valuation approach only is used for fair value measurement for investment property and 0 otherwise. *DISCLOSE* is a dummy variable coded 1 if the firm-level disclosure indices above the median index of total samples, 0 otherwise. The disclosure index is created by summing (i) *DISCRATE* (coded 1 if firms reveal discount rate, and 0 otherwise); (ii) *VACAN* (coded 1 if firms disclose vacancy rate, and 0 otherwise); (iii) *EXPRENT* (coded 1 if firms disclose expected rental incomes and operating expenses, and 0 otherwise); (iv) *SEN_QUAL* (coded 1 if firms provide qualitative sensitivity analysis

[16] Abnormal return is chosen as I want to remove systematic effects that are likely to affect all the companies during a certain period.

[17] The default dummy variable is Level 2 inputs, as there is no use of Level 1 inputs in fair value estimates in the AREI.

fair value measurement according to change in unobservable assumptions, 0 otherwise, and (v) *SEN_QUAN* measured 1 if firms provide quantitative analysis for that sensitivity, 0 otherwise. The disclosure index ranges from a high of 5 to a low of 0. The fair value inputs, the valuer information, and the fair value measurement related disclosure are manually collected from firms' annual reports.

2.3.1.3 Control Variables

Following value relevance literature (i.e. So and Smith, 2009; Bandyopadhyay et al., 2017), I include a number of control variables in the regression equation above. *SIZE* is the natural logarithm of the market value of a firm at the beginning of the accounting year. Atiase (1985) hypothesizes, and finds evidence consistent with, an inverse relationship between firm size and abnormal return in the US market. However, a more recent study points out that such inverse relationships between these two are context dependent (Astakhov et al., 2017). *GROWTH* is firm growth opportunities and is measured as market value of equity divided by book value of equity at the beginning of the year. I expect a negative coefficient (Fama and French, 1998), although a positive coefficient would be consistent with positive abnormal returns for high growth firms that persist in the future (Habib, 2008). *LEV* is the ratio of mortgages and other interest-bearing liabilities, to market values of real estate at the end of the accounting year and is obtained from the annual reports of sample firms. Although the theoretical literature suggests a positive association between leverage and returns (Giacomini et al., 2015), Nellessen and Zuelch (2011) show that a high debt to equity ratio is not perceived as being risky for reals estate firms. *CAPRATE* represents the capitalization rate at the accounting-year end and is defined as net operating income divided by the property market value. *CAPRATE* reflects specific risks and returns related

to properties, and is also helpful to investors to form the trend and to indicate the direction of their real estate market and properties portfolio (PropertyMetrics, 2013). Therefore, I expect a positive coefficient of *CAPRATE*. Additionally, the regression equation includes firm and year-fixed effects.

2.3.1.4 Corporate Governance Variables

I also include corporate governance variables as prior studies suggest that the value relevance of fair values can be strengthen by firms' corporate governance mechanisms (e.g Song et al. (2010)). *BIG4* is a dummy variable coded 1 if firm is audited by one the Big 4 firms, and 0 otherwise and is predicted no sign as Big 4 audit quality is dependent on contexts (Ferguson, 2017). I include the existence of risk management committees (*RC*) (a dummy variable equal to 1 if firms have a risk management committee and 0 otherwise, the frequency of audit committee meeting (*MEET*), and the percentage of institutional unitholders (*TOP20)*. I expect the coefficient on *RC* to be negative as *RC* have a vital role in monitoring business risks in industries where assets have unique characteristics (Kallamu, 2015: Pakhchanyan, 2016). Likewise, the coefficients on *MEET* and *TOP* are also expected to be negative as audit committees are responsible for monitoring the quality of financial reporting and institutional shareholders with larger stake in firms have incentive to activate the monitoring activities (Gillan & Starks, 2000), thus enhancing the usefulness of accounting information.

2.3.2 Empirical Models

Following, Easton et al. (1993), and Barth and Clinch (1998), I start with the relationship between the information content of earnings and the cumulative abnormal share returns, in the AREI context. That relationship is expressed in equation (1) as follows:

$$
\begin{aligned}
RET_{i,t} = {} & \beta_0 + \beta_1 EARN_{i,t} + \beta_2 \Delta EARN_{i,t} + \beta_3 SIZE_{i,t-1} + \beta_4 GROWTH_{i,t-1} + \beta_5 LEV_{i,t} \\
& + \beta_6 CAPRATE_{i,\mathrm{t}} + \beta_7 BIG4_{i,t} + \beta_9 RC_{i,t} + \beta_8 MEET_{i,t} + \beta_9 OWN_{i,t} \\
& + FIRM_{FE} + YEAR_{FE} \\
& + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots .(1)
\end{aligned}
$$

EARN and Δ*EARN* represent the level and change in earnings, scaled by the total market value of the firm at the beginning of the accounting year.[18] Δ*EARN* is included in the model because it captures unexpected earnings (transitory components) under the assumption that annual earnings are permanent (Easton & Harris, 1991). I expect both these coefficients to be positive, as the equation captures the return and earnings relation.

$$
\begin{aligned}
RET_{i,t} = {} & \beta_0 + \beta_1 EARN_{i,t} + \beta_2 \Delta EARN_{i,t} + \beta_3 CFV_{i,t} + \beta_4 SIZE_{i,t-1} + \beta_5 GROWTH_{i,t-1} \\
& + \beta_6 LEV_{i,t} + \beta_7 CAPRATE_{i,\mathrm{t}} + \beta_8 BIG4_{i,t} + \beta_9 RC_{i,t} + \beta_{10} MEET_{i,t} \\
& + \beta_{11} OWN_{i,t} + FIRM_{FE} + YEAR_{FE} \\
& + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)
\end{aligned}
$$

Notably, *EARN* and Δ*EARN* are *now* the level and change in earnings *before CFV*, scaled by the total market value of the firm at the beginning of the accounting year. Equation (2) is the baseline model used in this study for testing the incremental explanatory power of CFV conditional on reliability differences (i.e. *LEVEL3* and *DIRV_VAL*) and the

[18] I did not use comprehensive income because there is very little difference between earnings and comprehensive income reported by AREI firms (see Appendix B).

quality of fair value disclosure. Other variables are as previously defined. A positive and significant coefficient of *CFV* would support H1.

To investigate H2, which tests the moderating effect of Level 3 inputs in fair value estimates on the value-relevance of *CFV*, I estimate the following regression specification.

$$RET_{i,t} = \beta_0 + \beta_1 EARN_{i,t} + \beta_2 \Delta EARN_{i,t} + \beta_3 CFV_{i,t} + \beta_4 LEVEL3_{i,t} + \beta_5\, CFV_{i,t} * LEVEL3_{i,t} + \beta_6 SIZE_{i,t-1} + \beta_7 GROWTH_{i,t-1} + \beta_8 LEV_{i,t} + \beta_9 CAPRATE_{i,t} + \beta_{10} BIG4_{i,t} + \beta_{11} RC_{i,t} + \beta_{12} MEET_{i,t} + \beta_{13} OWN_{i,t} + FIRM_{FE} + YEAR_{FE} + \varepsilon_{i,t} \ldots\ldots\ldots (3)$$

I include *LEVEL3* and an interactive variable, *CFV*LEVEL3*, in the Equation (3). The interactive variable, *CFV*LEVEL3*, as my variable of interest, captures the incremental value-relevance of *CFV* when *LEVEL3* inputs are used. An insignificant coefficient of the interactive variable would be consistent with H2. Other variables are as defined previously.

To test H3, I develop the following equation by including *DIR_VAL* and an interactive variable, *CFV*DIR_VAL*. *CFV*DIR_VAL* which captures the moderating effects of the sources of valuers on the value-relevance of CFV, is the variable of interest. If the independent and mixed valuation approaches are more credible, then the coefficient of *CFV*DIR_VAL* would be negative and significant. Other variables are as defined previously. The regression equation is as follows:

$$RET_{i,t} = \beta_0 + \beta_1 EARN_{i,t} + \beta_2 \Delta EARN_{i,t} + \beta_3 CFV_{i,t} + \beta_4 DIR_{VAL_{i,t}} + \beta_5 CFV_{i,t} * DIR_{VAL_{i,t}} + \beta_6 SIZE_{i,t-1} + \beta_7 GROWTH_{i,t-1} + \beta_8 LEV_{i,t} + \beta_9 CAPRATE_{i,t} + \beta_{10} BIG4_{i,t} + \beta_{11} RC_{i,t} + \beta_{12} MEET_{i,t} + \beta_{13} OWN_{i,t} + FIRM_{FE} + YEAR_{FE} + \varepsilon_{i,t} \ldots\ldots\ldots (4)$$

Finally, to test H4, I include *DISCL* and an interactive variable, *CFV*DISCL* in the following equation. *CFV*DISCL* representing the value-relevance of *CFV* conditional on disclosure quality, is the variable of interest. I also include *LEVEL3* is included as a control variable, because it can affect the level of information disclosure (Ernst & Young, 2013). A positive and significant coefficient of the interactive variable would support H4. The regression equation is stated below:

$$RET_{i,t} = \beta_0 + \beta_1 EARN_{i,t} + \beta_2 \Delta EARN_{i,t} + \beta_3 CFV_{i,t} + \beta_4 DISCL_{i,t} + \beta_5 CFV_{i,t} * DISCL_{i,t} + \beta_6 LEVEL3_{i,t} + \beta_7 SIZE_{i,t-1} + \beta_8 GROWTH_{i,t-1} + \beta_9 LEV_{i,t} + \beta_{10} CAPRATE_{i,t} + \beta_{11} BIG4_{i,t} + \beta_{12} RC_{i,t} + \beta_{13} MEET_{i,t} + \beta_{14} OWN_{i,t} + FIRM_{FE} + YEAR_{FE} + \varepsilon_{i,t} \quad (5)$$

2.4 Sample Selection and Descriptive Analysis

This study consists of all the real estate companies listed on the Australian Stock Exchange (ASX) for the period 2007 to 2015. There were 84 publicly traded entities on the ASX as at 23 March 2017. I began with 2007, because AABS 140 (equivalent to IAS 40) came into effect in 2007. I collected financial statement data (i.e., CFV of investment property and earnings), and corporate governance information from the firms' preliminary final reports manually. Individual equity returns, as well as the return on the market portfolio (ASX 200), was obtained from the DataStream. The Initial sample included a total of 84 listed companies in the AREI sector, with a total of 756 firm-year observations. I then deleted 18 firm-year observations applying the historical cost method. After that, I excluded 297 observations with no reported investment property values on their financial reports (e.g., developers for whom the properties are treated as inventories). I further dropped 123 firm-

year observations with missing relevant financial data. The final sample includes 318 observations. Table 2.1, Panel A, reports the sample selection procedures in detail.

Table 2.1, Panel B reports the descriptive statistics. The cumulative abnormal stock returns around the seven-day event window, *RET(7d)*, has a mean (median) value of -0.003 (-0.004) with a standard deviation of 0.078. The averages of cumulative abnormal stock returns around the one-month and three-month event windows, *RET(1m)* and *RET(3m)*, are -0.004 and -0.017, respectively. The mean (median) of *CFV* is -0.013 (0.017).

Table 2.1: Sample selection and descriptive statistics

Panel A: Sample selection

Procedures	Firm-years observations
Original observations	756
After excluding observations using historical cost method	738
After excluding observations without investment property	441
After excluding observations with missing value of variables	318

Panel B: Regression Variables

Continuous Variables	Mean	SD	25%	Median	75%	N
RET(7d)	-0.003	0.078	-0.202	-0.004	0.013	318
RET(1m)	-0.004	0.078	-0.120	-0.005	0.011	318
RET (3m)	-0.017	0.148	-1.002	-0.017	0.011	318
EARN	0.348	0.993	-0.434	0.023	0.175	318
Δ*EARN*	0.090	0.516	-0.821	-0.008	0.127	318
CFV	-0.013	0.234	-0.823	0.017	0.070	318
DISCL	2.260	1.710	1.000	2.000	4.000	318
SIZE	5.814	1.978	1.589	5.745	7.263	318
GROWTH	1.072	1.392	0.120	0.885	1.100	318
LEV	0.274	0.218	0.001	0.279	0.425	318
CAPRATE (%)	7.729	1.622	4.000	7.750	8.575	318
MEET	4.522	2.080	1.000	4.000	6.000	318
OWN (%)	72.858	19.148	7.170	76.850	86.675	318
Dichotomous variables		Yes		No (%)		N
		Frequency (%)		Frequency (%)		
LEVEL3		258 (81)		60 (19)		318
DIR_VAL		186 (58)		132 (42)		318
DISCL (Low VS High)		145 (46)		173 (54)		318
BIG4		244 (77)		74 (23)		318
RC		254 (80)		64 (20)		318

Note: All continuous variables are winsorized 1% at the top and the bottom. See Appendix A, for variable definitions.

Table 2.2 presents the correlation coefficients among the variables. The correlation between *RET(7d)* and *CFV* is positive and statistically significant (coefficient = 0.29, P<0.01). *RET(7d)* is also related to *LEVEL3* positively, but this relationship is insignificant. Similarly, *DIR_VAL* and *DISCL* are correlated with *RET(7d*) positively and insignificantly. Correlation analysis also shows *GROWTH (CAPRATE)* to have a negative (positive) association with *RET(7d)*. To eliminate the concern over multicollinearity, I also run the estimated Variance Inflation Factor (VIF) for every fitted model in the main tests. The mean VIFs range from 1.64 to 2.19. Given that mean VIFs are less than ten[19], multicollinearity is not a concern.

[19] Marquardt (1970) uses a VIF greater than 10 as a guideline for serious multi-collinearity.

Table 2.2: Correlation analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
RET(7day) (1)	1														
EARN (2)	0.09	1													
Δ EARN (3)	0.06	0.56*	1												
CFV (4)	0.29*	-0.32*	-0.49*	1											
LEVEL3 (5)	0.08	0.18*	*0.11*	*-0.10*	1										
DIR_VAL (6)	0.04	0.03	-0.02	-0.00	0.08	1									
DISCL (7)	0.04	0.15*	0.08	-0.01	-0.22*	-0.08	1								
SIZE (8)	0.01	-0.27*	-0.17	-0.07	0.18*	*0.10*	*-0.11*	1							
GROWTH (9)	-0.01	0.02	0.02	0.09	0.06	*0.09*	0.01	0.08	1						
LEV (10)	-0.06	0.07	0.10	*-0.10*	0.10	-0.09	0.07	-0.29*	-0.04	1					
CAPRATE (11)	*0.11*	0.15*	***0.14***	-0.07	*0.10*	-0.02	***-0.14***	-0.09	***0.14***	-0.04	1				
BIG4 (12)	-0.06	*-0.10*	0.05	*-0.19*	0.23*	*-0.10*	0.09	0.40*	0.07	-0.03	***-0.14***	1			
RC (13)	*0.08*	***-0.14***	-0.06	-0.03	-0.06	-0.05	0.01	0.27*	0.03	0.10	-0.17*	0.34*	1		
MEET (14)	-0.03	***-0.13***	-0.01	*-0.10*	0.15*	-0.04	-0.01	0.18*	-0.08	-0.05	-0.03	*0.10*	0.05	1	
OWN (15)	-0.03	-0.04	-0.60	0.03	-0.03	0.05	0.15*	0.22*	0.02	-0.20*	-0.05	*-0.10*	*-0.24*	0.06	1

Note: * Correlation coefficients are statistically significant at the p<0.01. Bold and italicized correlations are significant at p<0.05. The italicized correlations are significant at p<0.10. See Appendix A, for variable definitions.

2.5 Main Test Results

Table 2.3 demonstrates the regression results for the four hypotheses developed in section 2.2. I use *RET(7d*) as a dependent variable for all the models presented in Table 2.3. Results reported in Column (1) show that both earnings (*EARN*) and changes in earnings (Δ*EARN*) are value-relevant in the AREI setting (coefficient = 0.016, t-stat = 1.87, p<0.10, and coefficient = 0.106, t-stat = 3.51, p<0.01, respectively).

Table 2.3: The Information-Usefulness of CFV and Its Features to Equity Investors

VARIABLES	Pred.	(1) Earnings & returns relationship	(2) Baseline Model	(3) Fair value inputs	(4) Choice of Valuers	(5) Disclosure quality
Intercept		-0.065**	-0.056**	-0.063***	-0.060**	-0.053*
		[2.19]	[-2.55]	[-2.76]	[-2.46]	[-1.76]
EARN	+	0.016*	0.025*	0.023*	0.026*	0.025*
		[1.87]	[1.78]	[1.76]	[1.91]	[1.91]
Δ*EARN*	+	0.106***	0.009	0.009	0.007	0.009
		[3.51]	[0.36]	[0.37]	[0.31]	[0.35]
CFV (H1)	+	-	0.092***	0.106***	0.109***	0.103**
			[3.62]	[4.74]	[4.05]	[2.37]
LEVEL3	?	-	-	0.018***	-	0.017**
				[3.09]		[2.04]
*CFV*LEVEL3 (H2)*	?	-	-	-0.038	-	-
				[-1.09]		
DIR_VAL	-	-	-	-	0.009*	-
					[1.74]	
*CFV*DIR_VAL (H3)*	-	-	-	-	-0.061*	-
					[-1.76]	
DISCL	-	-	-	-	-	-0.002
						[-0.16]
*CFV*DISCL (H4)*	-	-	-	-	-	0.016
						[0.37]
Control Variables						
SIZE	?	-0.006	-0.004	-0.003	-0.004	-0.002
		[-0.71]	[-0.01]	[-0.41]	[-0.28]	[-0.05]
GROWTH	-	-0.003**	-0.004***	-0.004***	-0.004***	-0.004**
		[-2.47]	[-2.58]	[-2.70]	[-2.71]	[-2.25]
LEV	?	-0.041	-0.015	-0.020	-0.016	-0.015
		[-1.15]	[-0.99]	[-1.30]	[-0.98]	[-0.93]
CAPRATE	+	0.009*	0.005***	0.005***	0.006***	0.005***
		[2.11]	[3.32]	[3.11]	[3.26]	[3.15]

Table 2.3: Continued

VARIABLES	Pred.	(1) Earnings & returns relationship	(2) Baseline Model	(3) Fair value inputs	(4) Choice of Valuers	(5) Disclosure quality
Corporate governance variables						
BIG4	+	0.036	0.004	0.004	0.001	0.003
		[0.040]	[0.44]	[0.02]	[0.15]	[0.28]
RC	+	0.028***	0.029***	0.031***	0.028***	0.028***
		[2.95]	[2.89]	[3.08]	[2.73]	[2.77]
MEET	+	0.001	0.001	0.001	0.002	0.001
		[0.38]	[0.30]	[0.02]	[0.31]	[0.33]
OWN	+	0.001	0.001	0.002	-0.002	0.001
		[0.23]	[0.30]	[0.58]	[-0.34]	[0.17]
F- test intercepts differ by race						
LEVEL3 = 0		-	-	3.00*	-	-
DIR_VAL = 0		-	-	-	2.87*	-
DISCL = 0		-	-	-	-	0.03
Incremental F-test		-	42.56***	1.91	2.77*	1.06
Likelihood ratio test		-	42.45***	4.08	5.90*	3.04
Firm fixed effect		Yes	Yes	Yes	Yes	Yes
Year fixed effect		Yes	Yes	Yes	Yes	Yes
Robust		Yes	Yes	Yes	Yes	Yes
VIF		1.64	1.69	2.19	1.72	1.87
Observations		318	318	318	318	318
Adj. R-squared		0.14	0.21	0.22	0.22	0.21

Note: the dependent variable is *RET(7d).* Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.10. See Appendix A, for variable definitions.

2.5.1 Summary of Findings from H1

I then include, *CFV*, the main variable of interest related to H1, and report the results in Column (2) of Table 2.3. Column (2) shows that *CFV* is associated with *RET(7d)* positively (coefficient=0.092, t-stat=3.62, p<0.01). Overall, the finding is consistent with the argument that subjective fair values of investment properties can reduce information-based risk by providing private information from managers about the future resource-generating capabilities of a portfolio of investment properties. Consequently, such values are relevant to equity investors for economic decision-making. By including *CFV* as a component of fair value earnings, this equation has significant incremental explanatory power in explaining the share returns model in this context (F-stat = 42.56, p<0.01 and

Likelihood Ration (LR) Chi-square = 42.45, p<0.01). This is in line with the work of Barth and Landsman (2018) demonstrating that separating fair value earnings into components can help financial report users make better economic decisions. However, the coefficients of Δ*EARN* become insignificant once *CFV* is included in the model. Recall that Δ*EARN* is defined as changes in earnings *before CFV* of investment properties. That is, Δ*EARN*, measured after subtracting *CFV* (the primary component of the income statement of real estate firms), may be comprised of items of little or no predictive value for stock returns, e.g., non-recurring expenses and other income (see Appendix B) (Doyle et al., 2003).

With respect to the control and corporate governance variables, some are significant and as expected. *SIZE* is related to *RET(7d*) insignificantly. Findings also indicate that *GROWTH* is associated with *RET(7d)* across all the models significantly and negatively, which suggests that growth firms are perceived as expensive or overvalued stocks and, hence, underperform compared to value firms. Likewise, I find an insignificant association between *LEV* and *RET (7d).* The coefficients of *CAPRATE* are positive and statistically significant, which indicates that equity investors use the capitalization rate disclosed by the AREI firms to infer potential risk and returns, or as an indicator of property market trends. Among four corporate governance variables, only coefficient on *RC* is significant and negative (coefficient = 0.029, t-stat = 2.89, p<0.01). This finding suggests that firms having management committees are perceived as a relatively lower business risk and a stronger corporate governance mechanism. This, consequently, strengthens the information usefulness of *CFV,* as it reflects firms' property portfolio risk management.

2.5.2 Summary of Findings from H2

Table 2.3, Column (3), reports the findings of H2, which hypothesizes that there is no difference between the value-relevance of *CFV* estimated with Level 3 inputs and of *CFV* estimated with Level 2 inputs. The coefficient of the interactive variable, *CFV*LEVEL3*, which is the variable of interest, is insignificant suggesting that equity investors do not discount the value-relevance of *CFV* significantly when firms use unobservable inputs in fair value estimates for investment property. Moreover, the positive and significant coefficient of *LEVEL3* implies that equity investors may benefit from managerial private information embedded in *CFV,* as that revealed private information reduces the information gap between uninformed investors and managements. Therefore, this supports H2.[20] I conduct additional tests using an incremental F-test and a Likelihood Ratio (LR) test. Results show that the incorporation of the *LEVEL3* variable does not moderate the value-relevance of CFV information. In terms of control variables and corporate governance measurements, results and inferences are generally consistent with previous discussion on CFV findings.

2.5.3 Summary of Findings from H3

Column (4) of Table 2.3 presents the findings of H3, investigating whether the value-relevance of CFV is affected by the choice of valuers. *CFV*DIR_VAL* is the main variable of interest for H3, and I hypothesized a negative association with *RET(7d).* The

[20] I further conduct an additional test to examine the robustness of H2 with respect to sampling timeframe. As mentioned before, AASB 13 became effective from the beginning of 2013 but my sample period started in 2007. For this robustness test, I classified fair values of investment properties as *LEVEL3* and coded 1 if firms use an exclusively model estimate with managerial assumptions (*MODEL_ONLY*) in property valuing, and 0 otherwise, following the definition of fair value hierarchy specified by IFRS 13 and the work of Vergauwe and Gaeremynck (2019). I then reran equation (3) but found the inferences of H2 unchanged (the coefficient of *CFV*MODEL_ONLY* is -0.026, and insignificant; the coefficient of *MODEL_ONLY* is 0.014, $p<0.05$) (untabulated).

coefficient of the interactive variable is, indeed, negative, and significant (coefficient = -0.61, t-stat=-1.76, p<0.10). This suggests that the value-relevance of *CFV* is decreased when fair value estimations are conducted by corporate directors. *DIR_VAL* is statistically and positively significant (coefficient=0.009, t-stat=1.75, p<0.10). This is perhaps because managerial private information, or the directors' knowledge of asset specificity that is embedded in director valuation, is informative about property values and, consequently, equity investors' economic decision-making is more efficient. However, the fair value measurement that is conducted by exclusive corporate directors appears to be comparatively less reliable and hence the interaction variable is negative. I further explore the data to identify the directors' expertise, and find that firms' directors have real estate industry, financial and accounting backgrounds. I estimate Equation (4) for subsamples categorized based on each of the above three backgrounds. However, I find no effect of directors' specific area of expertise on the value relevance of asset valuation.

In general, I find that the director valuation is less reliable relative to external and mixed valuation approaches, so H3 is supported.

2.5.4 Summary of Findings from H4

The findings relating to H4 are presented in Column (5) of Table 2.3. H4 hypothesizes that the reported *CFV* of investment properties are more value-relevant when firms have high-quality disclosure. However, the coefficient of the interactive variable, *CFV*DISCL*, which is the variable of interest, is insignificant, thus, rejects H4. This is in line with Sundgren et al. (2018) who find no beneficial effects from additional disclosure under IFRS13. This could be explained by the fact that all companies reveal capitalization rates, which seem to be the most relevant information to property values. In other words,

both low and high quality disclosure groups disclose capitalization rates which seems to be the most preferable piece of information to equity investors in analysing property value changes, and this fact leads to no statistical difference.

2.5.5 Subsampling Tests for Further Analysis of H2, H3, and H4

I then adopt subsample analyses to further test H2, H3 and H4. Specifically, I estimate equation (2), which is the baseline model, separately for firms with LEVEL3 versus LEVEL2 inputs, firms employing director valuation (DIR_VAL) versus external and mix valuations (Non-DIR_VAL), and firms with high disclosure quality (High) versus low disclosure quality (Low). I employ a Wald Chi-square statistic to test the difference in regression coefficients across groups. The large Chi-square value suggests that the regression coefficients of variables in the model differ statistically across groups (the higher the Chi-square value, the stronger the statistical evidence) (Liao, 2011). Results of sampling analyses are presented in Table 2.4.

Table 2.4: Sampling Tests and a Wald Chi-squared Test in Difference in Effect

VARIABLES	(1) Fair value inputs (H2) LEVEL3	LEVEL2	Diff	(2) The choice of valuer (H3) DIR_VAL	Non_DIR_VAL	Diff	(3) Disclosure quality (H4) High	Low	Diff
Intercept	-0.050	-0.048		-0.110	-0.041		-0.086*	-0.043est	
	[-1.15]	[-0.40]		[-1.41]	[-1.21]		[-1.89]	[-0.85]	
EARN	0.014***	0.043	3.95**	0.001	2.87*	2.87*	0.046***	0.010	4.28**
	[2.66]	[1.36]		[4.14]	[0.12]		[5.15]	[1.65]	
Δ*EARN*	-0.001	0.016	0.27	-0.031*	0.027**	1.98	0.007	-0.001	0.03
	[-0.09]	[0.69]		[-1.93]	[2.39]		[0.45]	[-0.08]	
CFV	0.111***	0.178***	2.24	0.051*	0.154***	3.95**	0.114***	0.117***	0.01
	[4.86]	[4.82]		[1.78]	[6.12]		[5.04]	[3.52]	
Control variables									
SIZE	0.001	-0.009	2.95*	0.001	0.000	0.01	0.001	-0.000	0.01
	[0.44]	[-1.63]		[0.26]	[0.14]		[0.49]	[-0.04]	
GROWTH	-0.003*	-0.019	1.04	-0.003*	-0.002*	0.03	-0.005	-0.005	0.01
	[1.74]	[-1.33]		[-1.77]	[-1.71]		[-1.60]	[-1.13]	
LEV	-0.22	-0.053	1.02	-0.010	-0.009	0.01	-0.023	-0.012	0.12
	[-1.04]	[-1.43]		[-0.29]	[-0.43]		[-1.13]	[-0.40]	
CAPRATE	0.006**	0.002	1.77	0.008*	0.006**	0.18	0.004*	0.006*	0.02
	[2.31]	[0.70]		[1.74]	[2.22]		[1.78]	[1.76]	
Corporate governance variables									
BIG4	-0.006	0.041**	4.97**	0.016	0.001	0.46	-0.001	0.009	0.04
	[-0.50]	[2.05]		[0.66]	[0.10]		[-0.06]	[0.61]	

Table 2.4: Continued

VARIABLES	(1) Fair value inputs (H2)			(2) The choice of valuer (H3)			(3) Disclosure quality (H4)		
	LEVEL3	LEVEL2	Diff	DIR_VAL	Non_DIR_VAL	Diff	High	Low	Diff
RC	0.35***	0.002	3.86**	0.041*	0.013	2.96*	0.025*	0.019	2.87*
	[2.74]	[0.33]		[1.85]	[1.18]		[1.95]	[1.17]	
MEET	0.001	0.003	1.02	0.002	0.001	0.04	0.004*	-0.001	3.59**
	[0.10]	[1.10]		[0.62]	[0.62]		[1.67]	[-0.43]	
OWN	0.001	0.002	1.19	-0.000	-0.000	0.01	0.000	-0.000	0.01
	[0.44]	[1.56]		[-0.53]	[-0.76]		[0.49]	[-0.11]	
Year fixed effect	Yes	Yes		Yes	Yes		Yes	Yes	
Observations	258	60		132	186		145	173	
Adj. R^2	0.12	0.36		0.13	0.19		0.29	0.07	

Note: Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.10. See Appendix A, for variable definitions.

The Column (1) of Table 2.4 reports findings relating to H2, testing the effect of fair value inputs on the value-relevance of *CFV*. Findings show that the value-relevance of *CFV* differs neither statistically nor economically, conditional on the usage of *LEVEL3* versus *LEVEL2* inputs. The coefficients of the standalone variable *CFV* continue to be positive and significant, as are the coefficients of *LEVEL3*. The latter implies that managerial assumptions or inputs are informative about properties' values, as they reflect management knowledge of asset specificity. In turn, it is fair to state that the use of Level 3 inputs makes this useful to investors from the perspective of comparability. Collectively, H2 is supported.

In terms of H3 relating to the choice of valuers effect, Column (2), shows that the coefficient of *CFV* reported by firms with both director and external valuation, is significant (coefficient = 0.051, t-stat = 1.78, $p<0.10$, coefficient = 0.154, t-stat = 6.12, $p<0.01$, respectively). However, the value-relevance of *CFV* is more pronounced when it is reported by firms using independent or mixed valuers. A Wald Chi-squared test also confirms that the effects of the *CFV* differ economically across samples (Chi-squared stat = 3.95, $p<0.05$). Furthermore, the un-tabulated LR testing the overall difference in effect across groups shows persistent findings (LR chi-squared stat =39.58, $p<0.01$). Altogether, empirical findings are in line with the argument that fair value estimates conducted by directors/management are perceived as less reliable and, accordingly, less relevant, despite the fact that these estimates can benefit from the directors' knowledge of how assets are managed. Therefore, H3 is partially supported.

The findings relating to H4 are presented in Column (5) and (6) in Panel A of Table 2.4. H4 hypothesizes that the reported *CFV* of investment properties are more value-relevant when firms have high-quality disclosure. Results indicate that coefficient of CFV for both groups are significant and has no economical difference. Thus, rejecting

H4. My finding is consistent with the work of Sundgren et al. (2018) which finds no beneficial effects of additional disclosure under IFRS13. The results from subsampling tests show that the coefficient of *CFV* reported by both the high- and low-disclosure quality groups are strongly significant (coefficient = 0.114, t-stat = 5.04, $p<0.01$ and 0.117, t-stat = 3.52, $p<0.01$, respectively). A Wald Chi-squared test reveals no statistical difference in the effect of *DISCL* across groups. This could be explained by the fact that all companies reveal capitalization rates, which seem to be the information most relevant to property values. In turn, the lower disclosure quality samples did not disclose required information in financial reports (e.g. discount rate and occupancy rate), equity investors are able to gather the key indicators related to *CFV* from other sections in the annual report (see Appendix E).

2.6 Additional Tests

2.6.1 Global Financial Crisis (GFC) and the Value-Relevance of CFV

Although my sample period comprises the onset and culmination of GFC, I included 2008 and 2009 observations in the regression analyses because a dependent variable used in tests, *RET(7d),* is adjusted for broader market movements. However, I further conduct an additional test for a sample that excludes observations from 2008 and 2009. The results are reported in Table 2.5. Reported results reveal that excluding the GFC period does not alter the inferences for H1 to H4.

Table 2.5: Main Results Excluding GFC Periods

VARIABLES	Pred.	(1) Earnings & returns relationship	(2) Baseline Model	(3) Fair value inputs	(4) Choice of Valuers	(5) Disclosure quality
Intercept		-0.078**	-0.063***	-0.071***	-0.067**	-0.053*
		[2.53]	[-2.69]	[-2.71]	[-2.57]	[-1.76]
EARN	+	0.014*	0.027*	0.025*	0.027**	0.028*
		[1.83]	[1.86]	[1.67]	[1.99]	[1.96]
ΔEARN	+	0.096***	0.005	0.005	0.004	0.005
		[3.48]	[0.20]	[0.21]	[0.15]	[0.19]
CFV (H1)	+	-	0.093***	0.138***	0.119***	0.086**
			[3.43]	[4.41]	[3.69]	[2.49]
LEVEL3	?	-	-	0.018***	-	0.017**
				[2.85]		[2.04]
*CFV*LEVEL3 (H2)*	?	-	-	-0.050	-	-
				[-1.28]		
DIR_VAL	-	-	-	-	0.011*	-
					[1.66]	
*CFV*DIR_VAL (H3)*	-	-	-	-	-0.060*	-
					[-1.76]	
DISCL	-	-	-	-	-	-0.002
						[-0.16]
*CFV*DISCL (H4)*	-	-	-	-	-	0.016
						[0.37]
Control variables						
SIZE	?	-0.001	-0.004	-0.002	-0.004	-0.001
	-	[-0.71]	[-0.23]	[-0.24]	[-0.52]	[-0.35]
GROWTH		-0.002*	-0.004**	-0.004**	-0.004***	-0.004**
		[-1.77]	[-2.49]	[-2.58]	[-2.66]	[-2.40]
LEV	?	-0.145	-0.014	-0.014	-0.016	-0.014
		[-1.09]	[-0.54]	[-0.86]	[-0.57]	[-0.85]
CAPRATE	+	0.005**	0.005**	0.005**	0.005**	0.005**
		[2.18]	[2.53]	[2.32]	[2.55]	[2.17]
Corporate governance variables						
BIG4	+	0.007	0.007	0.004	0.001	0.002
		[0.021]	[0.77]	[0.43]	[0.52]	[0.23]
RC	+	0.025**	0.029***	0.032***	0.029***	0.033***
		[2.39]	[3.14]	[3.32]	[2.95]	[3.32]
MEET	+	0.001	0.001	0.001	0.000	0.001
		[0.29]	[0.28]	[0.12]	[0.28]	[0.23]
OWN	+	0.001	0.001	0.001	-0.000	0.000
		[0.11]	[0.55]	[0.53]	[-0.28]	[0.51]

Table 2.5: Continued

Pred. VARIABLES	(1) Earnings & returns relationship	(2) Baseline Model	(3) Fair value inputs	(4) Choice of Valuers	(5) Disclosure quality
F- test intercepts differ by race					
LEVEL3 = 0	-	-	2.45	-	-
DIR_VAL = 0	-	-	-	2.99*	-
DISCL = 0	-	-	-	-	0.03
Incremental F-test	-	39.86***	1.88	12.71***	0.89
Likelihood ratio test	-	39.80***	4.02	37.25***	2.86
Firm fixed effect	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Robust	Yes	Yes	Yes	Yes	Yes
VIF	1.61	1.68	2.24	1.72	1.86
Observations	289	289	289	289	289
Adj. R-squared	0.13	0.21	0.22	0.22	0.22

Note: the dependent variable is *RET(7d).* Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.10. See Appendix A, for variable definitions.

2.6.2 Alternative Returns Windows and the Value-Relevance of CFV

Table 2.6 reports a sensitivity analysis using adjusted returns in different windows: *RET(1m)* and *RET(3m*) which are the one month and three-month window returns, beginning from the preliminary final report's announcement date, and calculated using the market-adjusted return. In general, results from the *RET(1m)* and *RET(3m)* methods are consistent with the given results (coefficient of *CFV* = 0.074, t-stat = 2.18, p<0.05, and 0.040, t-stat = 1.89, p<0.10, for *RET(1m)* and *(RET(3m),* respectively). The positive relationship between *LEVEL3* and share returns becomes insignificant in the *RET(3m)* approach, while the significant association between *DIR_VAL* and returns persists across all three return models. Notably, the coefficient of *DIR_VAL* is even larger in the *RET(3m*) model. Additional tests also show that the association between *DISCL* and share returns is insignificant across all three return models. In terms of interactive variables, the coefficients of *CFV*LEVEL3* and *CFV*DISCL* remain insignificant throughout the three return windows, whilst the coefficient of *CFV*DIR_VAL* becomes

insignificant in the *RET(1m)* and *RET(3m)* models. Interestingly, *EARN* and Δ*EARN* become positively significant in the three-month return window. Overall, findings suggest that *CFV* has the greatest impact on share returns for the *RET(7d)* model compared to longer return windows.

Table 2.6: Long Event Window Test Results

	RET(1m)				RET(3m)			
VARIABLES	(1) Base Model	(2) Fair value inputs	(3) Choice of valuers	(4) Disclosure quality	(5) Base Model	(6) Fair value inputs	(7) Choice of valuers	(8) Disclosure quality
Intercept	-0.066***	-0.074***	-0.070***	-0.079***	-0.106*	-0.117*	-0.111*	-0.099*
	[-3.18]	[-3.42]	[-3.23]	[-2.75]	[-1.74]	[-1.76]	[-1.88]	[-1.82]
EARN	0.012	0.010	0.012	0.010	0.016*	0.019*	0.016*	0.024**
	[1.01]	[0.85]	[0.99]	[0.89]	[1.74]	[1.70]	[1.73]	[2.38]
ΔEARN	0.002	0.003	0.002	0.002	0.030*	0.030*	0.034*	0.033*
	[0.09]	[0.13]	[0.12]	[0.13]	[1.79]	[1.76]	[1.75]	[1.75]
CFV	0.042**	0.074**	0.040**	0.031**	0.040*	0.108*	0.095*	0.046*
	[2.18]	[2.18]	[2.48]	[2.32]	[1.89]	[1.90]	[1.83]	[1.75]
LEVEL3		0.012*		0.012*		0.041		0.055
		[1.86]		[1.76]		[1.00]		[1.23]
*CFV*LEVEL3*		-0.038				-0.147		
		[-1.03]				[-1.57]		
DIR_VAL			0.007*	0.006*			0.043**	0.043*
			[1.76]	[1.84]			[1.97]	[1.89]
*CFV*DIR_VAL*			-0.003				-0.084	
			[-0.10]				[-0.68]	
DISCL				-0.007				-0.023
				[-0.70]				[-0.81]
*CFV*DISCL*				0.018				0.067
				[0.49]				[0.52]
Control variables								
SIZE	0.000	0.001	0.000	0.000	0.002	0.000	0.001	0.004
	[0.05]	[0.33]	[0.20]	[0.12]	[0.40]	[0.02]	[0.15]	[0.60]
GROWTH	-0.003**	-0.003**	-0.003**	-0.003**	-0.010***	-0.010***	-0.010***	-0.009***
	[-2.33]	[-2.37]	[-2.37]	[-2.28]	[-2.92]	[-2.75]	[-3.21]	[-2.64]
LEV	-0.020	-0.023	-0.021	-0.023	-0.036	-0.054	-0.033	-0.050
	[-1.43]	[-1.56]	[-1.47]	[-1.63]	[-0.81]	[-1.13]	[-0.76]	[-1.05]
CAPRATE	0.005**	0.005**	0.005**	0.005**	0.022**	0.024***	0.024***	0.024***
	[2.37]	[2.32]	[2.47]	[2.45]	[2.52]	[2.59]	[2.65]	[2.61]

Table 2.6: Continued

	RET(1m)				RET(3m)			
VARIABLES	(1) Base Model	(2) Fair value inputs	(3) Choice of valuers	(4) Disclosure quality	(5) Base Model	(6) Fair value inputs	(7) Choice of valuers	(8) Disclosure quality
Corporate governance variables								
BIG4	0.002	0.000	0.000	0.000	0.026	0.044	0.016	0.024
	[0.23]	[0.02]	[0.05]	[0.05]	[1.32]	[1.57]	[0.81]	[0.95]
RC	0.026***	0.028***	0.026***	0.029***	0.022***	0.024***	0.025***	0.027***
	[3.34]	[3.30]	[3.31]	[3.36]	[3.39]	[3.30]	[3.35]	[3.36]
MEET	0.001	0.001	0.001	0.000	0.001*	0.001*	0.001*	0.001*
	[0.69]	[0.52]	[0.67]	[0.37]	[1.89]	[1.84]	[1.83]	[1.92]
OWN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000
	[0.42]	[0.62]	[0.09]	[0.34]	[0.93]	[0.88]	[0.25]	[-0.07]
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Robust	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VIF	1.69	2.14	1.82	1.77	1.61	2.07	1.81	1.86
Observations	318	318	318	318	318	318	318	318
Adj. R-squared	0.08	0.08	0.07	0.08	0.07	0.07	0.08	0.08

Note: Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.10. See Appendix A, for variable definitions.

2.6.3 A Robust Check on the Effect of Sources of Valuers

To further investigate why valuations using directors as valuers exclusively, have lower value relevance of fair value information than those conducted by independent or mixed valuers, I further perform the following analysis. Specifically, I first re-estimate Equation 2 for each of the following subsample groups: director valuation approach (N = 131) versus mixed valuation approach (N = 105). Un-tabulated results show that the coefficient on CFV reported by firms the employing the director valuation approach is positive but insignificant, while that reported by firms using the mixed valuation approach is significant and positive (coefficient = 0.167, t-stat = 3.07, p<0.01). Later, I use Wald tests to compare coefficients across groups[21]. Un-tabulated results show that the difference is economically significant (Chi2 = 3.15, p<0.10). These results imply that the mixed expertise of external, independent valuers, together with directors, performs better in providing valuable information to investors than does the director-only approach.

Then, I test the baseline model on sub-sample groups, including valuations conducted by mixed valuers (N=105) vs. valuations conducted by independent valuers alone (N =82). Un-tabulated results indicate that the coefficient on CFV for the mixed valuation group (independent valuation group) is significant and positive (coefficient = 0.167, t-stat = 3.88, p<0.01 (coefficient = 0.154, t-stat = 4.79, p<0.01)). However, the Wald test reports no significant difference. Therefore, the results indicate that valuations conducted exclusively by independent valuers are not superior to valuations conducted by a mixed group of experts, including independent valuers and companies' directors. Taken together, valuations conducted by mixed valuers can bring, not only insiders' asset-specific knowledge, but also the independence of external valuers as an extra layer of

[21] See Liao (2011) for the use of a Wald test to examine if the coefficients are equal across groups

valuation monitoring. The strong policy implication is that, when a fair value is determined, both directors and independent valuers should work collectively, because the values determined interactively by a mixed group are perceived by investors as being more relevant and useful than those determined by directors alone.

2.7 Conclusion

This study provides insightful evidence into the fair value debate by investigating the value-relevance of the CFV of investment properties in the real estate industry where there is a lack of centralized market. I further investigate whether the value-relevance of fair value changes of investment properties is conditional on (i) fair value hierarchy (i.e., Level 2 versus Level 3 inputs); (ii) sources of valuers in conducting the valuation (i.e., directors only versus external and mixed valuers); and (iii) the quality of extensive related-measurement disclosure required by IAS 40 and IFRS 13. Using a sample of Australian real estate firms over the period from 2007 to 2015, I report a positive relationship between the CFV of investment property and cumulative market-adjusted stock returns over short- and longer-event windows. I further document that Level 3 inputs provide comparably useful information to equity investors; the value-relevance of CFV is more pronounced when it is reported by firms using independent or mixed valuers; and fair value measurement-related disclosures do not moderate the relevance-value of such fair value changes statistically.

The findings have important implications for accounting standard setters, the real estate industry and investors. The results suggest that fair value accounting under IAS 40 provides sufficiently faithful and relevant information to equity investors for their economic decision-making. Thus, the findings of my study provide empirical

endorsement to IAS 40. Also, my results indicate that companies and auditors should feel easy with adopting Level 3 inputs, as long as due diligence is carried out in selecting such inputs, because the use of level 3 inputs in fair value estimates does not diminish the information-usefulness of the estimated fair values economically compared to that classified as Level 2. In addition, the finding suggests that companies should strive to conduct property valuation using independent valuers, in order to improve information usefulness for equity investors. Additionally, the findings suggest that providing the greater level of disclosure required by IAS 40 and IFRS 13 in the notes of financial statements does not increase the information-usefulness of reported fair values as long as equity investors can access the relevant indicators associated with such values from annual reports. In that case, extensive disclosure may be a wasteful activity.

CHAPTER THREE- THE DECISION USEFULNESS OF REPORTED CHANGES IN FAIR VALUES AND THE COST OF DEBT (ESSAY TWO)

While in Essay One, I focuses on the value relevance of the CFV from equity investors' perspective, Essay Two examines the decision-usefulness of the CFV from the perspective of debtholders. This study is motivated by the scant research on information-usefulness of fair value information on debtholders, this Chapter examines the decision-usefulness of the CFV from the perspective of debtholders. Using hand-collected data from Australian Real Estate Industry, the findings indicate that CFV of investment property reduces the cost of debt suggesting that such fair value information is decision-useful to debtholders. The effect is more pronounced when the changes in fair value is positive. The findings further show that adopting unobservable inputs (Level 3 inputs) in fair value measurement for properties do not necessarily diminish fair value information content. In addition, I report that using stand-alone director valuation approach in fair value estimates for investment properties damages the information-usefulness of CFV, although director valuation could be insightful in terms of asset-specific knowledge. I also find that an extensive fair value measurement-related disclosure does not strengthen the information content of CFV. Overall, the findings suggest that in the real estate industry, where unobservable inputs are predominantly used to measure fair values of properties, debtholders view fair values sufficiently faithful and decision-useful.

3.1 The AREI, Property Prices, and Credit Factors

Since the 1970s, the AREI has grown steadily at approximately 3% annually (Stapledon, 2010). The global financial crisis of 2008 – 2009 affected the Australian commercial real

estate sector adversely in early 2010 (Quadrant Real Estate Advisor LLC, 2010) but it has since recovered.

The AREI is considered as bank-oriented as it is documented that banks represent about 90% of debt financial source in the AREI (Deloitte, 2018). Bank loans has become important source of debt finance for Australian firms since 1990s (Cotter, 1999)[22] as there has been downward trending of interest rate (The Urban Developer, 2018). That is, an attractive cost of debt influences firms' leverage decision.

It is noted that Australian firms attempt to signal borrowing capacity to debtholder by conducting the asset valuation for fixed-assets (Cotter & Zimmer, 1995). One of the most important creditability assessing factor from the creditors' perspective is the Loan-to-value ratio, defined as the ratio of a loan to the value (LTV) of an asset purchased (Standard & Poor's, 2015). LTV is sensitive to property price changes: higher property values and lower LTVs suggest better creditability. Collectively, the analysis suggests that in the AREI, where real estate is the key operating asset and provides primary collateral assets, valuation changes of real estates should be an important piece of information to banks.

Previous study also shows that that banks' portfolios and returns are likely to correlate with real estate prices and the real estate market (Igan & Pinheiro, 2010). Banks and credit rating companies argue that financing real estate companies is favorable because the real estate sector has a stable income (Igan, & Pinheiro, 2010; Standards & Poor's, 2018). Typically, real estate activity is conducted under non-cancellable long-term leases, and managed under a risk-diversified model. Diversification of geography

[22] Although the bank financing facility has been growing in the AREI, a comparison of levels of debt to total assets internationally reports that the AREI has one of the lowest gearing ratio (Steinert & Crowe, 2001): on average, it is about 32% - 38% during 2009 – 2010 (Cummins, 2010).

and types of tenants lessens the impact of wide fluctuations in property values and the business cycle on performance (Hilbers et al., 2001; Standards & Poor's, 2018). In terms of property price changes, theoretically the price of real estate should be equal to the discounted present value of expected rental income. Expected rental should take into account the expected growth in income and other related factors (e.g., taxes) (Hilbers et al., 2001). Thus, banks may take real estate prices as reflecting the value of firms' economic resources.

3.2 Literature Review and Hypotheses Development

3.2.1 The Information-Usefulness of CFV on Debt Pricing Decision Making

In general, real estate assets' values fluctuate uncontrollably and historical cost reporting does not sufficiently capture the relevant economic information about such value changes (Searfoss & Weiss, 1990). Thus, practitioners adjust firms' assets and equity to an undepreciated basis because well-located properties should be appreciating in value rather than being depreciated when assessing the creditworthiness of real estate companies (Standard & Poor's, 2018). Meanwhile, the fair value accounting model is preferable from the economic perspective as it is based on the principle of current value reporting and, thus, provides up-to-date and relevant information (Barth, 2018; Sterling, 1970). The fair value accounting model for real estate assets could provide users with information on potential economic value that may be available to an entity through the use or sale of these assets and reveals changes in the values of these assets from one reporting period to another (Barth, 2018b; Georgiou, 2017; Landsman, 2007).

As a product of the economic value reporting concept, IAS 40 'Investment Property' was issued in 2000 and has since came into effect in many countries, including Australia, after 2005 (Cairns et al., 2011; Yao et al., 2015). The Australian Accounting Standards Board (hereafter, AASB) 140, the Australian implementation of IAS 40, was mandated in 2007. This accounting standard specifies the definition of investment properties and allows firms to apply fair value measurements to investment properties. As is defined by AASB 140, investment property is property held (by means of acquisition, construction, or lease) to earn either rental income or gain from capital appreciation, or both. Under the fair value accounting-model in AASB140, investment properties are reported on the statement of financial positions at fair values, and changes in such values are recognised as gain or loss on the comprehensive income statement.

However, owning the heterogeneous, adopting fair value reporting for investment property is challenging. Investment properties are heterogeneous, so many properties are illiquid and highly segmented. Buying, selling and leasing of properties incurs significant negotiation costs, and consequently there is a low volume of transactions in the market (Ling & Archer, 2013), IAS 40 allows firms to apply valuation techniques in estimating fair value for investment properties when observable inputs are not directly accessible on the market. As a result, the valuation techniques based on the managerial assumptions (i.e. firms expected rental income and yield capitalization rate), the so called management estimated value approach, are used extensively in the real estate sector (Sundgren et al., 2018; Vergauwe & Gaeremynck, 2019) including in the AREI. There are four valuation techniques being used in the AREI (Ernst & Young, 2012). The first method is the Discounted Cash flow model (hereafter DCF) based on discounting expected future cash flows (see Appendix E, for an example). This model may use managerial assumptions as major inputs, and has gained popularity in the AREI

community, owing to its flexibility in adapting to different situations. The second method is the comparable method, which is used typically when information on comparable transactions in the active markets are available. The third method is the 'yield capitalization method' for which an estimated terminal value is used as an important input into methods, such as the DCF (Geltner et al., 2001; Ling & Archer, 2013). The last method is known as the 'mixed approach', and generally blends the 'yield capitalization' method and the DCF method (Ernst & Young, 2012)

Providing update and detailed accounting information as well as managerial private information embedded in fair values could mitigate the information-based risk, enhance information transparency, and hence reduce firms' cost of capital (Barlev & Haddad, 2003; Sengupta, 1998). When financing firms, capital providers evaluate firms' risks such as default risk according to accessible and available information. Uninformed capital providers facing information-based systematic risk would compensate that risk by charging higher cost of capital (Francis et al., 2005). The fair value method requires managerial private information about the future cash flows expected to be generated from the firms' investment properties. Fair value paradigm also requires firms to provide greater levels of information and more thorough disclosures, which may enhance the stewardship function of accounting information and increase transparency (Bandyopadhyay et al., 2017; Barlev & Haddad, 2003). Therefore, fair values for properties may alleviate the information gap and information-based risk leading to a lower cost of capital.

On the negative side, the managerially estimated value approach can introduce subjectivity into fair value estimates of investment properties and create an inconsistency with the fair value definition specified by IFRS 13. IASB's goal of providing current value information based on current market conditions may not be met when significant

managerial discretion is embedded in the fair values (Gonçalves & Lopes, 2014; Marsh & Fischer, 2013). In addition, Dechow, Myers, and Shakespeare (2010) suggest that opportunistic managements may use the flexibility given by the fair value accounting model to engage in earnings management. Even though fair value reporting is desirable from the economic perspective, this accounting model may come at a cost of reduced reliability and increased subjectivity. In turn, if fair values are affected by managerial opportunism, the values may not be reliable and decision-useful.

Fair value information is more value-relevant to equity investors than historical-based values according to evidence from studies on financial instruments (Barth, 1994; Eccher et al., 1996; Koonce et al., 2011; Venkatachalam, 1996) However, evidence on the information-usefulness of fair values for non-financial assets is mixed. Using a sample of real estate sectors in European countries (i.e., France, Germany, and Italy), Israeli (2015) finds that investors place a lesser weight on disclosed fair values, relative to recognized fair values. A study by So and Smith (2009), using Hong Kong real estate data, suggests that adjustments presented in the income statement as profit and/or loss are more value-relevant compared to those presented in the revaluation reserve account as equity. Bandyopadhyay et al. (2017), using Canadian real estate data, investigate the predictability of fair value adjustments, and find that fair values of investment properties have predictive value for firms' future cash flows. In contrast, evidence from Australian agricultural businesses shows that fair values of biological assets do not have incremental predictive value about the firms' future operating cash flows (He et al., 2018). Huffman (2018) finds that the fair value is more value-relevant when applied to assets in exchange (i.e. consumable biological assets) than to assets that are not in-use by firms (i.e. PPE and bearer biological assets). Collectively, if fair values of non-financial assets can reflect the

demand in the market or current market price conditions, such fair values could be decision-useful and have predictive value for firms' future resources.

Fair value accounting-model also plays the important role in the debt market as it is reported that fair value information is used as a key device for debt contracting setting and in solvency design, in the banking industry (Ball et al., 2015). Likewise, Demerjian et al. (2016) examine whether the fair value regime affects the debt contracting design and find that fair value adjustments are included in debt contracting designs in terms of financial covenant definition settings, when such adjustments are associated with firm's performance measurement. However, Magnan et al. (2016) exploit the relationship between the cost of borrowing and fair value accounting, and report a positive association between the two, suggesting that the greater use of fair value reporting results in a higher cost of debt.

Based on the above arguments, it can be stated that the economic decision-usefulness of fair values depends on the context: the nature of the assets and their faithful representation characteristics. As noted, investment property is defined as property held for gaining rental income and/or capital appreciation. Theoretically, the price of investment property should be equal to the discounted present value of expected rental income, underpinned by the expected growth in income and related factors (i.e. taxes) (Hilbers et al., 2001). Although, fair value estimates are subject to the opportunism argument, managerially estimated values for investment property are based on the stabilized vacancy rate and contractual tenants (Born & Pyhrr, 1994; Hilbers et al., 2001) and, consequently, can be fairly verifiable. That is, the upward and downward changes of a property's values indicate whether it is attractive to tenants and market. Consistent with this view, academic articles report that the changes in real estate price and real estate firms' economic returns are indicative of portfolio management performance. The

problem of adverse selection and asymmetric information is relatively lower (Cooper, Downs, & Patterson, 2000; Downs, Gu, & Patterson, 2000).Therefore, I hypothesize that the direction of changes in fair values of investment property can be the important debt pricing device for evaluating the default risks and creditworthiness assessments. The first hypothesis is stated as follow:

H1: There is a negative association between reported changes in fair value of investment property and the cost of debt.

As discussed previously, investment property values are expected to reflect firms' future resources and, thus, the upward fair value estimates are a positive signal of firm's ability to repay debts. Theoretically, fair value of investment property is the sum of discounted expected rental income and expenses, and gain on changes in fair values should be perceived as an increase in firms' future probable benefits and, thus, reduce credit risk. Therefore, I argue that the relationship between the cost of debt and CFV is stronger when CFV is reported as a gain. The hypothesis regarding H2 is stated as follows:

H2*:* The effect of changes in fair value of investment property on the cost of debt is more pronounced when the change in fair value is recognized as gain.

3.2.2 Aggregate Level 3 Inputs and the Information-Usefulness of CFV

Aiming to help financial report users to distinguish and assess the quality and reliability of fair values enhancing their comparability, IFRS 13 was issued and came into effect in 2011 and 2013, respectively (IASB, 2011). IFRS 13 requires firms to classify fair values according to the quality of inputs used in fair value estimates: the so-called fair value hierarchy of disclosures. In Australia, the AASB 13 which is the IFRS 13 equivalence categorizes fair value inputs into three levels: Level 1, Level 2, and Level 3 fair value

inputs. Level 1 inputs are the unadjusted quoted prices of identical assets and/or liabilities in active market. Level 2 inputs refer to adjusted observable market inputs, while Level 3 inputs are unobservable inputs from active markets managements' judgments and assumptions. Among the three fair value hierarchies, the Level 3 fair values appear the least reliable and verifiable, because incorporating Level 3 inputs in fair value estimates can introduce an opportunity to management to undertake earning management (Ramanna & Watts, 2012; Yao et al., 2018) and consequently reduce the accounting information content.

Prior evidence suggests that investors consider Level 3 estimates less reliable than the observable Levels 1 and 2 estimates, and less useful. Bagna et al. (2014) report that the market assigns a material discount on fair values obtained using Level 3 inputs. Likewise, prior study reflecting the debt capital market shows that the greater use of Levels 2 and 3 fair value inputs is associated with a higher cost of debt (Magnan et al., 2016).

Fair value estimates for investment property are most likely to rely on unobservable inputs in the active market (i.e. DCF with managements' assumptions), owing to the illiquid nature. Arguably, fair values estimated with unobservable inputs may lead to the lower financial reporting quality affecting debt contracting design (Demerjian et al., 2016; Wang & Zhang, 2017). That is, the debtholders require higher interest rate to compensate firms with lower information quality.

On the positive side, the use of managements' assumptions in fair value estimates for investment property could make financial transactions more transparent, lessening capital providers' information disadvantage. In the real estate industry, Vergauwe and Gaeremynck (2019) show that firms using exclusive valuation models to estimate properties' fair values provide more accurate fair values and supply a greater

level of information related to fair value measurements. Similarly, Altamuro and Zhang (2013) and Barron, Chung, and Yong (2016) and also contend that Level 3 fair values better reflect the persistence of future cash flows than do Level 2 fair values. In addition, there is no use of Level 1 inputs, owing to the lack of an active market in the AREI. Instead, Levels 2 and 3 inputs are used predominantly for fair value determination. Therefore, focusing on Levels 2 and 3 inputs, my analysis of the literature suggests a non-directional hypothesis stated as follows.

H3: The effect of changes in the fair value of investment property on the cost of debt is not conditional on the level of inputs (Level 3 vs. Level 2 inputs).

3.2.3 The Stand-Alone Director Valuation Approach and the Information Content of CFV

As real estate companies are most likely to measure their properties at fair values using unobservable inputs in active market (i.e. DCF), but using independent valuation in fair value measurement can be a way to improve the reliability of such subjective measurement (Amsterdam, 2012). Consistent with this view, Dietrich et al. (2000) hypothesize and find that external valuers can lessen biased properties' valuations relative to internal valuers. Likewise, Muller and Riedl (2002) report that market participants perceive lower levels of information asymmetry (proxied by bid-ask spreads) when sample firms employ external rather than internal valuers. Such evidence suggests that firms' choice of valuers to conduct fair value estimates for investment property can affect the reliability and consequently moderate the decision-usefulness of such estimated values.

Despite the fact that AASB 140 does not require fair values to be estimated by external valuers, external valuation remains a preferred practice. In practice, fair value estimates in the AREI can be conducted by independent valuers, internal valuers (directors) or a mixture of both (mixed valuation). Mixed valuation refers to an approach whereby director valuations are performed at the balance date, with independent valuations being conducted by external appraisers to confirm the internal valuations (Ernst & Young, 2012). By observation, among the three available choices of valuers, director valuation only is the most frequently used method.

Cotter and Richardson (2002) find that the director valuation approach is generally used for both investment properties and identifiable intangible assets, and interpret this as evidence of firms' choosing the directors' asset-specific knowledge that will be embedded in a director valuation. As properties and intangible assets are typically heterogeneous in nature, this knowledge specificity may be required for accurate valuation, and would explain the popularity of using director valuation only in the AREI.

Considering the arguments from both sides, it seems natural to presume that the mixed valuation approach has an advantage as it possesses the favorable characteristics of both the director and the external valuation approaches. The mixed valuation approach benefits from directors' asset-specific knowledge, while still maintaining a degree of reliability, owing to the incorporation of independent valuers' opinions, i.e., firms using the mixed valuation approach have an extra layer of external assurance from independent valuers, which may reduce debtholders' concerns over the reliability of CFV. Therefore, I posit that firms using only the director valuation approach to estimate fair values for investment property would be considered informationally biased, and available information on it less decision-useful. The hypothesis is stated as follow:

H4: The effect of the changes in fair value of investment property on cost of debt is mitigated when the valuation is performed solely by directors, *ceteris paribus.*

3.2.4 The Measurement-Related Disclosure and the Information Usefulness of CFV

In general, real estate firms employ subjective and unobservable inputs to estimate the values of real estates and, consequently, may possess high information-based risk. In this case, additional disclosures required by AASB 13 would give debtholders more detailed information for estimating the future cash flows expected, and inform investors on the sensitivity of the property value to the firm-specific assumptions used in its valuation.

Amsterdam (2012) contend that real estate companies provide useful fair value measurement-related disclosure, but it is not readily sufficient. Despite the fact that IAS 140 requires firms using a fair value accounting-model to disclose information about fair value estimate measurement (i.e. expected rental income and discount rate), the disclosures made by firms are often insufficient to allow capital providers to make efficient economic decision (Sundgren, Mäki, & Somoza-Lopez, 2018). For example, disclosure under AASB 140 does not specify provisions with respect to sensitivity analyses of the assumptions used in fair value estimates (Amsterdam, 2012). AASB 13 requires firms to discuss the sensitivity of inputs used in fair value measurement, in addition to a fair value hierarchy disclosure requirement. Additional requirements under AASB 13, together with AASB 140 requirements (e.g., expected rental income and growth rate of rental income) would be helpful for debtholders in verifying and assessing the quality of the fair values of investment properties. Therefore, I hypothesize that CFV could be more decision useful to debtholders if such values are reported by firms

supplying high-quality fair value measurement-related disclosures versus firms providing low-quality disclosures. The hypothesis is stated as follows:

H5: The effect of changes in fair value of investment property on the cost of debt is more pronounced when firms provide high-quality additional disclosures, *ceteris paribus*.

3.3 Research Design

3.3.1 Measurement of Variables

3.3.1.1 Dependent Variable

The dependent variable in this study is the cost of debt (*COD*) which is estimated by dividing the reported interest expense by the average of the beginning and ending debt levels (Al-Hadi, Habib, Al-Yahyaee, & Eulaiwi, 2017; Gul, Zhou, & Zhu, 2013; Minnis,2011;).

3.3.1.2 Independent Variables

The primary independent variable of interest in this study is the reported changes in fair value of investment property (CFV). I then create GAIN measured scored 1 if firms recognized CFV as gain, 0 otherwise, to capture the effect of positive CFV on the cost of debt. In order to capture the reliability differences associated with FV, I create three additional independent variables, namely, LEVEL3, DIR_VAL, and DISCLOSE. LEVEL3 is a dummy variable coded 1 if firms use Level 3 inputs in fair value estimates for investment properties, and 0 otherwise. DIR_VAL is measured as a dummy variable

coded 1 if director valuation approach only is used for investment property fair value measurement and 0 otherwise. DISCLOSE is a dummy variable coded 1 if the firm-level disclosure indices are above the median index of the total sample, 0 otherwise. The disclosure index is created by summing (i) DISCRATE (coded 1 if firms reveal the discount rate, and 0 otherwise); (ii) VACAN (coded 1 if firms disclose the vacancy rate, and 0 otherwise); (iii) EXPRENT (coded 1 if firms disclose the expected rental incomes and operating expenses, and 0 otherwise); (iv) SEN_QUAL (coded 1 if firms provide a qualitative sensitivity analysis of fair value measurement according to change in unobservable assumptions, 0 otherwise, and (v) SEN_QUAN measured 1 if firms provide quantitative analysis for that sensitivity, 0 otherwise. The disclosure index ranges from a high of 5 to a low of 0. The fair value inputs, the valuer information, and the fair value measurement related-disclosure are manually collected from firms' annual reports.

3.3.1.3 Control Variables

I include a number of control variables related to cost of debt financing following previous research (Demerjian et al., 2016; Magnan et al., 2016; Minnis, 2011). *SIZE* is the natural logarithm of the market value of equity at the year end. A negative coefficient on *SIZE* is expected larger firms are less exposed to default risk than their smaller firm counterparts (Magnan et al., 2016). WC is working capital measured the current assets minus the current liabilities scaled by total assets, is included in the model as firms with the higher liquidity are likely to be perceived as less risky (Demerjian et al., 2016). Thus, a negative coefficient on *WC* is expected. *CAP_INT* is the capital intensity measured as the total carrying value of investment properties scaled by total assets. I expect a negative

coefficient on *CAP_INT* is predicted as the real estate firms with larger underlying assets are less risky and, hence, pay lower borrowing costs (Bwembya, 2009).

Firm leverage (LEV) measured as total interest-bearing liabilities scaled by total assets proxies for firms' capital structure. I expect a positive coefficient on *LEV* as default risk increases with increase in firm leverage (Minnis, 2011; Standard & Poor's, 2018). The loan-to-value ratio (*LTV*) is measured as the mortgage amount divided by the value of the property and expected to be positively associated with the cost of debt (Standard & Poor's, 2018). *DISTRESS* proxies for the distress risk and is expected to be positively related to borrowing costs. I categorize distressed firms having (i) negative working capital in the most recent year and/or, (ii) a bottom line net loss in the most recent year, or (iii) both negative working capital and net loss experienced in the most recent year (McKeown et al., 1991; Hopwood et al., 1994; Mutchler et al., 1997). *HEDGE* is the hedged percentage of the company's interest-bearing liabilities and is expected to be negatively related to borrowing costs as high hedging exposure lower financial risk (Chen & King, 2014) In order to capture firms' ability to pay interest expenses, I include interest coverage ratio (*INTCOV*) defined as earnings before interest and taxes divided by interest expenses for the fiscal year. The negative coefficient on *INTCOV* is predicted as firms with the greater interest coverage are more capable of paying their interest expenses on outstanding debt (Pittman & Fortin, 2004). Additionally, the regression equation includes firm and year-fixed effects.

I further included variables to proxy for operational performance and risk and the growth opportunity of firms. The capitalization rate (*CAPRATE*), calculated as net operating income divided by market value of property, and represents the fundamental rate of return of investment property. The higher capitalization rate indicates higher returns and more efficient property management (PropertyMetrics, 2013). Thus, I expect

a negative coefficient on *CAPRATE*. Operating risk (*OPRISK*), estimated as the natural log of the standard deviation of the previous three-year operating cash flows, capture the volatility of firms' operating cash flows. I expect a positive coefficient on OPRISK. Return on assets (*ROA*) is calculated as the ratio of the net operating income to total assets and is expected to have a negative relationship with the cost of debt. *GROWTH* is measured as the market capitalization of the firms divided by the book value of equity at the year end. The negative association between *GROWTH* and cost of debt is predicted as debtholders would perceive firms experiencing growth as relatively less risky (Al-Hadi et al., 2017; Minnis, 2011).

3.3.1.4 Corporate Governance Variables

I also include corporate governance variables as prior studies suggest that the firms' cost of debt can be reduced by firms' corporate governance mechanisms (e.g Ghouma, Ben-Nasr, Yan, 2018). *BIG4* is a dummy variable coded 1 if firm is audited by one the Big 4 firms, and 0 otherwise and is predicted no sign as Big 4 audit quality is dependent on contexts (Ferguson, 2017). I include the existence of risk management committees (*RC*) (a dummy variable equal to 1 if firms have a risk management committee and 0 otherwise, the frequency of audit committee meeting (*MEET*), and the percentage of institutional unitholders (*TOP20)*. I expect the coefficient on *RC* to be negative as *RC* have a vital role in monitoring business risks in industries where assets have unique characteristics (Kallamu, 2015: Pakhchanyan, 2016). Likewise, the coefficients on *MEET* and *TOP20* are also expected to be negative as audit committees are responsible for monitoring the quality of financial reporting and institutional shareholders with larger stake in firms have

incentive to activate the monitoring activities (Gillan & Starks, 2000), thus lowering borrowing costs.

3.3.2 Empirical Models

In order to investigate the association between *CFV* of investment property and the cost of debt financing (test of H1), I estimate the following equation (1): a baseline model. H1 is supported if the coefficient on CFV is negative and significant.

$$COD_{i,t} = \beta_0 + \beta_1 CFV_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 WC_{i,t} + \beta_4 CAPINT_{i,t} + \beta_5 LEV_{i,t} + \beta_6 LTV_{i,t} + \beta_7 DISTRESS_{i,t} + \beta_8 HEDGE_{i,t} + \beta_9 INTCOV_{i,t} + \beta_{10} CAPRATE_{i,t} + \beta_{11} OPRISK_{i,t} + \beta_{12} ROA_{i,t} + \beta_{13} GROWTH_{i,t} + \beta_{14} BIG4_{i,t} + \beta_{15} RC_{i,t} + \beta_{16} TOP20_{i,t} + \beta_{17} MEET_{i,t} + FIRM_{FX} + YEAR_{FX} + \varepsilon_{i,t} \dots\dots\dots\dots\dots\dots (1)$$

Variable definitions can be found in the Appendix C.

I then develop the following regression equation (2) to test H2 hypothesizing that the relationship between *CFV* and the cost of debt will be more pronounced when *CFV* is positive. In so doing, I include *GAIN* and *CFV*GAIN* in the model. A negative and significant coefficient on the interactive variable would support H2.

$$COD_{i,t} = \beta_0 + \beta_1 CFV_{i,t} + \beta_2 GAIN_{i,t} + \beta_3 CFV * GAIN_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 WC_{i,t} + \beta_6 CAPINT_{i,t} + \beta_7 LEV_{i,t} + \beta_8 LTV_{i,t} + \beta_9 DISTRESS_{i,t} + \beta_{10} HEDGE_{i,t} + \beta_{11} INTCOV_{i,t} + \beta_{12} CAPRATE_{i,t} + \beta_{13} OPRISK_{i,t} + \beta_{14} ROA_{i,t} + \beta_{15} GROWTH_{i,t} + \beta_{16} BIG4_{i,t} + \beta_{17} RC_{i,t} + \beta_{18} TOP20_{i,t} + \beta_{19} MEET_{i,t} + FIRM_{FE} + YEAR_{FE} + \varepsilon_{i,t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

In order to test the difference in information content between CFV estimated with unobservable inputs in active market (Level 3 inputs) and adjusted market-based inputs (Level 2 inputs) (test of H3), I include *LEVEL3* and the interactive variable *CFV**

LEVEL3. H3 is supported if the coefficient on *CFV*LEVEL3* is insignificant. The developed equation is written as follows:

$$COD_{i,t} = \beta_0 + \beta_1 CFV_{i,t} + \beta_2 LEVLE3_{i,t} + \beta_3 CFV * LEVEL3_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 WC_{i,t} + \beta_6 CAPINT_{i,t} + \beta_7 LEV_{i,t} + \beta_8 LTV_{i,t} + \beta_9 DISTRESS_{i,t} + \beta_{10} HEDGE_{i,t} + \beta_{11} INTCOV_{i,t} + \beta_{12} CAPRATE_{i,t} + \beta_{13} OPRISK_{i,t} + \beta_{14} ROA_{i,t} + \beta_{15} GROWTH_{i,t} + \beta_{16} BIG4_{i,t} + \beta_{17} RC_{i,t} + \beta_{18} TOP20_{i,t} + \beta_{19} MEET_{i,t} + FIRM_{FE} + YEAR_{FE} + \varepsilon_{i,t} \quad (3)$$

I further develop regression equation (4) to test H4 which posits that the stand-alone director valuation will decrease the information content of *CFV*. In so doing, I include *DIR_VAL* and *CFV*DIR_VAL* in the regression model. The positive and significant coefficient on *CFV*DIR_VAL* would support H4. The equation is stated as follows:

$$COD_{i,t} = \beta_0 + \beta_1 CFV_{i,t} + \beta_2 DIR\_VAL_{i,t} + \beta_3 CFV * DIR\_VAL_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 WC_{i,t} + \beta_6 CAPINT_{i,t} + \beta_7 LEV_{i,t} + \beta_8 LTV_{i,t} + \beta_9 DISTRESS_{i,t} + \beta_{10} HEDGE_{i,t} + \beta_{11} INTCOV_{i,t} + \beta_{12} CAPRATE_{i,t} + \beta_{13} OPRISK_{i,t} + \beta_{14} ROA_{i,t} + \beta_{15} GROWTH_{i,t} + \beta_{16} BIG4_{i,t} + \beta_{17} RC_{i,t} + \beta_{18} TOP20_{i,t} + \beta_{19} MEET_{i,t} + FIRM_{FE} + YEAR_{FE} + \varepsilon_{i,t} \quad (4)$$

Finally, in order to assess the effect of the fair value measurement disclosures on the borrowing costs, (test of H5), I employ the following regression equation (5) which includes *DISCLOSE* and *CFV*DISCLOSE*. I also included *LEVEL3* as an additional control variable as the use of Level 3 inputs in fair value estimates affect the level of fair value measurement disclosure (Ernst & Young, 2013). H5 is supported if coefficient on *CFV*DISCLOSE* is significant and negative.

$$COD_{i,t} = \beta_0 + \beta_1 CFV_{i,t} + \beta_2 DISCLOSE_{i,t} + \beta_3 CFV * DISCLOSE_{i,t} + \beta_4 LEVEL3_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 WC_{i,t} + \beta_7 CAPINTENSE_{i,t} + \beta_8 LEV_{i,t} + \beta_9 LTV_{i,t} + \beta_{10} DISTRESS_{i,t} + \beta_{11} HEDGE_{i,t} + \beta_{12} INTCOV_{i,t} + \beta_{13} CAPRATE_{i,t} + \beta_{14} OPERATINGRISK_{i,t} + \beta_{15} ROA_{i,t} + \beta_{16} GROWTH_{i,t} + \beta_{17} BIG4_{i,t} + \beta_{18} RC_{i,t} + \beta_{19} TOP20_{i,t} + \beta_{120} MEET_{i,t} + FIRM_{FX} + YEAR_{FX} + \varepsilon_{i,t} \quad (5)$$

3.4 Sample Selection and Descriptive Statistics

This study consists of all the real estate companies listed on the Australian Stock Exchange (ASX) for the period 2007 to 2015. There were 84 publicly-traded entities on the ASX as at 23 March 2017. I started with 2007 because AABS 140 (equivalent to IAS 40) was mandated for listed companies in 2007. I collected financial statement data and the corporate governance data manually from firms' annual reports. Market- data was obtained from DataStream. The initial sample included a total of 84 listed companies in the AREI sector with a total of 756 firm-year observations. I then exclude 18 firm-year observations because those observations have applied the historical cost method to their properties. I further excluded 297 observations with no reported investment property values on the balance sheet financial reports (e.g., developers for whom the properties are treated as inventories). I also dropped 87 firm-year observations with missing firm-level control data. The final sample, therefore, consists of 354 firm-year observations. Table 3.1, Panel A, demonstrates the sample selection procedures in detail.

Table 3.1, Panel B and Panel C report the descriptive statistics of continuous and dichotomous variables used in tests, respectively. The *CFV* has a mean (median) value of 0.04 (0.03) with a standard deviation of 0.17. About 66% of the firm-year observations

reported CFV as gain. On average, 82% of the firm-year observations used Level 3 inputs in fair value estimates for investment properties. About 42 % of the firm-year observations employed the stand-alone director valuation. Approximately, 42% of the firm-year observations were identified as firms reporting high disclosure quality: firms with disclosure indices above median index for the total sample.

Table 3.2 demonstrates the Pearson correlations for the variables used in tests. The correlation between *COD* and *CFV* is negative and statistically significant (coefficient = -0.18, $p<0.01$) as is the correlation between *COD* and *GAIN* (coefficient = -0.10, $p<0.10$). Correlation analysis further shows *COD* to have a positive and significant association with *DIR_VAL* (coefficient = 0.09, $p<0.10$). *COD* is significantly and positively associated with *LEV* (coefficient = 0.20, $p<0.01$), *LTV* (coefficient = 0.15, $p<0.05$), and *DISTRESS* (coefficient 0.14, $p<0.05$). To address the multicollinearity issue, I also run the estimated Variance Inflation Factor (VIF) for all fitted models in the main tests. The mean VIFs range from 2.28 to 2.42. Given that mean VIFs are less than ten, multicollinearity appears not to be a concern. [23]

[23] Marquardt (1970) uses a VIF greater than 10 as a guideline for serious multi-collinearity.

Table 3.1: Samples and Descriptive Statistics

Panel A: Sample selection

	Firm-years observations
Original observations	756
After excluding observations using historical cost method	738
After excluding observations without investment property	441
After excluding observations with missing value of variables	354

Panel B: Continuous variables used in tests

	Mean	S.D.	0.25	Median	0.75	N
COD	0.629	0.321	0.455	0.619	0.747	354
CFV	0.04	0.17	-0.01	0.03	0.06	354
SIZE	12.60	2.04	11.01	12.49	14.00	354
WC	-0.05	0.22	-0.06	0.01	0.03	354
CAPINT	0.70	0.42	0.49	0.68	0.89	354
LEV	0.389	0.198	0.240	0.366	0.870	354
LTV	0.570	0.272	0.371	0.580	0.756	354
HEDGE (%)	63.24	30.95	54.00	73.80	84.00	354
INTCOV (time)	7.08	24.20	0.60	2.60	5.57	354
CAPRATE	0.798	0.181	0.675	0.782	0.900	354
OPRISK	9.91	1.60	8.84	9.85	10.95	354
ROA	0.06	0.11	0.03	0.05	0.10	354
GROWTH	1.01	0.61	0.66	0.90	1.25	354
MEET	4.44	2.12	3.00	4.00	6.00	354
TOP20 (%)	73.65	18.63	63.16	76.85	87.71	354

Panel C: Discontinuous variables used in tests

	Yes =1 Frequency (%)	No = 0 Frequency (%)	N
GAIN	234 (66%)	120 (34%)	354
LEVEL3	291 (82%)	63 (18%)	354
DIR_VAL	147 (42%)	207 (58%)	354
DISCLOSE	148 (42%)	206 (58%)	354
DISTRESS	171 (48%)	183 (52%)	354
BIG4	261 (74%)	93 (26%)	354
RC	268 (76%)	86 (24%)	354

Note: I winsorized 1% at the top and the bottom and took natural logarithm to address the normality issues for all continuous variables. See Appendix C, for variable definitions.

Table 3.2: Correlation Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
COD (1)	1																					
CFV (2)	-0.18*	1																				
GAIN (3)	*-0.10*	0.49*	1																			
LEVEL3 (4)	-0.01	-0.22*	-0.08	1																		
DIR_VAL (5)	*0.09*	0.02	0.04	0.08	1																	
DISCLOSE (6)	-0.01	-0.01	0.17*	0.04	0.03	1																
SIZE (7)	-0.05	-0.06	0.17*	***-0.12***	***0.11***	0.19*	1															
WC (8)	*-0.09*	-0.03	-0.08	-0.06	0.01	-0.15*	0.15*	1														
CAPINT (9)	***-0.12***	0.23*	0.19*	0.02	0.07	***0.13***	0.01	-0.08	1													
LEV (10)	0.20*	-0.08	0.04	***0.11***	-0.19*	-0.08	-0.44*	-0.19*	0.20*	1												
LTV (11)	***0.15***	***0.15***	***0.12***	***0.12***	0.14*	-0.04	-0.37*	-0.19*	0.20*	0.89*	1											
DISTRESS (12)	***0.14***	***-0.14***	0.02	0.02	***-1.16***	-0.02	-0.06	-0.51*	***0.11***	0.20*	0.18*	1										
HEDGE (13)	0.05	-0.25*	0.29*	-0.05	-0.17*	0.17*	0.36*	-0.01	0.18*	0.07	-0.02	0.04	1									
INTCOV (14)	-0.26*	0.17*	-0.04	0.05	0.14*	-0.04	***-0.12***	*0.09*	-0.04	-0.23*	-0.21*	-0.15*	-0.17*	1								
CAPRATE (15)	***-0.11***	0.01	0.04	***-0.11***	-0.14*	0.01	-0.17*	-0.07	***-0.11***	0.03	0.03	-0.01	-0.24*	0.02	1							
OPRISK (16)	0.08	0.07	***0.13***	*-10*	0.13	-0.09	0.78*	0.06	***-0.13***	-0.28*	-0.25*	*0.1*	0.35*	-0.18*	***-0.13***	1						
ROA (17))	-0.18*	0.31*	-0.06	0.06	0.26*	0.07	0.01	0.02	-0.08	***-0.11***	-0.04	-0.26*	*-0.09*	*0.35**	-0.01	-0.07	1					
GROWTH (18)	-0.01	0.26*	-0.08	0.01	0.14*	0.22	0.25*	0.06	-0.07	***-0.14***	*-0.09*	***-0.12***	-0.16*	-0.02	0.19*	0.07	0.20*	1				
BIG4 (19)	***0.13***	***-0.12***	0.26*	*-0.09*	-0.08	*0.25**	0.44*	-0.02	0.14*	-0.01	0.01	0.02	0.46*	-0.18*	-0.08	0.36*	-0.08	0.01	1			
RC (20)	-0.01	-0.06	0.05	-0.07	**-0.01**	***0.12***	*0.35**	*0.08*	0.16*	0.01	0.04	*-0.09*	*0.16**	-0.6	*-0.11*	*0.23*	*-0.16**	*-0.09*	*0.43**	1		
TOP20 (21)	*-0.09*	0.06	-0.06	***0.13***	*0.07*	*0.09*	0.20*	0.03	-0.38*	-0.29*	-0.31*	-0.04	0.01	0.08	*-0.10*	*0.18*	-0.04	-0.04	***-0.10***	-0.26*	1	
MEET (22)	-0.01	***-0.11***	*0.1*	*-0.1*	0.01	0.01	0.24*	-0.05	0.06	-0.04	-0.01	***0.11***	*0.19**	***-0.11***	-0.03	***0.14***	***-0.14***	*-0.09*	*0.16**	0.16*	0.01	1

Note: * Correlation coefficients are statistically significant at p<0.01. Bold and italicized correlations are significant at p<0.05. The italicized correlations are significant at p<0.10. See Appendix C, for variable definitions.

3.5 Main Test Results

Table 3.3 reports the multiple regression results for the five hypotheses developed in Section 3.3. For all regression models reported in Table 3.3, I use *COD* as a dependent variable.

Table 3.3: The Effect of CFV and Its Features on COD

VARIABLES	Pred.	(1) CFV	(2) Gain on CFV	(3) Fair value inputs	(4) Valuer choice	(5) Disclosure quality
Intercept		10.522***	11.010***	10.448***	10.256***	10.534***
		[4.14]	[4.65]	[4.23]	[3.91]	[4.16]
CFV	-	-1.736**	-1.719*	-1.772*	-1.713**	-1.731*
		[-2.34]	[-1.74]	[-1.90]	[-2.05]	[-1.92]
GAIN	-		-0.682*			
			[-1.88]			
*CFV*GAIN*	-		-1.803***			
			[-3.17]			
LEVEL3	?			-0.801		-0.902
				[-1.13]		[-1.43]
*CFV*LEVEL3*	?			0.631		
				[0.42]		
DIR_VAL	+				0.566*	
					[1.77]	
CFV DIR_VAL*	+				1.611*	
					[1.81]	
DISCLOSE	-					-0.015
						[-0.04]
*CFV*DISCLOSE*	-					-0.041
						[-0.30]
Control variables						
SIZE	-	-0.051	-0.066	-0.075	-0.107	-0.160
		[-0.51]	[-0.47]	[-0.86]	[-0.87]	[-1.15]
WC	-	-1.345**	-1.373**	1.-386***	-1.269**	-1.317***
		[-2.58]	[-2.52]	[-2.65]	[-2.46]	[-2.63]
CAPINT	-	-0.084	-0.322	-0.212	-0.257	-0.256
		[-0.58]	[-0.68]	[-0.48]	[-0.56]	[-0.57]
LEV	+	0.106***	0.102***	0.105***	0.104***	0.104***
		[3.96]	[3.68]	[3.64]	[4.14]	[3.73]
LTV	+	0.101***	0.100***	0.105***	0.104***	0.102***
		[4.17]	[4.15]	[3.93]	[4.30]	[3.95]
DISTRESS	+	1.016**	0.934**	0.966**	1.010**	0.924**
		[2.39]	[2.26]	[2.28]	[2.42]	[2.19]

Table 3.3: Continued

VARIABLES	Pred.	(1) CFV	(2) Gain/Loss on CFV	(3) Fair value inputs	(4) Valuer choice	(5) Disclosure quality
HEDGE	-	-0.016*	-0.013*	-0.018*	-0.017**	-0.017*
		[-1.93]	[-1.71]	[-1.96]	[-2.10]	[-1.90]
INTCOV	-	-0.025***	-0.024***	-0.026***	-0.027***	-0.025***
		[-3.21]	[-3.07]	[-3.29]	[-3.50]	[-3.31]
CAPRATE	-	-0.361**	-0.334*	-0.378**	-0.361**	-0.363**
		[-2.06]	[-1.85]	[-2.09]	[-2.07]	[-2.06]
OPRISK	+	0.470*	0.478*	0.488*	0.423**	0.477*
		[1.87]	[1.89]	[1.89]	[2.31]	[1.87]
ROA	-	-0.851	-0.552	-0.472	-0.502	-0.643
		[-0.47]	[-0.31]	[-0.25]	[-0.28]	[-0.35]
GROWTH	-	0.406	0.576*	0.476	0.434	0.494
		[1.37]	[1.75]	[1.51]	[1.38]	[1.55]
BIG4	?	1.589***	1.559***	1.423**	1.401**	1.510**
		[2.84]	[2.68]	[2.43]	[2.45]	[2.54]
RC	-	-0.227	-0.132	-0.014	-0.237	-0.166
		[-0.28]	[-0.16]	[-0.02]	[-0.28]	[-0.19]
TOP20	-	-0.012*	-0.012*	-0.012*	-0.007*	-0.012*
		[-1.79]	[-1.76]	[-1.82]	[-.86]	[-1.76]
MEET	-	0.004	0.003	0.004	0.005	0.003
		[0.24]	[0.46]	[0.00]	[0.04]	[0.03]
Firm fixed effect		Yes	Yes	Yes	Yes	Yes
Year fixed effect		Yes	Yes	Yes	Yes	Yes
Robust		Yes	Yes	Yes	Yes	Yes
Observations		354	354	354	354	354
Adj. R-squared		0.276	0.282	0.26	0.276	0.264
VIF		2.32	2.33	2.42	2.30	2.28
F-test on interaction effects						
GAIN=0			3.12*			
LEVEL3=0				0.14		
DIR_VAL=0					3.34*	
DISCLOSE=0						0.07
Compared to the baseline model						
Incremental *F-test*			3.42*	0.12	2.39*	0.04
Likelihood ratio test			4.14*	0.27	5.16*	0.10

T-statistics in brackets, *** p<0.01, ** p<0.05, * p<0.10. Variables are defined in Appendix C.

3.5.1 The Decision Usefulness of CFV (H1)

Table 3.3, Column (1) presents the findings of H1 which hypothesizes that *CFV* is decision-useful to debtholders. Results indicate that *CFV* is associated with *COD* negatively and significantly (coefficient = -1.736, t-stat = -2.34, $p<0.05$) and a one standard deviation increase in *CFV* reduces *COD* by 29.51 basis points ((-1.736* 0.17)*100). This suggests that *CFV* is decision useful in debt pricing as it informs debtholders about the relative desirability of firms' properties and hence alleviate the information – based risk to uninformed debtholders about property values. Therefore, H1 is supported statistically.

The coefficients on many of the control variables are significant and have the expected signs. *WC, HEDGE, INTCOV,* and *CAPRATE* are significantly and negatively correlated with *COD* (coefficient = -1.345, t-stat = -2.58, $p<0.05$, coefficient = -0.016, t-stat = -1.93, $p<0.10$, coefficient = -0.025, t-stat = 3.21, $p<0.01$, and coefficient = -0.361, t-stat = -2.06, $p<0.05$, respectively) suggesting that firms having high working capital, hedging coverage, and profitability as well as rate of return of property portfolio management paid a lower cost of debt as they have comparatively less credit risk. The coefficients on *LEV, LTV, OPRISK* are positive and statistically significant (coefficient = 0.106, t-stat = 3.96, $p>0.01$, coefficient = 0.101, t-stat =4.17, $p<0.01$, and coefficient = 0.470, t-stat = 1.87, $p<0.10$, respectively).This is consistent with the common wisdom that more highly leveraged and high operating income volatile firms are considered riskier and have higher cost of debt. Likewise, distressed firms bear a higher cost of debt (coefficient = 1.016, t-stat = 2.39, $p>0.05$).

With respect to corporate governance variables, as opposed to the prediction, the coefficient on *BIG4* is significantly positive (coefficient = 1.589, t-stat = 2.84, $p<0.014$) implying that firms employing Big 4 audit firms report higher interest expenses. According

to O'Hagan (2018), big four firms' auditors do not always provide high – quality audit as it was not embroiled in frequency of financial scandals that the big four firms have associated. This fact could account for the unexpected coefficient sign on BIG4. Among the other three corporate governance proxies, only *TOP20* is statistically associated with *COD* (coefficient = -0.012, t-stat = -1.79, $p<0.10$) implying that debtholders perceive firms having higher institutional ownership as being less risky and charge a lower cost of debt accordingly.

3.5.2 The Incremental Effect of the Positive CFV on the Content of CFV Information (H2)

Table 3.3, Column (2) demonstrates the findings of H2 hypothesizing that the effect of *CFV* of investment properties on *COD* is more pronounced when *CFV* is recognized as gain. Findings indicates that the coefficient on the interaction term, *CFV*GAIN*, is negative and statistically significantly (coefficient = -1.803, t-stat = -3.17, $p<0.01$), suggesting that *GAIN* has an incremental effect on the negative association between *CFV* and *COD*. After the inclusion of *GAIN*, the effect of CFV on *COD* is now -3.522 (-1.719 + -1.803), indicating that a one standard deviation increase in *CFV* reduces *COD* by 59.7 ((-3.522*0.17)*100) basis points. This supports the argument that the upward or positive valuation changes can inform debtholders that firms' properties: underlying assets of debt, are attractive to market and tenants increasing firms' possible future cash flows to repay debt. Therefore, H2 is statistically evident. In addition, I conduct an incremental F-test and a Likelihood Ratio (LR) test. Results show that *GAIN* incrementally moderate the content of CFV information. In terms of control variables, the findings are consistent with previous discussion in the previous sub-section: 3.5.1.

3.5.3 The Incremental Effect of Level 3 inputs on the Content of CFV Information (H3)

Table 3.3, Column (3) presents the findings relevant to H3 which hypothesizes that the effect of *CFV* of investment properties on *COD* is not conditional on the level of input (Level 3 vs. Level 2 inputs). Results indicates that the coefficient of *CFV*LEVEL3* is insignificant suggesting that debtholders do not impose penalty by increasing the cost of debt on *CFV* measured with Level 3 inputs compared to *CFV* measured with Level 2 inputs. In other words, adopting of Level 3 inputs in fair value estimates for properties does not reduce the information content of the CFV of investment property as using unobservable for fair value measurement for investment property is predominant. Besides, the negative coefficient on *LEVEL3* demonstrates that debtholders do not charge higher cost of debt to compensate for the subjectivity of such unobservable inputs in active market. The additional F-test and LR test also show consistent inferences with multiple regression tests' results. Therefore, H3 is supported. In general, inferences with respect to controls, are consistent with previous discussion on findings from H1.

3.5.4 The Incremental Effect of Valuers' sources on the Content of CFV Information (H4)

Table 3.3, Column (4) demonstrates the findings of H4, which posits that the effect of *CFV* of investment properties on *COD* is mitigated when the valuation is solely performed by a director. The main variable of interest is *CFV*DIR-VAL,* which captures the incremental effect of director valuation on the COD. The coefficient on *CFV* DIR_VAL* is positively and statistically correlated with *COD* (coefficient = 1.611, t-stat = 1.81, p>0.10). Overall, the findings suggest that the effect of *CFV* on *COD* decreases when fair value estimates for

investment property are conducted by firms' directors. The findings are consistent with the argument that mixed and independent valuers are perceived as more credible and, hence, the valuations conducted by such valuers are perceived as less biased and more useful, despite the possibility that directors may possess entity-specific knowledge. That is, mixed valuation and external valuation provide more reliable *CFV,* as such valuations have independent valuers as an extra layer of valuation monitoring. The inferences are unchanged after conducting an incremental F-test and an LR test. Thus, H4 is statistically supported.

3.5.5 The Incremental Effect of the Disclosure Quality on the Content of CFV Information (H5)

Table 3.3, Column (5) presents the findings regarding H5 which posits that the effect of CFV of investment properties on the cost of debt is more pronounced when firms provide high quality additional disclosure. The coefficient of the interactive variable, *CFV*DISCLOSE* is the main variable of interest for H5. Results indicate that the coefficient of *CFV*DISCLOSE* on cost of debt is negative but statistically insignificant. Thus, there is no evidence to support H5. The results, however, are consistent with the argument of Sundgren et al. (2018) who report that real estate firms do not benefit from providing additional disclosure under IFRS 13. This is perhaps because all real estate companies reveal other key factors (e.g., capitalization rates, tenants portfolio etc.) affecting property values. In other words, despite the fact that firms categorized in the low disclosure quality group did not supply the required information (i.e. for sensitivity analysis of value changes according to input used in fair value estimates), debtholders can access other relevant indicators such as borrowing firms' tenant quality and capitalization (see Appendix E) and hence can make efficient comparative analysis in assessing risks.

3.6 Additional Tests

3.6.1 Hypotheses' Tests Excluding Global Financial Crisis (GFC)

The fact is that my sample periods include the onset and culmination of GFC. To the effect of GFC on my findings, I conduct an additional test for a sample that excludes firm-year observation from 2008 and 2009. The findings are presented in Table 3.4. The results indicate that the GFC period does not drive the results.

3.6.2 A Robust Check of H3: The Incremental Effect of Level 3 inputs

I further conduct a robust check of H3 regarding the sampling timeframe. AASB 13 came into an effect in the beginning of 2013 but my sample period started in 2007. For this additional robustness, I first categorized fair values of investment properties as LEVEL 3 and scored 1 if firms use the stand-alone model estimate with managerial assumptions (MODEL_ONLY) in properties' fair value estimates, and 0 otherwise, following the definition of fair value hierarchy specified by IFRS 13 and the work of Vergauwe and Gaeremynck (2019). Next, I reran the regression Equation (3). I find that the inferences relating to H3 are consistent with previous test (coefficient on CFV*MODEL_ONLY is 0.183, and insignificant; the coefficient on MODEL_ONLY is -0.728, and insignificant)

3.6.3 Additional Tests of H4: The Effect of Sources of Valuers

To reassess findings regarding the effect of the use of stand-alone director valuation approach on COD, I perform subsampling tests analysis. In doing so, I first reran the baseline model (Equation 1) on two groups: firms using the director valuation approach (N = 147) versus firms employing the mixed valuation approach (N = 109). Un-tabulated results show

that the coefficient on CFV of firms employing the director valuation approach is significant and positive (coefficient = 2.623, t-stat = 2.16, p>0.05), while that of firms using the mixed valuation approach is significant and negative (coefficient = -2.100, t-stat = -1.86, p<0.10). Later, I establish Wald tests to compare coefficients across groups[24], un-tabulated results show that the difference is economically significant (p<0.10). I further reran the baseline model on groups: mixed valuation approach (N=109) vs independent valuation (N =98). Un-tabulated results indicate that the coefficients on CFV of both groups are significant and negative. However, Wald tests reports no significant difference. Collectively, findings support the argument that CFV using the stand-alone director valuation approach is considered to have high information-based risk and thus firms using such approach paid higher costs of debt to compensate for the information risk.

[24] See Liao (2011) for the use of a Wald test to examine if the coefficients are equal across groups

Table 3.4: The Effect of CFV and Its Features on COD Excluding GFC Periods

VARIABLES	Pred.	1 CFV	2 Gain/Loss on CFV	3 Fair value inputs	4 Valuer choice	5 Disclosure quality
Intercept		12.038***	12.749***	10.678***	11.289***	11.951***
		[4.53]	[4.87]	[4.05]	[4.19]	[4.16]
CFV	-	-1.831**	-1.903*	-1.773*	-1.841**	-1.827*
		[-2.29]	[-1.86]	[-1.82]	[-2.27]	[-1.74]
GAIN	-		-0.622*			
			[-1.65]			
*CFV*GAIN*	-		-1.612**			
			[-2.41]			
LEVEL3	?			-0.681		-0.778
				[-0.31]		[-1.12]
*CFV*LEVEL3*	?			0.386		
				[0.22]		
DIR_VAL	+				0.687*	
					[1.95]	
CFV DIRVAL*	+				1.965*	
					[1.86]	
DISCLOSE	-					-0.022
						[-0.05]
CFV DISCLOSE*	-					-0.604
						[-0.36]
Control variables						
SIZE	-	-0.111	-0.146	-0.163	-0.113	-0.115
		[-0.45]	[-0.24]	[-0.79]	[-0.44]	[-0.52]
WC	-	-1.410***	-1.338**	-1.510**	-1.267**	-1.503*
		[-2.71]	[-2.47]	[-2.36]	[-2.42]	[-1.69]
CAPINT	-	-0.015	-0.246	-0.103	-0.133	-0.077
		[-0.30]	[-0.52]	[-0.20]	[-0.27]	[-0.17]
LEV	+	0.105***	0.104***	0.110***	0.111***	0.109***
		[3.56]	[3.60]	[3.83]	[3.50]	[3.35]
LTV	+	0.109***	0.105***	0.108***	0.106***	0.108***
		[3.41]	[3.38]	[3.56]	[3.61]	[3.57]
DISTRESS	+	1.074**	1.107**	1.134**	1.060**	1.134**
		[2.30]	[2.40]	[2.39]	[2.32]	[2.39]
HEDGE	-	-0.018*	-0.016*	-0.019**	-0.019**	-0.019*
		[-1.95]	[-1.80]	[-2.52]	[-2.19]	[-1.93]
INTCOV	-	-0.025***	-0.027***	-0.026***	-0.024***	-0.026***
		[-3.01]	[-2.85]	[-2.88]	[-2.85]	[-2.96]
CAPRATE	-	-0.350*	-0.341*	-0.372*	-0.381*	-0.370*
		[-1.77]	[-1.69]	[-1.82]	[-1.90]	[-1.83]
OPRISK	+	0.470*	0.466*	0.427*	0.443*	0.533*
		[1.81]	[1.70]	[1.82]	[1.88]	[1.83]

Table 3.4: Continued

VARIABLES	Pred.	1 CFV	2 Gain/Loss on CFV	3 Fair value inputs	4 Valuer choice	5 Disclosure quality
ROA	-	-0.941	-0.661	-0.365	-1.012	-0.719
		[-0.44]	[-0.32]	[-0.20]	[-0.47]	[-0.32]
GROWTH	-	0.407	0.441	0.110	0.448	0.379
		[1.37]	[1.36]	[1.08]	[1.46]	[1.19]
BIG4	?	1.663***	1.689***	1.539***	1.731***	1.494**
		[2.76]	[2.79]	[2.50]	[2.94]	[2.15]
RC	-	-0.114	-0.186	-0.126	-0.141	-0.059
		[-0.14]	[-0.22]	[-0.73]	[-0.87]	[-0.37]
TOP20	-	-0.007*	-0.012*	-0.010*	-0.006*	-0.010*
		[-1.77]	[-1.81]	[-1.76]	[-1.74]	[-1.86]
MEET	-	0.004	0.019	0.014	0.026	0.007
		[0.24]	[0.22]	[0.31]	[0.29]	[0.73]
Firm fixed effect		Yes	Yes	Yes	Yes	Yes
Year fixed effect		Yes	Yes	Yes	Yes	Yes
Robust		Yes	Yes	Yes	Yes	Yes
Observations		317	317	317	317	317
Adj. R-squared		0.270	0.284	0.26	0.283	0.266
VIF		2.32	2.33	2.42	2.31	2.28
F-test on interaction effects						
GAIN=0			3.02*			
LEVEL3=0				0.11		
DIR_VAL=0					3.75*	
DISCLOSE=0						0.04
Compared to the baseline model						
Incremental F-test			3.23**	0.10	2.50*	0.04
Likelihood ratio test			6.56**	0.22	5.41*	0.08

T-statistics in brackets, *** p<0.01, ** p<0.05, * p<0.10. Variables are defined in Appendix C.

3.6.4 Endogeneity with Respect to the Choice of Capital Structure

According to theories of capital structure (Pecking order theory and the trade-off theory), the firm leverage level is a product of a leverage decision affected by many factors (e.g. tax benefit on interest and firms' size) (Bwembya, 2009; Cadenillas, Cvitanić, & Zapatero; Wellalage & Locke, 2013) and the leverage decision could alter the level of the cost of debt. That is, firms having greater gearing ratios may report higher interest expenses, as they have larger amount of debts. As the leverage decision is non-random, leading to selection bias,

biased coefficients in the estimations could occur accordingly (Lennox, Francis, & Wang, 2012). In order to alleviate a self-selection effect ensuring the leverage choice is random, I conduct a robustness test using the Heckman two-stage test (Heckman, 1979). In the first stage probit model, I regress the leverage decision determinants (*LEV_HIGH*, a binary variable coded 1 for firms having *LEV* greater than median of total samples, 0 otherwise) on *ROA*, *CAPINT*, *SIZE*, *GROWTH*, *OPRISK*, and *TRUST*, following Bwembya (2009). *TRUST* is a dummy variable coded 1 if firm is an AREIT, and 0 otherwise. AREITs can access flow-through tax by passing income on to the owners and investors, as discussed in section 2. Thus, tax deductibility of interest expenses may not be attractive to AREITs and, consequently, affect the choice of capital structure accordingly. However, the form of real estate firms will not affect creditors' pricing decisions directly, as creditors are mainly concerned over the default risk (Standard & Poor's, 2018), and being a *TRUST* will not mitigate or increase such risk. I therefore run the regression equations (1) to (5) including the Inverse Mills Ratio (IMR) from the first stage as an additional control variable.

The results relating to endogeneity regarding the leverage decision, are reported in Table 3.5. Findings indicate that the inferences of H1 to H5 are not altered by firms' leverage decisions.

Table 3.5: Robust Tests with Respect to the Choice of Capital Structure

VARIABLES	Pred.	1 CFV	2 Gain/Loss on CFV	3 Fair value inputs	4 Valuer's choice	5 Disclosure quality
Intercept		11.843***	12.308***	11.882***	11.289***	11.778***
		[3.712]	[5.17]	[5.08]	[4.19]	[4.82]
CFV	-	-1.656**	-1.604*	-1.613*	-1.833**	-1.609*
		[-2.22]	[-1.90]	[-1.75]	[-1.96]	[-1.72]
GAIN	-		-0.658*			
			[-1.86]			
*CFV*GAIN*	-		-1.701**			
			[-2.46]			
LEVEL3	?			-0.839		-0.770
				[-1.17]		[-1.20]
*CFV*LEVEL3*	?			0.705		
				[0.47]		
DIR_VAL	+				0.563*	
					[1.91]	
CFV DIRVAL*	+				1.394*	
					[1.67]	
DISCLOSE	-					-0.029
						[-0.05]
*CFV*DISCLOSE*	-					-0.417
						[-0.30]
Control variables						
SIZE	-	-0.111	-0.111	-0.100	-0.104	-0.111
		[-0.49]	[-0.50]	[-0.44]	[-0.46]	[-0.47]
WC	-	-1.359***	-1.421***	-1.430**	-1.278**	-1.419*
		[-2.57]	[-2.60]	[-2.72]	[-2.45]	[-2.85]
CAPINT	-	-0.012	-0.037	-0.069	-0.095	-0.067
		[-0.23]	[-0.76]	[-0.60]	[-0.27]	[-0.13]
LEV	+	0.105***	0.101***	0.106***	0.107***	0.107***
		[3.91]	[3.84]	[3.75]	[4.05]	[3.82]
LTV	+	0.103***	0.101***	0.106***	0.103***	0.105***
		[4.15]	[4.14]	[4.09]	[4.26]	[4.09]
DISTRESS	+	1.018**	1.019**	1.063**	1.013**	1.062**
		[2.41]	[2.46]	[2.48]	[2.43]	[2.48]
HEDGE	-	-0.016*	-0.013*	-0.017**	-0.017**	-0.017*
		[-1.91]	[-1.61]	[-1.93]	[-2.10]	[-1.89]
INTCOV	-	-0.026***	-0.026***	-0.026***	-0.025***	-0.027***
		[-3.18]	[-3.06]	[-3.13]	[-3.06]	[-3.15]
CAPRATE	-	-0.363*	-0.338*	-0.385**	-0.390*	-0.380**
		[-2.07]	[-1.87]	[-2.11]	[-2.20]	[-2.12]
OPRISK	+	0.470*	0.447*	0.491*	0.473*	0.491*
		[1.86]	[1.80]	[1.88]	[1.86]	[1.87]

Table 3.5: Continued

VARIABLES	Pred.	1 CFV	2 Gain/Loss on CFV	3 Fair value inputs	4 Valuer's choice	5 Disclosure quality
ROA	-	-0.919	-0.857	-0.742	-0.900	-0.730
		[-0.50]	[-0.47]	[-0.39]	[-0.49]	[-0.38]
GROWTH	-	0.434	0.557	0.421	0.451	0.417
		[1.28]	[1.57]	[1.25]	[1.37]	[1.23]
IMR	-	-1.210	-1.39	-1.870	-1.920	-1.543
		[-0.10]	[-0.42]	[-0.23	[-0.10]	[-0.19]
BIG4	?	1.600***	1.622***	1.474**	1.731***	1.457**
		[2.78]	[2.83]	[2.56]	[2.89]	[2.32]
RC	-	-0.235	-0.119	-0.057	-0.239	-0.067
		[-0.28]	[-0.24]	[-0.70]	[-0.30]	[-0.28]
TOP20	-	-0.006*	-0.009*	-0.011*	-0.012*	-0.010*
		[-1.87]	[-1.80]	[-1.75]	[-1.79]	[-1.66]
MEET	-	0.004	0.016	0.025	0.020	0.022
		[0.26]	[0.22]	[0.25]	[0.19]	[0.22]
Firm fixed effect		Yes	Yes	Yes	Yes	Yes
Year fixed effect		Yes	Yes	Yes	Yes	Yes
Robust		Yes	Yes	Yes	Yes	Yes
Observations		354	354	354	354	354
Adj. R-squared		0.275	0.290	0.269	0.286	0.272
VIF		2.30	2.30	2.40	2.28	2.38
F-test on interaction effects						
GAIN=0			3.13*			
LEVEL3=0				0.13		
DIR_VAL=0					3.32*	
DISCLOSE=0						0.09
Compared to the baseline model						
Incremental F-test			5.04**	1.12	2.37*	0.05
Likelihood ratio test			8.70**	0.26	5.14*	0.11

T-statistics in brackets, *** p<0.01, ** p<0.05, * p<0.10. Variables are defined in Appendix C.

3.7 Conclusion

This Chapter I investigate the decision-usefulness of CFV of investment property in determining the cost of debt in the real estate industry: an industry that lacks an active market. I also examine whether the effect of CFV on the cost of debt is conditional on several

features (including: GAIN versus Loss, level of inputs used in fair value estimates, sources of valuer, and fair value disclosure quality). Overall, using hand-collected data from Australian real estate firms over the period from 2007 to 2015, I report a significant negative relationship between CFV and cost of debt, implying that CFV is decision-useful in debt pricing. The CFV information content is more pronounced when changes in fair value of investment property are recognized as gain. The findings also indicate that the use of Level 3 inputs in fair value estimates for investment properties, does not damage CFV information content. I further find that the exclusive use of the director valuation fair value estimates for investment properties decreases the decision-usefulness of CFV information. However, I find no evidence for any effect on the information-content of CFV of the quality of disclosure.

The findings of my study have important implications for accounting standard-setters, regulatory authorities, the real estate companies and debtholders. My findings suggest that changes in fair value of investment property reported under IAS 40 provides sufficiently faithful and useful information to debtholders for their financing decisions. Although this study provides empirical endorsement to IAS 40, property valuation needs to be closely monitored and governed, as my findings indicate that property values are associated significantly with debt pricing decisions made by banks. The results of this study also indicate that using Level 3 inputs do not necessarily lower the information content of fair values when compared to Level 2 inputs in the AREI. Furthermore, my results suggest that companies should encourage the use of an independent or mixed valuation approach, as it will potentially be rewarded with a lower cost of debt. Finally, my findings suggest that additional disclosure on fair value measurement may be a box-ticking activity.

CHAPTER-FOUR- FAIR VALUE EXPOSURE, CHANGES IN FAIR VALUE AND AUDIT FEES (ESSAY THREE)

Essay One and Two analyse the information-usefulness of CFV information from different capital provider perspectives. This Chapter, however, aims to investigate the cost of monitoring such information proxied by audit fees. Specifically, I examine the association between audit fees, which proxy for monitoring costs, and (i) the fair value exposure of investment properties, (ii) the reported changes in fair value (hereafter, CFV) of investment property, and (iii) the sources of inputs and valuers, in the context of the AREI. This study is motivated by the limited and inconclusive evidence available on the effect on audit fees of full fair value reporting for illiquid assets. Using hand-collected data from the Australian real estate industry, I find a negative (positive) association between audit fees and fair value exposure (CFV of investment properties). The findings of this study also indicate the use of unobservable inputs in fair value estimates for investment properties (Level 3 inputs) does not affect audit fees. Further, I report that audit fees are higher for firms having fair values of investment properties estimated by external and mixed valuers, compared to firms having fair values estimated by directors alone. This study enriches the audit fee literature by documenting auditors' pricing decisions in an area that involves significant estimation and valuation risks.

4.1 Institutional Background - Relevant Accounting Standards

Before the adoption of IFRS in 2005, the Australian Accounting Standards Board (AASB) 1041: Revaluation of Non-Current Assets, was the main accounting standard dealing with the revaluation issue pertinent to non-current assets in Australia. Currently, there are three accounting standards governing revaluations of non-current assets in Australia: AASB 116 Property, Plant, and Equipment (equivalent to IAS 16), AASB 138 Intangible Assets (equivalent to IAS 38), and AASB 140 Investment Property (equivalent to IAS 40), which came into effect after 2005 (Cairns et al., 2011; Yao et al., 2015). Of these three accounting standards, AASB 140 is the most relevant to real estate firms' financial position and performance.

AASB 140 specifies the definition of investment properties, and allows firms to apply fair value measurements to assets classified as investment properties. Investment properties are defined as properties held (by means of purchase, construction or lease) to earn rental income, gain from capital appreciation, or both. Because of the illiquid nature of real estate, AASB 140 allows firms to use valuation techniques based on managerial assumptions and inputs (i.e. rental income and discount rate) when the observable inputs are not accessible. Consequently, firms in AREI have used four major valuation methods to measure fair values for investment property (Ernst & Young, 2012). The first method is the Discounted Cash flow model (hereafter DCF) based on discounting expected future cash flows. This model may require managerial assumptions as model inputs, and is gaining popularity in the AREI community owing to its flexibility in adapting to different situations. The second method is the 'comparable method', which is typically used when comparable transactions in the active markets are available. The third method is the 'yield capitalization method' (Geltner et al., 2001; Ling & Archer, 2013). The last method is known as the 'mixed approach', and generally blends the 'yield capitalization' method and the DCF method (Ernst

& Young, 2012). Of these methods, the yield capitalization method may have the most significant place in practice, as it is commonly used to estimate terminal values: an important input into other methods such as DCF (see Appendix E). Given the complexity of the valuation techniques, it may require significant effort and resource deployment by auditors in order to assess the reliability of the reported fair values.

Although AASB 140 does not require fair values to be estimated by external valuers, it is the preferred method. In practice, fair value estimates in AREI can be from independent valuers, internal valuers (directors) or a mixture of both (mixed valuation). Mixed valuation refers to an approach whereby director valuations are performed at the balance sheet date, independent valuations were conducted during the year, or external appraisers were employed to estimate fair values for properties, in order to confirm the internal valuations (Ernst &Young, 2012). Generally, external appraisals are perceived to be more credible (Muller & Riedl, 2002), therefore, the choice of valuers may influence auditors' judgment on the reliability of the valuation.

Firms that choose to apply fair value measurement under AASB 140 are required to comply with more detailed fair value disclosures specified by IFRS 13. IFRS 13 was issued in 2011 in order to promote transparency and establish a fair value disclosure hierarchy that classifies valuation inputs used in fair value estimates into the three levels (IASB, 2011). Level 1 input is the inputs obtained from quoted prices in an active market for identical assets or liabilities, while Level 2 inputs refer to adjusted observable inputs from the market (i.e. the price of similar properties and the rental rate of similar buildings). Level 3 input is defined as the un-observable inputs typically obtained from corporate information (i.e. the leasing terms, tenants' credit profile, and the discount rate used to perform cash flow projecting). AASB 13, the Australian equivalent to IFRS 13, was mandated in 2013. From an audit perspective, verifying fair values classified as Level 3 can

be riskier, since it may contain management assumptions. Also, IFRS 13 may introduce extra work, as auditors must ensure that managers did not misclassify fair value input hierarchies in order to mislead financial report users (Earley et al., 2014).

4.2 Literature Review and Hypotheses Development

This study stems from two literature threads: (i) that investigating the determinants of audit fees and (ii) that examining the effects of fair value application. Following Jensen and Meckling (1976) and Watts and Zimmerman (1983), I view audit fees as a component of agency costs dealing the agency problem between the owners and the management of a firm. In turn, audit fees represent monitoring costs. I follow Simunic (1980) in viewing audit fees are driven by the risk (future losses) and the costs of production factors (audit resources), as Simunic (1980) theoretical and empirical evidence is essentially cited in literature on audit pricing. According to Simunic (1980), audit fees can be modeled as follows;

$$E(C) = cq + E(d) \times E(\theta)$$

where $E(C)$ is the auditor's expected total costs for the audit engagement or the audit fees; c is the cost of the production factors; q is the quantity of resources that the auditor uses to perform the audit, $E(d)$ is the expected present value of future losses that might occur from a period's audit, and $E(\theta)$ is the likelihood that the auditor will have to pay for such losses. Thus, audit fees are expected to consist of two factors: a resource cost factor (cq) and an expected loss factor ($E(d) \times E(\theta)$). Pratt and Stice (1994) note that, in a competitive market, auditors will use judgment to assess the expected loss factor, and to expend resource costs up to the point where the marginal cost of an additional unit of cost is equal to the marginal reduction in expected losses.

AUASB (2015a) encourages auditors to plan and perform an audit that will obtain reasonable assurance that the financial statements are free from material misstatements. However, the fair value-based measurement system has posed increasing challenges for audit work, because of a high degree of estimation uncertainty. Estimation uncertainty refers to the susceptibility of estimated accounting items and their relevant disclosures that results from inaccuracy in measuring means (AUASB, 2015 (c)). This magnifies the risk of material misstatements in financial reports involving possible management bias (Bell and Griffin 2012; Bratten et al. 2013; Ettredge et al. 2014). Measurement uncertainty arising from fair value inputs and/or model selection can introduce risks, and such risks can be greater when fair value measurement is applied to illiquid assets like real estate properties (Goncharov et al., 2014). To cope with high risk of uncertain fair value estimates, auditors require increased resources (i.e. the training and hiring of valuation specialists) (Glover et al., 2016). In short, this estimation of uncertainty increases audit reputational risk and litigation risk. According to the Simunic (1980) model, the auditor will increase audit procedures and resources to reduce such risks, resulting in an audit fee premium charge.

Prior evidence on the association between fair value reporting and audit fees has documented a positive association between the two (Alexeyeva et al. 2016; Bratten et al., 2013; Ettredge et al., 2014; Mohrmann et al., 2013; Yao et al., 2015). Fair value estimates and reporting can, therefore, magnify audit risk by affecting the environmental factors, task factors and individual auditors (Bratten et al., 2013; Cannon & Bedard, 2017). The environmental factors refer to the uncertain estimates, and regulatory and legal influences, associated with audit reputation perception. An emphasis on auditors' responsibility for fair value accounting, audit task-factors affected by the task difficulties arising from unstructured financial reporting, lack of appropriate audit guidance and management bias, as well as the increase in complexity of fair value estimation, eventually results in the reduction of

individual audit performance, because of insufficient knowledge, experience, professional scepticism and cognitive processing (Bonner, 2008).

From a real estate industry perspective, investment property is the primary asset in a statement of financial position. Thus, fair value estimates for investment properties can increase the uncertainty inherent in real estate firms' financial statements. Also, changes in fair value estimates can have a significant impact on the financial positions and performances of these firms (Danielsen et al., 2009). Given the subjective nature of the input assumptions, moderate changes in fair value inputs can cause substantial changes in reported fair values, thereby, increasing earnings volatility. Highly volatile firms tend to have greater inherent risk that increases the litigation risk of auditors and, thus, audit fees (Huang et al., 2015).

In contrast to the above arguments, auditing production factors (audit resources) may be reduced due to the fact that investment properties constitute the single prominent asset category that dominates real estate firms' balance sheet. As noted, for a typical real estate company, investment properties alone account for 70% of the entity's total assets, on average (Vergauwe & Gaeremynck 2019). Holding other factors constant, with fair value accounting model, this simple balance sheet constitution greatly reduces auditing resources (i.e. time, people, and workload) by avoiding high-volume stocktaking, inventory values verifications, impairment/depreciation estimation testing.

Empirically, evidence provided by Goncharov et al. (2014) supports my postulation that larger fair value exposure on the balance sheet is associated with lower audit fees. They use data from the European real estate industry and find evidence that firms with primary operating assets (investment properties) reported at fair values under IAS 40 have lower audit fees, compared to firms with investment properties stated at depreciated costs. Audit fees, however, are higher for firms who recognised investment properties at fair values on the balance sheet, compared to firms who disclosed the fair value of investment properties

only in the footnotes[25]. Their findings suggest that, without non-recurring impairment, the reporting of investment properties at fair value results in audit fees that are higher relative to those of properties stated at historical cost.

Therefore, I hypothesise that:

H1a: There is a negative association between audit fees and fair value exposure.

H1b: There is a positive association between audit fees and changes in the fair values of investment properties

Using unobservable inputs in fair value estimates for properties may post audit challenges as existing evidence indicates that firms have incentive to use Level 3 valuation inputs to undertake earning managements (Yao et al., 2018). As aforementioned, firms applying the fair value accounting model under AASB 140 are also required to follow the AASB 13 fair value reliability categories. Typically, fair value measurement using Level 3 inputs involves valuation techniques that are underpinned by managerial assumptions and, therefore, pose valuation complexities (Casabona, 2007). Prior evidence reports that fair values with Level 3 inputs are estimated using management's own assumptions or expectations and are, therefore, complex, discretionary, and difficult for auditors to verify. Consequently, audit risks and, hence, audit fees are increased (Ettredge et al., 2014; Goncharov et al., 2014). Also, previous empirical research provides evidence that firms reporting Level 3 fair value assets experience more frequent accounting restatements (Lin et al., 2017) and less accurate analyst's forecasts (Ayers et al., 2017; Magnan, Menini, & Parbonetti, 2015. Hence, in verifying unobservable Level 3 fair values, auditors have to secure additional supportive evidence, to mitigate the risk of material misstatements. For

[25] Under IAS 40, if firms select the cost method to report their investment properties, firms must provide fair values for such investment properties in the footnotes and, thus, Goncharov et al. (2014) study whether audit fees are higher for firms that reported their properties at fair values relative to firms disclosing fair values in the footnotes.

example, Cannon and Bedard (2017) and Glover et al. (2016) report that, to cope with risks arising from fair value estimates classified as Level 3, auditors extend substantial testing approaches, e.g.: (i) managerial assumptions testing; (ii) development of the auditor's valuation with either management assumptions or auditor's assumptions (and/or third-party specialists assumptions); (iii) use of third-party valuation specialists; and (iv) checking of subsequent events related to fair value-estimated transactions for extremely uncertain estimates. These additional substantive tests arising from auditing fair value categorised as Level 3 may drive audit fees.

Alternative to the above augment, the use of Level 3 inputs in determining fair values for investment property may not pose additional risks to auditors, as it is implicitly acceptable practice in the real estate industry. As discussed previously, fair value for investment property reflects expected rental income and, typically, rental income is stable and contractual. Although expected rental income and other fair value features (i.e. vacancy rate and lease terms) are typically unobservable on the market, these pieces of information can be obtained on the auditor's request. Empirically, Vergauwe and Gaeremynck (2019) show that firms employing valuation models to estimate the fair value of their investment properties have provided higher levels of information related to model assumptions, and more accurate fair values. Hence, I posit that in the real estate industry, which lacks Level 1 inputs and relies heavily on Level 3 inputs for fair value estimates (Ernst and Young, 2012), auditors may neither perceive the Level 3 inputs as an incremental risk nor charge higher fees accordingly. Therefore, I hypothesise that:

H2: The audit fees of firms with investment properties being valued with Level 3 inputs are not different from those estimated with Level 2 inputs

Auditors may view fair values estimated by external valuers as relatively less risky as previous studies report that external valuers provide less biased and more accurate fair

value estimates as compared to internal valuers (Dietrich et al., 2000; Muller & Riedl, 2002). With similar perspective, AASB 140 preferred that external valuers perform the fair value estimation. As noted previously, there are three different valuations being used in the AREI: (i) independent valuation, (ii) stand-alone internal or director valuation, and (iii) mixed valuation. The internal valuation may be performed at the end of the year and compared with the values determined by the external valuation at mid-year, or the reverse. AUASB (2015b) advises that internal evidence is weaker (in terms of the reliability) than evidence derived from external sources. Consistently, the prior literature supports an increase in audit risk (litigation risk) emanating from stand-alone director (internal) valuation (Easton et al., 1993; Muller & Riedl 2002; Yao et al., 2015). Although directors are involved in mixed valuation, fair value determination conducted under mixed valuation is monitored by external valuers as a first layer of the monitoring system. From this point of view, it is reasonable to believe that the use of exclusive director valuation in fair value estimates for investment property is of concern with regard to reliability, and may pose audit risks.

Auditors, however, may rely on management assumptions on fair value estimations when verifying fair value estimates for non-financial assets like investment properties and this fact could make the internal valuation more accessible. Unlike financial assets, the values of which auditors can justify using observable market inputs, non-financial fair value assets must be justified by auditors relying on the data prepared by management, which may include management bias. Bratten et al., (2013) and Glover et al., (2016) document that auditors routinely make professional judgments to verify the rationality of management's assumptions, or employ specialists to cope with subjective and uncertain fair values. Both result in higher audit costs. Existing research also suggest that auditors tend to seek advice from a valuation specialist when the client employs a similar specialised consultation service (Cannon & Bedard, 2017). Therefore, fair values can be more credible, but may entail higher

audit total costs as auditors are charged for the consulting fees from specialists if the client uses external valuation.

However, altogether, from the view of credibility of evidence and reliability of uncertain fair values, a stand-alone director valuation seems to bias financial reporting and burden the audit tasks (AUASB, 2015b). Therefore, audit fees would be higher for firms with investment properties valued by directors (the exclusive internal valuation), than they would be for firms using independent and /or mixed valuation. Therefore, I hypothesize that:

H3*:* Firms with investment properties valued by the stand-alone internal valuation (external and mixed valuation) have higher (lower) audit fees, *ceteris paribus*.

4.3 Research Design

4.3.1 Measurement of Variables

4.3.1.1 Dependent Variable

Following previous studies (Choi et al., 2008; Craswell et al., 1995; Ezzamel et al., 1996; Hay et al., 2006; Seetharaman et al., 2002, I use the natural logarithm of the audit fees (*LN_AF*) as a dependent variable in the tests.

4.3.1.2 Independent Variables

The primary independent variable of interest in this study is the reported changes in fair value of investment property (CFV) measured by dividing the CFV by the total assets at year end. In order to capture the effect of reliability differences of CFV on audit fees, I create two different independent variable, namely LEVEL3 and DIR_VAL. LEVEL3 is a dummy

variable coded 1 if firms use Level 3 inputs in fair value estimates for investment properties, and 0 otherwise. DIR_VAL is measured as a dummy variable coded 1 if exclusive director valuation approach is used for investment property fair value measurement and 0 otherwise.

4.3.1.3 Control Variables

I include several known determinants of audit fees. I control for the effect of the size of the audit client (*SIZE*) measured by the natural logarithm of the total assets. *SIZE* is expected to have positive relationship with audit fees. I include *INAR* and *CAPRATE* to control for inherent risks. *INAR* is inventory and account receivables divided by total assets and is expected to be related to audit fees positively (Simunic, 1980). *CAPRATE* is the capitalization rate measured as the ratio of net operating income to property asset value. This reflects risks inherent in property valuation, as noted in section 2, and is expected to be related to audit fees positively. *CR* is a proxy for financial risk and is calculated as the difference between total cash and cash equivalent and short-term liabilities, divided by total short-term liabilities. *LEV* is firm leverage, calculated as non-current liabilities divided by total assets. *CR* and *LEV* are predicted to be positively related to audit fees. *ROA* represents the return on assets, calculated as net income scaled by total assets. Audit quality is proxied by *BIG4*, which is a dummy variable coded 1 if the firm is audited by one of the Big 4 firms. *ROA* (*BIG4*) are expected to be related with audit fees negatively (positively). I also include *TRUST*, a dummy variable coded 1 if the firm is an AREIT and 0 otherwise. *NSEG* represents number of operating segments. *IPTYPE* stands for the number of asset classes (e.g. retail, commercial building and hotel) and *GS* is the geographical segment, coded 1 if investment property is located overseas (outside Australia), and 0 otherwise. *NSEG*, *IPTYPE* and *GS*

capture the complexity of property valuation and should be related positively to audit fees. I additionally included year fixed effect (*YEAR_FE*) and firm fixed effect (*FIRM_FE*).

4.3.1.4 Corporate Governance Variables

I further include the corporate governance measurements in the equation as corporate governance mechanisms may moderate the effects on audit fees in change in fair value assessing. In doing so, I employ three corporate governance proxies including the availability of risk management committees (measured as a dummy variable equal to 1 if firms have a risk management committee and 0 otherwise (*RC*), the frequency of audit committee meetings (*MEET*), and the percentage of institutional unitholders (*OWN*). I expect the negative relationship between given three measurements and audit fees.

4.3.2 Empirical Models

In order to test H1 which predicts that fair value exposure (IP), and the CFV are related to audit fees positively, I develop the following audit fee model.

$$LN\_AF_{i,t} = \beta_0 + \beta_1 IP_{i,t} + \beta_2 CFV_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 CR_{i,t} + \beta_5 INAR_{i,t} + \beta_6 CAPRATE_{i,t} + \beta_7 LEV_{i,t} + \beta_8 ROA_{i,t} + \beta_9 BIG4_{i,t} + \beta_{10} TRUST_{i,t} + \beta_{11} NSEG_{i,t} + \beta_{12} IPTYPES_{i,t} + \beta_{13} GS_{i,t} + \beta_{14} RC_{i,t} + \beta_{15} MEET_{i,t} + \beta_{16} OWN_{i,t} + YEAR\_FE + FIRM\_FE + \varepsilon_{i,t} \quad \ldots\ldots (1)$$

Variable definitions can be found in the Appendix D.

To examine H2 which hypothesises that audit fees of firms with investment properties being valued with Level 3 inputs are not different from those estimated with Level

2 inputs, I include *LEVEL3* in Equation (2) below. Other variables are as specified previously. H2 is supported if coefficient on *LEVEL3* is insignificant.

$$LN\_AF_{i,t} = \beta_0 + \beta_1 LEVEL3_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 CR_{i,t} + \beta_4 INAR_{i,t} + \beta_5 CAPRATE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 ROA_{i,t} + \beta_8 BIG4_{i,t} + \beta_9 TRUST_{i,t} + \beta_{10} NSEG_{i,t} + \beta_{11} IPTYPES_{i,t} + \beta_{12} GS_{i,t} + \beta_{13} RC_{i,t} + \beta_{14} MEET_{i,t} + \beta_{15} OWN_{i,t} + YEAR\_FE + FIRM\_FE + \varepsilon_{i,t} \quad \ldots\ldots (2)$$

In order to test H3 which posits that audit fees are higher for management valuations than for valuations conducted by independent and mixed valuation approaches. I include *DIR_VAL*, a dummy variable coded 1 if the valuation is conducted by exclusive director valuation, and 0 otherwise in following equation. Other variables have been defined previously.

$$LN\_AF_{i,t} = \beta_0 + \beta_1 DIR\_VAL_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 CR_{i,t} + \beta_4 INAR_{i,t} + \beta_5 CAPRATE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 ROA_{i,t} + \beta_8 BIG4_{i,t} + \beta_9 TRUST_{i,t} + \beta_{10} NSEG_{i,t} + \beta_{11} IPTYPES_{i,t} + \beta_{12} GS_{i,t} + \beta_{13} RC_{i,t} + \beta_{14} MEET_{i,t} + \beta_{15} OWN_{i,t} + YEAR\_FE + FIRM\_FE + \varepsilon_{i,t} \quad \ldots\ldots (3)$$

4.4 Sample Selection and Descriptive Statistics

My sample period is from 2007 to 2015.[26] I begin with 2007 because the effective year of relevant accounting standards. The data are obtained from two main sources. First, I collect the following information from the annual reports manually, (i) audit fees, (ii) reported fair values of investment properties at year end, (iii) reported changes in the fair value of

[26] My sample period entails the onset and culmination of the global financial crisis which was most severe during the years 2008 and 2009. As an additional test, I excluded these two periods, and re-ran the regressions (Equation (1)). The coefficients on *IP* and *CFV* remain consistent with the full sample results (coefficient on *IP* is -0.174, significant at p<0.05, and that on CFV is 0.398., significant at p<0.10) (untabulated).

investment properties, (iv) input hierarchies and the assumptions used in fair value estimates, (v) capitalization rate, and (vi) corporate governance information. Second, financial statement information is retrieved from Thomson Reuters DataStream.

The initial sample included a total of 84 listed companies and 756 firm-year observations. I exclude 18 firm-year observations because those firms apply the historical cost method. I then deleted 297 observations because they did not report investment property values (e.g., developers for whom the properties are treated as inventories). Then, I dropped 71 firm-year observations without relevant financial data. The final samples include 370 observations to test the hypotheses. Table 4.1, Panel A, demonstrates the sample selection procedures.

Table 4.1, Panel B shows that audit fees have a mean (median) value of 5.66 (5.49) with a relatively low standard deviation of 1.80. Panel C reports compares audit fees between groups. The univariate t-tests suggest that firms that employ Big 4 auditing firms pay higher audit fees (t-stat -7.68, $p<0.01$). Firms that classify investment properties using Level 3 inputs pay significantly higher audit fees than firms using Level 2 inputs (t-stat = -1.84, $p<0.10$)). Also, firms employing external and mixed valuers pay significantly higher audit fees than firms using the director valuation (t-stat = 3.12, $p<0.01$). Moreover, audit fees paid by AREITs are statistically higher than audit fees paid by AREOCs (t-stat = -7.56, $p<0.01$).

Table 4.1: Sample Selection Procedures, Audit Fees Characteristics, and Audit Fees Classified by Groups

Panel A: Sample selection

	Firm-years observations
Original observations	756
After excluding observations using historical cost method	738
After excluding observations without investment property	441
After excluding observations with missing value of variables	370

Panel B: Audit fees characteristics

Variables	75%	Mean	Median	25%	SD	N
LN_AF	6.28	5.66	5.49	4.39	1.80	370

Panel C: Audit Fees classified by groups

BIG4	Summary of paid audit fees		N
	Mean	SD	
0 (Non-Big4 auditors)	4.57	1.14	101
1 (Big4 auditors)	6.05	1.83	271
Total			370

Note: Difference between the mean of group 0 and group 1 is statistically significant (t-stat =-7.68 = p<0.01)

LEVEL 3	Summary of paid audit fees		N
	Mean	SD	
0 (Level 2 inputs)[27]	5.29	1.40	69
1 (Level 3 inputs)	5.73	1.87	303
Total			370

Note: Difference between the mean of group 0 and group 1 is statistically significant (t-stat = -1.84, p<0.10)

DIR_VAL	Summary of paid audit fees		N
	Mean	SD	
0 (Mixed and external valuation)	5.89	1.94	214
1 (a stand-alone director valuation)	5.32	1.54	156
Total	5.66	1.80	370

Note: Difference between the mean of group 0 and group 1 is statistically significant (t-stat = 3.12, p<0.01)

TRUST	Summary of paid audit fees		N
	Mean	SD	
0 (AREOCs)	4.64	1.02	113
1 (AREITs)	6.08	1.89	259
Total			370

Note: Difference between the mean of group 0 and group 1 is statistically significant (t-stat -7.56, p<0.01)
Variable definitions are provided in Appendix D.

[27] There is no use of Level 1 inputs in fair value estimates for investment properties in the AREI

Table 4.2 reports the descriptive statistics of variables used for tests. Investment properties carried at fair values represent about 70% of total assets of real estate firms, while the reported change in fair values is about four percent of total assets. More than 81% of the sample observations used Level 3 inputs to measure their investment properties. About 42% of the firm-year observations had their fair value valuation performed by their directors. Around 70% of the sample firms were audited by Big4 audit firms. Analysis also indicates that AREITs have higher *IP* and *CFV*. All continuous variables are winsorized at the top and bottom 1% of their respective distributions.

Table 4.3 displays the correlation coefficients among variables. Table 3 reveals that there is a significant negative correlation between *LN_AF* and *CFV* (correlation coefficient = -0.0861, p<0.10), while the correlation between *LN_AF* and *IP* is positive but insignificant. *LN_AF* is significantly and negatively related to *DIR_VAL* (correlation coefficient = -0.151, p <0.10)[28], while the correlation between *LN_AF* and *LEVEL3* input is significantly positive (coefficient = 0.095, p<0.10). Correlation analysis also shows that other control variables (i.e. *SIZE*, *NSEG* and *TRUST*) have a significant association with audit fees, and show the expected positive signs. To eliminate the concern over the multicollinearity, I also run the estimated Variance Inflation Factor (VIF) for every fitted model in the main tests. The mean VIFs range from 1.72 received from fitted model 3 to 1.73 obtained from the fitted model 1. Given that mean VIFs are less than ten, the multicollinearity is not of concern.[29]

[28] The negative correlation between *LN_AF* and *DIR_VAL* can be explained by auditors' decisions to employ valuation specialists when their clients use specialised consultation services, rather than internal valuations and this may consequently increase audit total costs (Cannon & Bedard, 2017). That is, the external and mixed valuation may introduce the audit work/fees, particularly when there is significant different between director and external valuation.

[29] Marguardt (1970) uses a VIF greater than 10 as a guideline for serious multi-collinearity.

Table 4.2: Descriptive Statistics

Panel A: Continuous variables												
Variables	AREITs				AREOCs				Total			
	Mean	Median	SD	N	Mean	Median	SD	N	Mean	Median	SD	N
IP	0.71	0.74	0.29	259	0.47	0.53	0.26	111	0.70	0.68	0.29	370
CFV	0.04	0.02	0.05	259	0.05	0.02	0.05	111	0.04	0.02	0.05	370
SIZE	14.01	13.73	1.70	259	11.94	11.93	1.72	111	13.38	13.28	1.95	370
CR	(0.17)	0.03	1.92	259	1.04	0.06	3.83	111	0.20	0.04	2.70	370
INAR	0.07	0.13	0.13	259	0.21	0.13	0.23	111	0.11	0.02	0.18	370
CAPRATE	0.77	0.77	0.181	259	0.83	0.84	0.134	111	0.78	0.78	0.17	370
LEV	0.28	0.28	0.23	259	0.23	0.20	0.19	111	0.27	0.26	0.22	370
ROA	0.02	0.03	0.12	259	0.03	0.03	0.12	111	0.02	0.03	0.09	370
NSEG	2.56	2.00	1.71	259	3.00	2.85	1.27	111	2.65	2.00	1.59	370
IPTYPE	2.25	2.00	1.36	259	1.95	2.00	0.94	111	2.16	2.00	1.25	370
MEET	4.81	5.00	1.89	259	3.64	3.00	1.81	111	4.45	4.00	1.94	370
OWN	0.71	0.77	0.20	259	0.80	0.83	14.60	111	0.74	0.78	0.19	370

Panel B: Dichotomous variables									
Variables	AREITs			AREOCs			Total		
	Yes (%)	No (%)	N (100%)	Yes (%)	No (%)	N (100%)	Yes (%)	No (%)	N (100%)
LEVEL3	235 (91)	24 (9)	259 (100)	68 (61)	43 (39)	111 (100)	303 (81)	67 (19)	370 (100)
DIR_VAL	106 (41)	153 (59)	259 (100)	50 (45)	61 (55)	111 (100)	156 (42)	214 (58)	370 (100)
BIG4	236 (91)	23 (9)	259 (100)	33 (30)	78 (70)	111 (100)	269 (73)	101 (27)	370 (100)
GS	129 (40)	130 (50)	259 (100)	28 (25)	83 (75)	111(100)	157 (42)	213 (58)	370 (100)
RC	224 (86)	35 (14)	259 (100)	51 (46)	60 (55)	111 (100)	273 (74)	97 (26)	370 (100)

Variable definitions are provided in Appendix D.

Table 4.3: Correlation analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
LN_AF (1)	-																	
IP (2)	0.03	-																
CFV (3)	*-0.09*	***0.17***	-															
LEVEL3 (4)	*0.10*	***0.14***	0.00	-														
DIR_VAL (5)	***-0.15***	-0.05	0.08	0.06	-													
SIZE (6)	***0.69***	*0.10*	***-0.23***	***0.14***	***-0.11***	-												
CR (7)	***-0.14***	-0.06	0.02	-0.03	0.03	***-0.17***	-											
INAR (8)	0.04	***-0.60***	***-0.18***	***-0.24***	*-0.09*	0.02	-0.05	-										
CAPRATE (9)	***-0.17***	***-0.14***	0.00	***0.13***	***-0.15***	***-0.21***	0.06	0.05	-									
LEV (10)	-0.02	***0.22***	0.03	0.06	-0.04	*-0.10*	***-0.11***	***-0.13***	-0.07	-								
ROA (11)	*-0.09*	-0.06	-0.03	0.01	0.07	0.01	0.05	*0.10*	-0.05	*-0.10*	-							
BIG4 (12)	***0.37***	*0.10*	-0.07	***0.21***	-0.02	***0.50***	***-0.26***	0.02	***-0.17***	0.00	0.01	-						
TRUST (13)	***0.37***	**0.37**	-0.04	***0.36***	-0.04	***0.49***	***-0.21***	***-0.35***	***-0.14***	*0.10*	-0.02	***0.62***	-					
NSEG (14)	***0.40***	0.01	-0.07	-0.05	-0.08	***0.29***	-0.05	0.06	-0.03	***-0.14***	*-0.10*	*-0.10*	-0.08	-				
IPTYPE (15)	***0.52***	0.00	0.00	-0.02	-0.01	***0.26***	-0.06	0.00	0.05	0.04	-0.03	0.07	***0.11***	***0.47***	-			
GS (16)	***0.44***	0.05	-0.03	0.03	***-0.30***	***0.41***	***-0.19***	0.00	-0.01	0.00	-0.06	***0.22***	***0.23***	***0.34***	***0.17***	-		
RC (17)	***-0.38***	***0.19***	-0.04	*-0.09*	***-0.12***	***0.46***	***-0.20***	*-0.10*	***-0.19***	***0.14***	-0.04	***0.45***	***0.43***	-0.06	*0.10*	***0.29***	-	
MEET (19)	***0.26***	***0.15***	***-0.13***	***0.11***	***-0.12***	***0.34***	***-0.12***	***-0.13***	-0.03	-0.02	*-0.09*	***0.22***	***0.27***	***0.12***	0.08	*0.09*	***0.21***	-
OWN (18)	0.06	***-0.32***	***-0.14***	-0.02	***0.23***	***0.11***	*0.10*	***0.16***	***-0.12***	***-0.32***	-0.02	***-0.14***	***-0.25***	***0.19***	0.00	0.07	***-0.33***	-0.03

Note: (i) Bold and italicized correlations are significant at p<0.05. (ii) The italicized correlations are significant at p<0.10. (iii) Appendix D, provides variable definitions.

4.5 Results Discussion

4.5.1 Main Test Results

Column (1) of Table 4 shows that the coefficient on *IP* is negative and significant (coefficient = -0.145, t-stat = -2.01, p<0.10), as predicted. In terms of economic significance, the estimated coefficients suggest that a one standard deviation increase in *IP* will result in the decrease in logged audit fees by 4% (-0.145*0.29). This finding is in line with the finding of Goncharov et al. (2014). The result suggests that auditors of real estate firms can benefit from economies of scale that stem from a relatively large proportion of investment properties reported at fair values. In turn, findings imply that auditing production factors affecting audit fees can be mitigated since investment properties constitute the single prominent asset category that dominates real estate firms' balance sheet. Holding other factors constant, under the fair value accounting-model, this simple balance sheet constitution greatly reduces auditing resources by avoiding verifications of carrying amount of high volume of complicated financial instruments, receivables and inventory. The coefficient on *CFV* is positive and marginally significant (coefficient = 0.501, t-stat = 2.18, p<0.05). The estimated coefficient suggests that a one standard deviation increase in *CFV* increases logged audit fees by 2.5% (0.501*0.05). This finding is consistent with our argument that increases in the magnitude of fair value change will result in increases in audit tasks and, thus, audit fees. In other words, verification and reasoning fair value measurement inputs and/or model selection that cause changes in fair value periodically can increase audit resources as, to cope with uncertain accounting estimates, auditors may require increased resources (i.e. timing and hiring of valuation specialists) (Glover et al. 2016). Consequently, auditors adjust the audit fees according to the higher cost of audit production (Simunic 1980). Therefore, if the engagement team works on the audit plan wisely, the advantage from auditing firms

with large scale of investment property can still out-weigh the disadvantage arising from reasoning changes in fair value. Overall, H1a and H1b are evident.

Consistent with the literature, *SIZE* and *INAR* are associated with audit fees positively (coefficient = 0.174, t-stat = 2.24, p<0.05, and coefficient = 0.245, t-stat = 1.71, p, <0.10), while the coefficient of the *CAPRATE* significantly negative (coefficient = -0.042, t-stat = -2.19, p<0.05). *TRUST* is significantly associated with audit fees (coefficient = 0.429, t-stat = 4.77, p<0.01). The coefficients on *NSEG*, *IP_TYPE* and *GS* are positive significant (coefficient = 0.096, t-stat = 1.85, p<0.10, coefficient = 0.017, t-stat = 1.88, p<0.10, and coefficient = 0.372, t-stat = 2.37, p<0.05, respectively), indicating that number of operating segments, different classes and geographical segments of investment properties increase audit fees.

In terms of corporate governance variables, the results show that the firm with an operational risk committee pays lower audit fees (coefficient =-0.260; t-stat = -1.76, p<0.10). The coefficient on *OWN* is insignificant, whilst that on *MEET* is positive (coefficient =0.065, t-stat=2.98, p<0.01). Audit committees review audit results, and communicate with external auditors in relation to financial reporting issues (Smith, 2003) and, thus, the frequency of the meetings and subsequent communications with external auditors may lead to higher audit fees. Importantly, the coefficients on *IP* and *CFV* remain consistent with the baseline results.

The ordinary least squares (OLS) regression estimates of the determinants of ARL as a function of auditor and other controls works well, as long as the choice of audit firms remains random. However, firms choose particular auditors as a response to certain firm-specific characteristics (Chaney et al, 2004). To control for such self-selection effects in the audit pricing model, I employ the Heckman two-stage test (Heckman, 1979). In the first stage probit model, I regress the choice of large audit firms (*AUDIT*, a dummy

variable coded 1 for firms employing Big 4 audit firm, and 0 otherwise) on some of the likely determinants of the auditor choice decision, e.g., *SIZE, LEV, INAR, CAPRATE, ROA, TRUST, NSEG, TPTYPE,* and *GS.* Second, I run the base-line regression including the Inverse Mills Ratio (*IMR*) from the first stage as an additional independent variable. Untabulated results report that inferences remain unchanged (the coefficients on *IP* and *CFV* are -0.165 and 0.408 respectively, both significant at $p<0.05$). The coefficient on *IMR* is insignificant. Lennox, Francis, and Wang (2011) argue that it is important to impose exclusion restrictions in implementing the Heckman two-stage regression, even though the *IMR* can be identified by its nonlinear arguments. Using the industry average *CFV* would have served my purpose, but given that I am using data from one industry, I could not perform this test.

Table 4, Column (2), reports findings from H2 which posits that incorporating Level 3 inputs in fair value estimates for investment properties does not incrementally affect audit fees. The coefficient on *LEVEL3* which, is the variable of interest, is insignificantly associated with audit fees. This insignificant finding suggests that auditors do not perceive the fair values of investment properties classified as Level 3 as a marginal risk, as this is an implicitly acceptable practice in the AREI. Therefore, my H2 is supported. Interferences on control variables and corporate governance measurements are consistent with previous discussion.

Table 4 Column (3) shows the findings from H3, which hypothesizes that firms using the exclusive director valuation in determining the fair value of properties, paid higher audit fees than did firms using mixed and external valuation. Unexpectedly, *DIR_VAL* which is the variable of interest is negatively and significantly associated with audit fees, and suggests that director valuation reduces audit fees (coefficient = -0.184, t-

stat = -1.95, $p<0.10$). Hence, H3 is rejected. Inferences regarding control variables and corporate governance measurements are consistent with previous discussion.

Table 4.4: Fair Value Exposures, the Effect of Level 3 inputs and Director Valuation Only on Audit Fees

This table reports OLS regression results of audit fees on investment properties and changes in fair value of investment properties for a sample of listed Australian real estate firms for the 2007 to 2015 sample period. Robust t-statistics in brackets, *** p<0.01, ** p<0.05, * p<0.10. Variables are defined in Appendix D.

Variables	Pred.	(1) CFV	(2) Fair value inputs	(3) Sources of valuers
Intercept		-1.117*	-1.492**	-1.302**
		[-1.77]	[-2.04]	[-2.00]
IP	+	-0.145**	-	-
		[-2.01]		
CFV	+	0.501**	-	-
		[2.18]		
LEVEL3	?	-	0.034	-
			[1.11]	
DIR_VAL	+	-	-	-0.184*
				[-1.95]
Control Variables				
SIZE	+	0.174**	0.198**	0.162**
		[2.24]	[2.31]	[2.48]
CR	+	0.016	0.025	0.013
		[0.87]	[0.92]	[0.77]
INAR	+	0.245*	0.367**	0.127**
		[1.71]	[2.27]	[2.32]
CAPRATE	-	-0.042**	-0.041**	-0.039**
		[-2.19]	[-2.39]	[-2.22]
LEV	+	0.191*	0.249*	0.197*
		[1.80]	[1.84]	[1.94]
ROA	-	-0.967**	-1.121**	-0.123**
		[-2.21]	[-2.12]	[-2.01]
BIG4	+	0.201	0.214	0.183
		[1.25]	[1.42]	[1.16]
TRUST	+	0.429***	0.430***	0.437***
		[4.77]	[5.14]	[4.50]
NSEG	+	0.096*	0.093*	0.090*
		[1.85]	[1.72]	[1.71]
IP_TYPE	+	0.017*	0.009*	0.017**
		[1.88]	[1.92]	[2.18]
GS	+	0.372**	0.387**	0.213**
		[2.37]	[2.48]	[2.12]
Corporate Governance Variables				
RC	-	-0.260*	-0.285*	-0.264*
		[-1.76]	[-1.71]	[-1.78]
MEET	-	0.065***	0.066***	0.068***
		[2.98]	[2.90]	[3.17]
OWN	-	-0.002	-0.051	-0.002
		[-0.52]	[-0.67]	[-0.44]
VIF		1.76	1.72	1.73
Year fixed effect		Yes	Yes	Yes
Firm fixed effect		Yes	Yes	Yes
Observations		370	370	370
Adj. R^2		0.63	0.65	0.64

4.5.2 Further Analysis on the Effect of Level 3 inputs - H2

I conducted a sensitivity test to examine whether the effect of fair value input levels mandated by IFRS 13/AASB 13 is sensitive to the method I used to measure the dummy variable, *LEVEL3*, for the observations before 2013 as the commencement of IFRS 13 is in 2013. For this robustness test, I classified fair value measurement of investment properties as *LEVEL3*, coded 1 if firms use a valuation model exclusively with managerial assumptions (*MODEL_ONLY*) in property valuing, and 0 otherwise, following the definition of fair value hierarchy specified by IFRS 13 and the work of Vergauwe and Gaeremynck (2019). I then re-estimate the equation (2) and (un-tabulated results) find the inferences of H2 unchanged (coefficient on *MODEL_ONLY* = 0.021, insignificant).

4.5.3 Further Analysis on the Effect of Director Valuation - H3

Literature suggests that auditors face difficulty in obtaining sufficient information to verify the proprietary models or assumptions used in calculations by external valuers; and there is lack of clear guidance on how to cope with dramatically different calculations between external valuers and independent auditors (Cannon & Bedard, 2017). Both approaches, i.e., checking the subsequent events relevant to the market values of properties, and using audit firms' in-house specialists to verify the calculations, can contribute to additional audit tasks. This could exert a more significant effect in mixed valuation scenarios. Moreover, Glover et al. (2016) noted that when the client uses specialists to perform fair value measurements, auditors tend to use specialists as well (either in-house or outsourced valuers), and this introduces audit costs, although the appraisers do increase the credibility of fair values. In this situation, auditors may prefer a management valuation model, after weighing the risks arising from the management

bias inherent in director valuation, against the benefits of reducing audit effort in obtaining evidence.

To support this argument, we conduct further analysis by dividing the sample into those using director valuation solely and sub-samples using mixed and external valuation. The results presented in Table 5 show that *CFV* is statistically and positively significant for firms using non-director valuation (coefficient = 2.154, t-stat = 2.20, $p<0.05$), but not for firm-years using the director valuation approach. We also compare regression coefficients across groups using Wald tests[30], and the results indicate that the difference is economically significant ($p<0.10$). The findings are contrary to those of Dietrich et al., (2000) and Muller and Riedl (2002). Using a sample of UK investment property, Dietrich et al. (2000) examine the reliability of investment properties' estimates conditional on the source of valuers, and find that external valuers provide less biased and more accurate estimates relative to internal valuers or managements. With a similar research design and question, Muller and Riedl (2002) study the associations between external monitoring and investment property appraisal estimates, and information asymmetry measured with bid-ask spreads, and report that markets perceive information asymmetry to be less when their sample firms employ external valuers, rather than internal valuers. However, my study has a different focus on auditor perception of audit production and costs associated with fair value application under the new fair value accounting standards, and *the results shed light on the trade-off between audit costs and benefits*.

[30] See Liao (2011) for the use of a Wald test to examine if the coefficients are equal across groups

Table 4.5: Sub-sampling analysis

This table reports the baseline regression model results of audit fees on investment properties and changes in fair value of investment properties for subsamples; firms using level 3 inputs versus level 2 inputs and director valuation versus non-director valuation. Column (3) and (6) present Wald chi-square test results examining whether coefficients differ across groups. T-statistics in brackets, *** p<0.01, ** p<0.05, * p<0.10. Variables are defined in Appendix D.

	Level 3 VS Level 2			Director VS Non-Director valuation		
	(1)	(2)	(3)	(4)	(5)	(6)
	Level 3 inputs	Level 2 inputs	Diff. in	Solely directors	Mixed & external	Diff. in
Variables	Ln_AF	Ln_AF	Effects	Ln_AF	Ln_AF	Effects
Intercept	-0.818*	-4.018*		-2.637***	-1.356*	
	[-1.84]	[-1.76]		[-2.94]	[-1.79]	
IP	-0.261	-0.764	1.590	-0.301	-0.221	0.030
	[-0.87]	[-0.96]		[-1.04]	[-0.50]	
CFV	1.012*	-0.766	0.920	0.737	2.154**	3.154*
	[1.79]	[-0.25]		[0.72]	[2.20]	
SIZE	0.388***	0.443*	3.110*	0.522***	0.329***	3.720*
	[7.98]	[1.81]		[11.44]	[3.40]	
CR	0.013	0.092**	3.010*	0.007	0.029	0.160
	[0.46]	[2.27]		[0.29]	[0.79]	
INAR	0.719	2.416	0.770	0.402	1.943**	3.670*
	[1.35]	[1.34]		[0.83]	[2.32]	
CAPRATE	-0.128***	0.408*	8.630***	-0.004	-0.124**	3.430*
	[-3.19]	[1.97]		[-0.09]	[-2.27]	
LEV	0.732**	0.862	7.170***	0.034	0.788*	1.910
	[2.28]	[1.09]		[0.10]	[1.83]	
ROA	-0.739	-1.546*	0.180	-1.448*	-1.087*	0.150
	[-1.26]	[-1.92]		[-1.77]	[-1.89]	
BIG4	0.146	-0.635	1.000	-0.093	0.237	0.870
	[0.68]	[-1.17]		[-0.36]	[0.89]	
TRUST	0.133**	0.878*	0.600	0.166*	0.752*	2.250
	[2.17]	[1.81]		[1.82]	[1.94]	
NSEG	0.144***	0.059**	0.850	0.042**	0.277***	7.230***
	[2.75]	[2.21]		[2.58]	[3.62]	
IP_TYPE	0.531***	0.048	3.500*	0.273***	0.546***	5.740**
	[8.75]	[0.13]		[3.22]	[7.44]	
GS	0.636***	0.061	1.020	0.604***	0.403*	1.791
	[3.62]	[1.350]		[2.98]	[1.95]	
Corporate governance variables						
RC	-0.231*	-0.219	0.010	-0.288*	-0.099	1.030
	[-1.74]	[-0.41]		[-1.89]	[-0.35]	
MEET	0.018**	0.003	5.56**	0.073*	0.020	0.950
	[2.09]	[0.04]		[1.87]	[0.38]	
OWN	-0.001	-0.010	0.410	-0.005	-0.002	0.450
	[-0.13]	[-0.51]		[-0.79]	[-0.30]	
Year fixed effect	Yes	Yes		Yes	Yes	
Firm fixed effect	Yes	Yes		Yes	Yes	
Observations	303	67		156	214	
Adj. R^2	0.66	0.64		0.77	0.62	

4.6 Alternative Research Setting

There may be concerns over my research design, as the first model includes both *IP* and *CFV,* where *CFV* is viewed as a component of *IP*. I reassess the results of the primary findings by using alternative measurements and models. I create *FV_EXPOS* to capture the fair value exposure, calculated in two steps. I, first calculate the ratio of investment property (stated at fair values) to total assets. Second, I create a dummy variable coded 1 for firms having this ratio above its mean value, and 0 otherwise. I then develop the following model to test the effect of *FV_EXPOS* on audit fees.

$$
\begin{aligned}
LN\_AF_{i,t} \quad = {} & \beta_0 + \beta_1 FV\_EXPOS_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 CR_{i,t} + \beta_4 INAR_{i,t} + \beta_5 CAPRATE_{i,t} \\
& + \beta_6 LEV_{i,t} + \beta_7 ROA_{i,t} + \beta_8 BIG4_{i,t} + \beta_9 TRUST_{i,t} + \beta_{10} NSEG_{i,t} \\
& + \beta_{11} IPTYPES_{i,t} + \beta_{12} GS_{i,t} + \beta_{13} RC_{i,t} + \beta_{14} MEET_{i,t} \beta_{15} OWN_{i,t} \\
& + YEAR_{FE} + FIRM_{FE} + \varepsilon_{i,t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots . (4)
\end{aligned}
$$

Results shown in Table 4.6, Column (1), report the negative association between *FV_EXPOS* and audit fees (coefficient = -0.133, t-stat = -2.21, p<0.05). Thus, the inference is unchanged.

(2)

I then reassess the effect of CFV on audit fees separately. In doing so, I re-create the CFV calculated by the reported changes in fair value of investment property divided by the carrying amount of investment property, as at the beginning of the accounting year, to capture the scale of changes in values. For this reassessment, I also consider the potential misspecification of the model if fair value exposure is not observed, since *IP* and *CFV* are highly correlated (Wooldridge, 2009). This means that OLS results could be biased, because the scale of investment properties is correlated with the error terms of the OLS. I therefore alleviate these concerns by adopting a 2SLS approach. I use *IPACQUIS*: the acquisition of investment properties in the fiscal year scaled by total assets, as an instrumental variable for the first stage regression. Although *IPACQUIS* can directly

enlarge the scale of investment properties, the level of audit fees may not be directly influenced by the firms' investment in properties. Property acquisitions may be perceived as growing business, and expected income factors compensating business, when auditors assess business risks. In the second stage, I use the predicted value of *IP*, which is denoted as *PIP*, and include it as follows:

$$LN\_AF_{i,t} = \beta_0 + \beta_1 CFV_{i,t} + \beta_2 PIP_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 CR_{i,t} + \beta_5 INAR_{i,t} + \beta_6 CAPRATE_{i,t} + \beta_7 LEV_{i,t} + \beta_8 ROA_{i,t} + \beta_9 BIG4_{i,t} + \beta_{10} TRUST_{i,t} + \beta_{11} NSEG_{i,t} + \beta_{12} IPTYPES_{i,t} + \beta_{13} GS_{i,t} + \beta_{14} RC_{i,t} + \beta_{15} MEET_{i,t} \beta_{16} OWN_{i,t} + YEAR\_FE + FIRM\_FE + \varepsilon_{i,t} \quad (5)$$

Table 4.6, Column (2) shows that there is a significant and positive association between *CFV* and audit fees (coefficient = 0.877, t-stat = 1.85, p<0.10). The findings are consistent with my primary test results. I further investigate whether Gain versus Loss on *CFV* moderates the effect of *CFV* on audit fees (findings are reported in the Column (3) of Table 6.

Collectively, I conclude that my H1 is partially supported.

I also reassess the effect of the interaction of *CFV* and *LEVEL3 (CFV*LEVEL3)*, and of *CFV* and *DIR_VAL (CFV*DIR_VAL)* on audit fees, using the following equations.

$$LN\_AF_{i,t} = \beta_0 + \beta_1 CFV_{i,t} + \beta_2 LEVEL3_{i,t} + \beta_3 CFV * LEVEL3_{i,t} + \beta_4 PIP_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 CR_{i,t} + \beta_7 INAR_{i,t} + \beta_8 CAPRATE_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} ROA_{i,t} + \beta_{11} BIG4_{i,t} + \beta_{12} TRUST_{i,t} + \beta_{13} NSEG_{i,t} + \beta_{14} IPTYPES_{i,t} + \beta_{15} GS_{i,t} + \beta_{16} RC_{i,t} + \beta_{17} MEET_{i,t} + \beta_{18} OWN_{i,t} + YEAR_{FE} + FIRM_{FE} + \varepsilon_{i,t} \quad (6)$$

$$LN\_AF_{i,t} = \beta_0 + \beta_1 CFV_{i,t} + \beta_2 DIR\_VAL_{i,t} + \beta_3 CFV * DIR\_VAL_{i,t} + \beta_4 PIP_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 CR_{i,t} + \beta_7 INAR_{i,t} + \beta_8 CAPRATE_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} ROA_{i,t} + \beta_{11} BIG4_{i,t} + \beta_{12} TRUST_{i,t} + \beta_{13} NSEG_{i,t} + \beta_{14} IPTYPES_{i,t} + \beta_{15} GS_{i,t} + \beta_{16} RC_{i,t} + \beta_{17} MEET_{i,t} + \beta_{18} OWN_{i,t} + YEAR_{FE} + FIRM_{FE} + \varepsilon_{i,t} \ldots\ldots \quad (7)$$

Table4.6, Column (4) and (5) report the effects of *LEVEL3* and *DIR_VAL* on audit fee pricing, respectively. Findings indicate that *LEVEL3* does not moderate the effect of *CFV* on audit fees. The coefficient of *CFV*DIR_VAL* is negative and significant with audit fees (coefficient = -1.198, t-stat = -1.77, p<0.10). The inferences on the effect of *LEVL3* and *DIR_VAL* on audit fees are consistent with my primary tests and results. Overall, H2 is supported while H3 is rejected.

Table 4.6: Findings from alternative settings

This table reports the findings from alternative settings. Column (1) demonstrates results from a robust check regarding an alternative proxy for fair value exposure using OLS Equation (4). Column (2), (3), (4) and (5) present the findings from the CFV conditional on fair value features (i.e. Gain/Loss, fair value inputs, source of valuers) using a 2SLS approach. T-statistics in brackets, *** p<0.01, ** p<0.05, * p<0.10. Variables are defined in Section 4.3 and Appendix D.

		OLS	2SLS			
VARIABLES	Pred.	(1) FV exposure	(2) CFV (Baseline)	(3) Gain/Loss	(4) Fair value inputs	(5) Valuer source
Intercept		-1.670*	0.083**	0.195**	1.329**	0.859*
		[1.82]	[2.06]	[2.14]	[2.30]	[1.70]
FV_EXPOS (H1)	+	-0.133**	-	-	-	-
		[-2.21]				
PFVEXPOSE	-	-	-0.878*	-0.858*	-0.813*	-0.980**
			[-1.84]	[-1.83]	[1.71]	[-2.01]
CFV (H1)	+	-	0.877*	1.001*	0.949*	1.094**
			[1.85]	[1.77]	[1.72]*	[2.46]
GAIN	?	-	-	0.022	-	-
				[0.41]		
*CFV*GAIN*	?	-	-	0.119	-	-
				[0.39]		
LEVEL3	?	-	-	-	0.019	-
					[1.17]	
*CFV*LEVEL3 (H2)*	?	-	-	-	0.224	-
					[1.03]	
DIR_VAL	+	-	-	-	-	-0.124*
						[-1.79]
*CFV*DIR_VAL (H3)*	+	-	-	-	-	-1.198*
						[-1.77]
Control variables						
SIZE	+	0.208**	0.331**	0.334**	0.223**	-0.331**
		[2.17]	[2.21]	[2.23]	[2.37]	[-2.20]
CR	+	0.006	0.002	0.002	0.004	0.004
		[0.74]	[0.23]	[0.27]	[0.46]	[0.45]
INAR	+	0.026**	0.051	0.065	0.140	0.120
		[2.10]	[1.18]	[1.23]	[1.32]	[1.39]
CAPRATE	-	-0.031*	-0.041**	-0.042**	0.817*	-0.043**
		[-1.70]	[-2.13]	[-2.35]	[1.87]	[-2.10]
LEV	+	0.238	0.067	0.062	0.037	0.016
		[1.72]*	[0.26]	[0.24]	[0.78]	[0.06]
ROA	-	-0.247	-0.011*	-0.004**	-0.013*	0.129*
		[-0.94]	[-1.74]	[-2.01]	[-1.75]	[1.88]
BIG4	+	0.208	0.013	0.007	0.039	0.049
		[1.40]	[0.07]	[0.03]	[1.52]	[0.23]
TRUST	+	0.555**	0.111**	0.125**	0.115***	-0.194**
		[2.54]	[2.30]	[2.34]	[3.95]	[-2.57]
NOSEG	+	0.013*	0.018**	0.019**	0.064**	0.017**
		[1.83]	[2.48]	[2.48]	[2.40]	[2.40]
IPTYPES	+	0.107*	0.003	0.001	0.119	0.116
		[1.76]	[1.03]	[1.01]	[0.92]	[1.45]
GS	+	0.489***	0.005	0.007	0.107	0.223
		[2.97]	[1.02]	[1.02]	1.32]	[1.73]

Table 4.6: Continued

VARIABLES	Pred.	OLS (1) FV exposure	2SLS (2) CFV (Baseline)	(3) Gain/Loss	(4) Fair value inputs	(5) Valuer source
Corporate governance						
RC	-	-0.080*	-0.022**	-0.024**	-0.063*	-0.008**
		[-1.75]	[-2.13]	[-2.14]	[-1.88]	[-2.05]
MEET	-	-0.063	-0.004	-0.006	-0.061**	-0.004
		[-0.66]	[-0.11]	[-0.16]	[-2.54]	[-0.09]
OWN	-	-0.003	-0.002	-0.001	-0.002	-0.001
		[-0.50]	[-0.08]	[-0.08]	[-0.42]	[-0.12]
Year fixed effect		Yes	Yes	Yes	Yes	Yes
Firm fixed effect		Yes	Yes	Yes	Yes	Yes
F-tests on interaction effect						
GAIN				1.09		
LEVEL3					1.03	
DIR_VAL						3.21*
Compared to the baseline model						
Incremental F-test				1.45	2.65*	2.65*
Likelihood ratio test				3.12	5.67*	5.28*
Observations			370	370	370	370
Adj. R-squared			0.62	0.63	0.64	0.64

4.7 Conclusion

This paper aims to fill a research gap in the effect of fair value accounting on audit fees in the real estate industry, where an active market is unavailable. It examines real estate firms' audit fees determinants focusing on three dimensions of IAS40 and IFRS13, including (i) the magnitude of fair value reporting of investment property, i.e. the scale of investment property stated at fair values and changes in such values, and (ii) the source of inputs used in fair value estimates, and (iii) the source of valuers conducting the valuation.

Studying a sample of Australian real estate firms over the period from 2007 to 2015, I find a negative relationship between the proportion of investment properties stated at fair values and audit fees. I also find a positive association between the changes in fair values and such audit fees. In addition, the results show that using Level 3 inputs in fair

value estimates does not increase audit fees. Inconsistent with my hypothesis, is my finding that firms using director valuation reported lower audit fees, compared to firms hiring external and mixed valuers to conduct fair value estimates.

The findings have important implications for auditors and companies. The results suggest that fair value accounting for investment property can pose audit challenges and costs related to the monitoring of property value changes. However, auditors could benefit from auditing clients having a relatively larger proportion of investment property, as investment property generally covers about 70% of real estate firms' total assets. The findings also suggest that in the real estate industry, implementing fair value measurement categorized as Level 3, and director valuation, do not always introduce audit risk and increased fees. As there is no centralized market for investment properties, directors' specific knowledge embedded in managerial assumptions and valuation could provide advantages to auditors in terms of accessibility.

CHAPTER FIVE – CONCLUSIONS AND IMPLICATIONS

5.1 Conclusion

This research aims to offer insightful evidence for the fair value debate by investigating the information usefulness of the CFV of investment properties and the effect of such information on the monitoring costs in the real estate industry. Specifically, I investigate the value relevance of CFV of investment property reported and disclosed under IAS 40 Investment Property and IFRS 13 Fair Value Measurement, conditional on factors including the source of fair value inputs, the source of valuers and disclosure quality, from the equity investor's and debtholders' perspectives. I further investigate the effect of fair value application for an investment property on audit fees.

In the first essay, by using hand collected-data spanning over 2007 – 2015 to study the association between stock returns and CFV, the empirical evidence suggests that investors consider CFV to be sufficiently reliable and relevant for making investment decisions. The results also indicate that the use of unobservable inputs does not reduce the value-relevance of the CFV information, suggesting that such inputs at least provide comparable information about property values for real estate firms, and hence are useful to investors in economic decision making. I further document that the value-relevance of CFV is greater for firms using external or mixed valuation methods than for firms using stand-alone director valuation approach. However, I fail to document the moderating effects of disclosure quality on the value-relevance of CFV. This is perhaps due to the fact that companies in the AREI are likely to disclose capitalisation rates, which appear to be the information most relevant to property values. As long as this piece of information is disclosed, equity investors can access the key indicators related to CFV from other sections of annual reports.

Essay Two reports a statistically significant negative relationship between CFV and the cost of debt. This suggests that CFV is decision-useful in debt pricing as it depicts the relative desirability of firms' properties and thus mitigates the information-based risk to uninformed debtholders on property values. The results also demonstrate that this relationship is more pronounced when the CFV is positive, which is consistent with the theory that recognised gain on fair value changes display the positive expected future cash flow of the rental income and hence lower the cost of debt. The findings also show that adopting Level 3 inputs in fair value estimates for investment properties does not always damage the information-usefulness of fair values, but the exclusive use of director valuation decreases the information content of value changes. Moreover, the findings reveal that extensive fair value measurement disclosure does not improve the debt pricing decision usefulness of fair value information.

Essay Three reports a negative (positive) association between fair value exposure (changes in fair values of investment properties) and audit fees. The results indicate that auditors can benefit from audit clients having relatively a larger fair value exposure, by simplifying the procedures used to validate investment property stated at fair values. However, verifying *changes* in fair values can drive up audit production processes and costs. These results remain unchanged after conducting robust checks. I further report that the use of Level 3 inputs in fair value estimates does not cause additional audit risk and audit fees. In contrast to my initial expectations, I find that firms employing external and mixed valuers to determine fair values for their investment properties paid higher audit fees than firms using stand-alone director valuation. This is perhaps due to the fact that auditors typically use independent valuation specialists' work if a client utilises valuation specialists, and therefore incur an extra layer of cost to the audit engagement (Cannon & Bedard, 2017; Glover et al., 2016). Also, anecdotal

evidence reports that auditors could have difficulties understanding and obtaining sufficient information from the proprietary models and assumptions used by external valuers, and, hence, demand higher fee premiums.

5.2 Research Implications and Contributions

5.2.1 Research Implications

This research has important implications for the accounting standards domain, key capital providers, auditors, and real estate companies. First, in order to gain the benefit from directors' specific asset knowledge and external valuers' creditability, I suggest accounting standard-setters consider requiring firms to employ the mixed valuation approach if the benefits of doing so outweigh the costs. The cost to be considered for implementing such a practice may arise from additional audit fees, which echoes with the findings of the Essay Three, which reveal that firms using mixed and independent valuation paid higher audit fees. Second, the IASB called for additional evidence to have a better understanding of the post-implementation effects of the IFRS 13 (IASB, 2017). The findings relate to additional disclosures imply that the extensive disclosure requirements under this standard may be a wasteful practice and may cause information overload. Third, my findings suggest that companies and auditors can be more liberal on fair value measurements classified as Level 3, as long as due diligence is carried out in selecting such inputs, because the use of Level 3 inputs in fair value estimates for investment property neither diminish the information-usefulness of such estimated values nor increase the cost of debt. Moreover, the findings indicate firms with greater investment properties stated at fair values may require lower audit resources due to auditors can benefit from avoiding verifying other complicated balance sheet items (i.e.

stock valuing and impairment testing), which is consistent with the argument made by Goncharove et al. (2014).

5.2.2 Research Contribution

My research contributes to the fair value reporting research stream in several ways. First, I provide insightful evidence on fair values of investment properties are decision-useful to capital providers in making an economic decision, despite it is considered to be subjective in the fair value estimation at first glance. Second, Barth et al. (2001) note a limitation that the majority of the value-relevance research implications reflect joint implications for both relevance and reliability. My study contributes to address this limitation by reporting that, from capital providers' perspectives, adopting Level 3 inputs in fair value estimates does not diminish the information content fair values. Third, I provide empirical evidence on the decision usefulness of fair value information to debtholders, which is limited in the literature related to the value relevance of accounting information (Holthausen & Watts, 2001).

My research also contributes to the auditing literature in the following ways. First, I offer insightful evidence in that auditors can benefit from auditing firms holding large scale of investment properties stated at fair values, while valuation changes can drive audit workload and fees. Second, my study contributes to fair value accounting and audit fees research by reporting alternative implications that adopting Level 3 inputs in fair value estimates does not always drive additional audit risks and fees. In addition, the findings from my research suggest that while utilising independent valuers may appear to be the preferable choice at first glance, the additional costs, including valuation fees and

audit workload to understand and assess propriety external valuations, may make the choice less preferable.

5.3 Limitations of the Research and Suggestions for Future Research

The main limitation of this study is that the small number of firm-year observations and the unique characteristics of the AREI may raise the concerns over the generalisability. In addition, my research cannot be more comprehensive as I cannot test the effect of fair value application for an investment property on the information environment. This is because the coverage of the market data such as analyst forecasts, analyst following, and share prices, etc, in the AREI is not generally available.

The limitations mentioned above, however, further opens the opportunities for future research. As empirical evidence of this research indicate that fair value information is value relevant to capital providers in making economic decisions, it will be interesting for future research to investigate whether such information enhances the information environment in the real estate context. For example, studying the effect of fair value accounting applied to investment properties on analysts' forecast of accuracy and the deviation of share prices from firms' net asset values (NAV) could provide more insightful evidence. This will require access to more comprehensive data.

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Appendix A: Variable Definitions – ESSAY ONE

Variables	Definition
RET(7d)	Cumulative market-adjusted stock returns calculated for the seven-day event window, starting three days before and ending three days after the preliminary earnings announcement date.
RET(1m) and RET(3m)	Cumulative market-adjusted stock returns calculated for one- and three-month event windows, beginning from the preliminary final report's announcement date.
EARN	Earnings before changes in fair value of investment properties scaled by the market value at the beginning of the accounting year
Δ*EARN*	The difference between earnings before changes in fair value of investment properties in the current year and the previous year, scaled by the market value at the beginning of the accounting year
CFV	Changes in fair value of investment properties reported in the statement of the comprehensive income statement, scaled by the market value at the beginning of the accounting year
LEVEL3	Dummy variable codded one if fair values of investment properties are classified as level 3 fair value, and zero otherwise.
DIR_VAL	Dummy variable which is set equal to one if fair values of investment properties of firms are valued by firms' directors exclusively, and zero otherwise.
DISCL	Dummy variable coded 1 if firms have the sum of disclosure indices lower than the median of total samples, 0 otherwise. Sum of disclosure indices constructed as (1) *DISRATE* coded 1 if firms reveal discount rate, 0 otherwise, (2) *VACAN* valued 1 if firms disclose vacancy rate, 0 otherwise, (3) *EXPRENT* taking the value of 1 if firms disclose expected rental incomes and operating expenses, 0 otherwise, (4) SEN_*QUALI* coded 1 if firms provide qualitative sensitivity analysis fair value measurement according to change in unobservable assumptions, 0 otherwise, and (5) SEN_Q*UANTI* is measured as 1 if firms provide quantitative analysis for that fair value estimates sensitivity analysis, 0 otherwise. Hence, the maximum value is 5 and the minimum is 0.
SIZE	The natural logarithm of the market value of equity as at the beginning of accounting year and is derived from Thomson Reuters DataStream.
GROWTH	Market to book value ratio as at the beginning of accounting period and is obtained from the Thomson Reuters Datastream.
LEV	The ratio of mortgages and other interest-bearing liabilities to the market values of real estate and obtained from the annual reports of sample firms.
CAPRATE	The capitalization rate which is the fundamental rate of return of investment property calculated as net operating income divided by market value of property and is obtained from firm annual reports.
BIG4	Dummy variable coded one if firms employed Big 4 auditing firms, zero otherwise.
RC	Dummy variable which is set equal to one if firms have a risk management committee, zero otherwise. RC is obtained from the annual report.
MEET	The frequency of audit committee meetings and is obtained from the annual report.
OWN	The percentage of institutional unitholders.

Appendix B: Examples of the Comprehensive Income Statements

Company A

		Consolidated Group	
Continuing Operations	Note	**2015 $'000**	2014 $'000
Revenue	2	**2,777**	2,445
Other income	2a, 2b	**107**	52
Gain/(loss) on revaluation of investment properties		**3,153**	2,240
Employee benefits expense		**(742)**	(623)
Depreciation and amortisation expense		**(10)**	(10)
Finance costs		**(777)**	(961)
Other expenses from ordinary activities		**(787)**	(834)
Share of net profits/(losses) and revaluation gains/(losses) of associates	12	**154**	(348)
Profit before income tax		**3,875**	1,961
Income tax (expense)/benefit	4	**(1,371)**	(719)
Profit from continuing operations		**2,504**	1,242
Other comprehensive income		**-**	-
Net Profit (after income tax) for the year ended 30 June 2015		**2,504**	1,242
Profit attributable to minority equity interest		**-**	-
Profit attributable to members of the parent entity		**2,504**	1,242

Company B

	Notes	**2015 $'m**	2014 $'m
Revenue			
Gross rental income		**200.9**	184.3
Interest income		**0.3**	0.2
Total revenue		**201.2**	184.5
Other income			
Share of net profit and valuation gains on investment in joint venture entity	12(b)	**25.6**	24.1
Net gain on movement in fair value of investment properties	3(a)	**66.8**	31.3
Total revenue and other income		**293.6**	239.9
Expenses			
Property expenses		**(64.2)**	(61.7)
Net loss from derivative financial instruments	3(b)	**(12.9)**	(8.5)
Net loss on disposal of investment properties	10(e)	**(0.9)**	(0.2)
Management fees	24(d)	**(9.1)**	(8.1)
Finance costs	3(c)	**(31.0)**	(24.5)
Other expenses	3(d)	**(3.2)**	(3.5)
Total expenses		**(121.3)**	(106.5)
Profit for the year from continuing operations		**172.3**	133.4
Loss from discontinued operations	10(c)	**(9.8)**	(48.2)
Profit for the year		**162.5**	85.2
Other comprehensive income*			
Exchange differences on translation of foreign operations	18	**(0.4)**	1.6
Transfer from reserves of cumulative FX losses on disposal of assets held for sale	18	**9.2**	30.6
Change in the fair value of cash flow hedges	18	**(0.1)**	–
Other comprehensive income		**8.7**	32.2
Total comprehensive income for the year		**171.2**	117.4

Appendix C: Variable Definitions - ESSAY TWO

Variables	Definitions
COD	An interest rate estimated by dividing the reported interest expense by the average of the beginning and ending debt levels.
CFV	The reported changes in fair value of investment property in the statement of comprehensive income, scaled by market value of the accounting year.
GAIN	A dummy variable scored 1 if firms recognized CFV as gain, 0 otherwise.
LEVEL3	A dummy variable coded 1 if firms use Level 3 inputs in fair value estimates for investment properties, 0 otherwise.
DIR_VAL	A dummy variable coded 1 firm's fair value measurement is conducted by directors (the stand-alone internal valuers), 0 otherwise.
DISCLOSE	A dummy variable coded 1 if firms have the sum of disclosure indices lower than median of total samples, 0 otherwise. Sum of disclosure indices constructed as (1) *DISCRATE* coded 1 if firms reveal discount rate, 0 otherwise, (2) *VACAN* coded 1 if firms disclose vacancy rate, 0 otherwise, (3) *EXPRENT* taking the value of 1 if firms disclose expected rental incomes and operating expenses, 0 otherwise, (4) *SEN_QUALI* is coded 1 if firms provide qualitative sensitivity analysis of properties' values to unobservable assumptions used in estimates, 0 otherwise, and (5) *SEN_QUANTI* is coded 1 if firms provide quantitative analysis for that sensitivity, 0 otherwise. Hence, the maximum value is 5 and the minimum is 0.
SIZE	The natural logarithm of the market value of equity at the year-end, obtained from DataStream
WC	Is working capital calculated as current assets minus current liabilities scaled by total assets and gathered from DataStream
CAPINTENSE	The capital intensity measured as the total values of properties scaled by total assets.
LEV	Firm leverage measured as total interest-bearing liabilities scaled by total assets.
LTV	The loan-to-value ratio calculated as the mortgage amount divided by properties' market values.
DISTRESS	The distress/non-distress classification, firms assigned firms as distressed companies if firm met the one of following conditions: Negative working capital in the most recent year A bottom-line net loss in the most recent year, and Both negative working capital and net loss experienced in the most recent years
HEDGE	The hedged percentage of the company's interest-bearing liabilities.
INTCOV	The interest coverage ratio calculated by dividing firms' earnings before interest and taxes by firms' interest expenses for the same period.
CAPRATE	The capitalization rate which is the fundamental rate of return of investment property calculated as net operating income divided by market value of property and obtained from firm annual reports.
OPERATINGRISK	The natural log of the standard deviation of firms' three-year consecutive operating cash flows
ROA	The ratio of return on assets calculated as the ratio of net operating income to total value of assets.
GROWTH	The growth opportunities measured as the market capitalization of the firm divided by the book value of equity.
BIG4	A dummy variable coded 1 for firms employing Big 4 audit firm, 0 otherwise.
RC	A dummy variable equal to 1 if firms have a risk management committee, 0 otherwise
TOP20	The percentage of institutional unitholders.
MEET	Represents the frequency of audit committee meetings

Appendix D: Variable definitions - ESSAY THREE

Variables	Definitions
LN_AF	The natural logarithm of the audit fees.
IP	The proportion of investment properties stated at fair values to total assets, proxied for fair value exposure.
CFV	The total reported change in fair values of investment property to total assets, reflected the values that auditors must verify periodically.
LEVEL3	A dummy variable equal to 1 if the firm measures fair value for its investment properties with Level 3 inputs, and 0 for its investment properties with Level 2 inputs.
DIR_VAL	A dummy variable coded 1 if the valuation is conducted by the exclusive director valuation, and 0 otherwise.
SIZE	The natural logarithm of total assets.
CR	A proxy for financial risk and is calculated as the difference between total cash and cash equivalent and short-term liability divided by total short-term liabilities.
INAR	Inventory and account receivables divided by total assets, proxied for inherent risks.
CAPRATE	The capitalization rate, measured as net operating income divided properties 'market value and is obtained from annual reports, proxied for inherent valuation risk.
LEV	Firm leverage, calculated as non-current liabilities divided by total assets.
ROA	Represents the return on assets, calculated as net income scaled by total assets.
BIG4	A dummy variable coded 1 if the firm is audited by one of the Big 4 firms, and 0 otherwise
NSEG	Represents number of operating segments.
IPTYPE	Stands for the number of asset classes (e.g. retail, commercial building and hotel).
GS	The geographical segment, coded 1 if investment property is located overseas (outside Australia), and 0 otherwise.
RC	A dummy variable equal to 1 if firms have a risk management committee and 0 otherwise.
MEET	Represents the frequency of audit committee meetings.
OWN	The percentage of institutional unitholders.

Appendix E: Fair Value Measurement-Related Disclosure

(d) Valuation techniques used to derive level 3 fair values

In determining fair value of investment properties, management has considered the nature, characteristics and risks of its investment properties as well as the level of fair value hierarchy:

Class of property	Fair value hierarchy	Fair value as at 30 June 2015 $'m	Valuation technique	Significant unobservable inputs used to measure fair value	Range of unobservable inputs
Recurring fair value adjustments					
– Australia	Level 3	1,937.5	DCF and income capitalisation method	Gross market rent ($ p.a./sq.m.)	$121 – $637
				Adopted capitalisation rate	6.00 – 8.25%
				Adopted terminal yield	6.25 – 8.75%
				Adopted discount rate	7.00 – 9.50%

Term	Definition
Discounted Cash Flow (DCF) method	A method in which a discount rate is applied to future expected income streams to estimate the present value.
Income capitalisation method	A valuation approach that provides an indication of value by converting future cash flows to a single current capital value.
Gross market rent	The estimated amount for which an interest in real property should be leased on the valuation date between a willing lessor and a willing lessee on appropriate lease terms in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.
Capitalisation rate	The return represented by the income produced by an investment, expressed as a percentage.
Terminal yield	A percentage return applied to the expected net income following a hypothetical sale at the end of the cash flow period.
Discount rate	A rate of return used to convert a future monetary sum or cash flow into present value.

In determining the valuation of all investment properties measured at recurring fair value, consideration has been given to the highest and best use of those properties.

Valuation process

The Board conducts an investment property valuation process on a semi-annual basis. All valuations are performed either by independent professionally qualified external valuers or by Charter Hall's internal valuers who hold recognised relevant professional qualifications.

Stable properties

If the external valuation is more than 12 months old then the property is externally valued. For those with an external valuation less than 12 months old an assessment is made as to which properties are likely to have had material movements in the book value reported at the last reporting period to determine whether they should be revalued externally or whether an internal valuation is applicable. To make this assessment, the following steps are performed for each property:

1. perform initial desktop assessment of current value through a capitalisation of income and direct comparison approach by obtaining an estimate of the current capitalisation and rates per square metre, by reference to comparable sales evidence, and the net property income;
2. undertake discussions with external valuers and market participants to gauge the current market situation in more detail, specifically seeking "house" views on capitalisation/discount and terminal capitalisation rate movements along with rental growth forecasts, in order to reach an initial opinion of value;
3. compare the initial assessment of current value to the most recent book value and determine the percentage movement; and
4. if the property has been acquired in the last six months, the valuation on acquisition may still be valid but is reviewed against comparable sales/market data.

If the prior external valuation is under 12 months old and the change between the initial assessment and current book value is:

23. Fair value measurement continued

(d) Valuation techniques used to derive level 3 fair values continued

Valuation process continued

Development properties

The total cost of a development property is generally capitalised to its carrying value until development is complete. At the commencement of a development project, an estimated valuation on completion is obtained and the capitalised costs during the project are monitored against this initial valuation.

On completion, the property is externally valued with a full formal report and thereafter the stabilised asset valuation process applies.

At each reporting date, the carrying values of development properties are reviewed to determine whether they are in excess of their fair value. Where appropriate, a write-down is made to reflect fair value.

Sensitivity analysis

Significant input	Fair value measurement sensitivity to significant increase in input	Fair value measurement sensitivity to significant decrease in input
Gross market rent ($ p.a./sqm)	Increase	Decrease
Adopted capitalisation rate (%, p.a.)	Decrease	Increase
Adopted terminal yield (%, p.a.)	Decrease	Increase
Adopted discount rate (%, p.a.)	Decrease	Increase

Appendix E (cont.)

Leasing arrangements

The investment properties are leased to tenants under long term operating leases with rentals payable monthly. Minimum lease payments receivable on leases of investment properties are as follows:

	2015 $'m	2014 $'m
Minimum lease payments under non-cancellable operating leases of investment properties not recognised in the financial statements are receivable as follows:		
Within 1 year	**148.0**	148.4
Later than 1 year but not later than 5 years	**441.1**	456.3
Later than 5 years	**447.5**	463.5
	1,036.6	1,068.2

Fair value measurement-related disclosure presented in AREI firms' annual reports (not in financial reporting section)