Juha Mäki

Fair Value Appraisal and Financial Reporting

▲▲▲

Vaasan yliopisto
UNIVERSITY OF VAASA

ACADEMIC DISSERTATION

To be presented, with the permission of the Board of the School of Accounting and Finance of the University of Vaasa, for public examination on the 16th of October, 2020, at noon.

Julkaisun nimike
Käyvän arvon määrittäminen ja tilinpäätösraportointi

Tiivistelmä
Tämä väitöskirja analysoi esiin nousevia ilmiöitä, kun tilinpäätöstiedot julkaistaan IFRS-standardien (International Financial Reporting Standards) mukaisesti Euroopan Unionin alueella sijaitsevissa kiinteistö-sijoitusyhtiöissä. Ensimmäinen ja toinen essee keskittyvät sijoitus-kiinteistöomaisuuden arvon määrittäjien valinnan vaikutuksiin kirjan-pidon konservatiivisuuteen ja toisaalta sidosryhmien käytössä olevan tiedon käytettävyyteen. Kolmas essee osoittaa yrityskohtaisten tekijöi-den vaikuttavan kiinteistösijoitusten arvostuksessa siihen, valitaanko käyttöön fair value- vai poistoihin perustuva malli. Neljäs essee kertoo, miten yksityiskohtaisempia tietoja edellyttävä IFRS 13 vaikuttaa tilin-päätösten laatuun.

Väitöskirjan tulokset luovat uusia näkökulmia ja ymmärrystä standardien laatijoille yritysten ominaisuuksista, jotka lisäävät halukkuutta käyttää fair value –mallia sijoituskiinteistöjen arvostuksessa ja tietoa, miten uusien ohjeiden laatimisessa voidaan päästä tasapainoon yksityis-kohtaisemman tiedon julkaisuvaatimusten ja mahdollisuuden valita eri raportointitapoja välillä. Toisin sanoen tasapaino vertailukelpoisen yksityiskohtaisen tiedon ja yrityskohtaisten toimintaa tukevien valintavaihtoehtojen välillä nousee avainasemaan. Toisaalta sekä sijoittajille ja pankkiireille on tärkeää tietää yhtiön toiminnan tärkeim-pien raportointimenetelmien, kuten omaisuuden arvostustapojen, yksityiskohdat. Väitöskirjan johtopäätös on, että ajoittaisesta kritiikistä ja epäilyistä huolimatta nykyinen vaadittavan raportoinnin taso ei ole ylisuuri koskien käypiä arvoja. Lisäksi tutkimusten loppupäätelmä on, että standardin laatijoiden olisi hyvä pohtia vaatimusta tarkemmasta lisäinformaatiosta aina, kun on mahdollista käyttää vaihtoehtoisia raportointitapoja.

Asiasanat
IFRS, käypä arvo, kiinteistösijoitusyhtiöt

Title of publication

Fair Value Appraisal and Financial Reporting

Abstract

This thesis analyzes phenomena that occur when financial reporting on real estate companies located in the European Union is published under International Financial Reporting Standards (IFRS). The first and second essays address the effects of the investment property appraisal choice on conservative accounting and information asymmetry. The third essay addresses the company-specific factors affecting the choice to apply the fair value or cost method in the valuation of investment properties. The fourth essay discusses how more precise information requesting IFRS 13 affects the quality of disclosures.

The results of the thesis offer new perspectives to help standard-setters understand what type of firms are more willing to apply fair value accounting and how the design of new guidelines should be an attempt to find balance between requests for a larger volume of exact information and the possibility to choose between the alternative choices of publishing accounts. In other words, the balance between comparable information and company-specific advantages, like the ease of applying demanded rules, is the key issue. On the other hand, it is important for investors and bankers to know the most important routines of the company such as those related to valuation processes. The conclusion of the thesis is that, despite some contrasting discussion and doubts, the requested information is not of an overwhelming volume at this point. Furthermore, the conclusion of the thesis is that standard-setters should consider if it is always necessary to request more detailed information in notes when it is possible to use alternative reporting methods.

ACKNOWLEDGEMENT

Laihia, 2020

Juha Mäki

Contents

X

Essays

Mäki, J. (2020). The Role of Investment Property Appraisal in European Real Estate Companies. *The Journal of European Real Estate Research* 13:1, 105-122. https://doi.org/10.1108/JERER-11-2019-0038[1]

Mäki, J. (2020). *External Appraisal, Auditing, and Information Asymmetry: A Study of Fair Values in European Real Estate Companies under IFRS.* The 25th Nordic Academy of Management Conference (Nordiska Företagsekonomiska Föreningen/NFF). Under review in *Nordic Journal of Business*.

Mäki, J., Somoza-López, A. and Sundgren, S. (2016). Ownership Structure and Accounting Method Choice: A Study of European Real Estate Companies. *Accounting in Europe* 13:1, 1-19. https://doi.org/10.1080/17449480.2016.1154180[2]

Sundgren, S., Mäki, J. and Somoza-López, A. (2018). Analyst Coverage, Market Liquidity and Disclosure Quality: A Study of Fair-value Disclosures by European Real Estate Companies under IAS 40 and IFRS 13. *The International Journal of Accounting* 53:1, 54-75. https://doi.org/10.1016/j.intacc.2018.02.003[3]

---

[1] Reprinted with kind permission of Emerald
[2] Reprinted with kind permission of Taylor & Francis
[3] Reprinted with kind permission of World Scientific

1 INTRODUCTION

Accounting is the language of business. Every day a huge number of investors ranging from ordinary people to elite professionals are questioning how reliable, accurate, or timely that accounting information is. That uncertainty causes considerable friction and inefficiency on the capital markets and generally in the economy. In the real estate industry, the correct valuation of investment properties are of fundamental importance for both investors and all other stakeholders because they offer essential information informing key economic conclusions on decision-making and investments.

The key question in the real estate industry is how to assign the correct value to an investment property. Traditionally, companies have applied the cost model when they report the value of property, plant, and equipment (fixed assets) in the balance sheet. That method states an investment property is to be valued at its initial cost less any accumulated depreciation and impairment losses. The disadvantage of this method is that investors and creditors looking to make viable investment decisions are not interested in yesterday's value, but in the present market price of properties.

The International Financial Reporting Standards (IFRS) offers a potential remedy to that valuation issue by permitting the choice between two models for investment properties: the cost model and the fair value model. Under the fair value model, unlike under the depreciation model, investment properties are measured at their fair values in the balance sheet, and unrealized changes in the fair value are reported as a gain or a loss in the income statement. These rules are included among those found in the International Accounting Standard (IAS) 40. These alternative accounting models were introduced into the European Union at the beginning of 2005, when applying IAS/IFRS became mandatory in the consolidated accounts of listed companies. Pre-IFRS practices varied greatly according to country; for example, requirements in France, Germany, and Spain were based on the measurement of historical costs, with the possible exceptions of random revaluations according to government regulations. Only in the UK was reappraisal fully possible (Kvaal & Nobes, 2012).

Under IAS 40, the approach advocated to replace the cost model is a fair value model (IFRS 13, Fair Value Measurement). Fair value is defined as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date" (IASB, 2018a). Additionally, IFRS 13 provides a framework for appraising fair value and necessary disclosures about fair value measurement based on a three-level hierarchy: Level 1 uses unadjusted quoted prices for identical assets in active markets; Level 2 uses other observable inputs for the asset, such as quoted prices in active markets for similar assets or quoted prices for identical assets in inactive markets; and Level 3 uses unobservable inputs for the asset (IASB, 2018a). That framework is the major focus of the current thesis. The situation is interesting because most investment properties are classified as Level 2 or Level 3, which can cause unreliable

valuation estimations (PWC, 2017). When the observable prices are not available, an income approach (e.g., discounted cash flows) or a market approach (e.g., quoted prices for similar equity held by other companies) is normally used (EY, 2019). The IFRS 13 requires more specific information in disclosures when unobservable inputs are used to measure fair value. Estimated fair values could result in an unclear balance sheet and a lack of precision in income statements, especially if properties are valuated according to the Level 3 provision. Fair values estimates can also affect trading shares in and out because of unreliable estimations (Penman, 2007).

The IFRS was instigated in the European Union with the goal of making accounts and business life available across the whole continent, and the value of harmonization quickly made the concept attractive around the world. The IFRS are widely used, but not currently in the United States. Approximately 120 countries use the IFRS to some extent, and 90 of them insist companies follow IFRS regulations precisely. This research examines real estate companies located in European Union (EU) countries and extends the knowledge of seldom-studied factors, like the type of fair value appraisers, connected to IAS 40, IFRS 13, and financial statements.

This doctoral thesis, Fair Value Appraisal and Financial Reporting, is positioned to extend the knowledge of important, but less comprehensively studied, factors affecting the adoption of IAS 40 and later factors and choices affecting the features of financial reporting and results under IFRS 13. The following essays show that both the characteristics of the company (e.g., ownership dispersion or the analysts following the company or earnings properties) and decisions made by the company's management have a significant effect on how the stakeholders of the company receive the development views on the potential and future of the company. The first essay monitors the choice of external investment property valuation with the relative changes of investment property fair values. The second article examines the relationship between the choice of external investment property valuation and information asymmetry in companies. The third essay deals with the choice of accounting method and the ownership structure, and the final essay with disclosure quality, analysts following the company, and liquidity and fair value measurement under IFRS 13. The overall contribution of this thesis consists of information reducing a research gap between earlier studies and conservatism or information asymmetry in accounting, the choice of valuation methods and the consequences of that choice.

As a whole, this dissertation includes results that will be of interest to investors and other stakeholders. The first essay is a novel study examining the relationship between the choice of investment property appraisal and relative fair value changes in accounting. The main contribution of the first study is the finding that the choice of investment property appraisers is affected by earnings properties, and that external appraisers present more moderate valuations than internal appraisers. That is important when planning investments. The second essay offers evidence that the appraisal type of properties affects information asymmetry in companies, while companies employing external property valuation produce less information asymmetry among investors. The main findings of the

final two essays are that the use of the fair value model is positively associated with ownership dispersion, financial statements are less important if ownership concentration is high, firms with a financial company as the largest owner are slightly more likely to choose the fair value model, disclosure quality is significantly higher under IFRS 13, and the disclosure quality is generally associated with the analysts following and bid-ask spreads. These results are interesting for investors because better disclosure quality can indicate a lower cost of capital, and for standard-setters because the results encourage company types that are more willing to apply fair value accounting. All four of these essays and their results can give helpful information to investors and other stakeholders, for example lenders, when they are deliberating how correct the values are in the accounting and which factors affect the decisions behind them.

The contribution of this dissertation is an increased understanding of the factors related to fair value measurement in the real estate industry (i.e., IAS 40 and IFRS 13). There are only a few prior studies on these issues and many of them, for example, the effect of external valuation type, are being examined to this extent for the first time. Company-specific features as well as decisions made inside the company can have an effect on the financial reporting of a firm and the relationship with its stakeholders. At the same time, the dissertation shares some new information and ideas for companies already using or on the verge of adopting the IFRS. All new viewpoints and suggestions are also important for standard-setters because the International Accounting Standards Board (IASB) has actively continued to improve standards. Synchronizing accounting standards all over the world is an ongoing process in the international level of accounting. The results show that IFRS 13 is working quite well in active markets by generating good quality disclosures. Investors and analysts can see the significance of fair values because of the effect on the bid-ask spreads. Some challenges still remain in areas requiring judgment. The biggest public debate centers on finding a balance between having sufficient comparable company information and easy alternative reporting methods. One example is a proposal for mandatory external investment property valuation that emerges in this thesis. In the future, more precise information, experience, and education could resolve these challenges. Further practice could be a key element contributing to an all-embracing fair value reporting process. On the other hand, standard-setters might conclude that the updated disclosure requirements in IFRS 13 do not resolve any market imperfections. This thesis offers evidence that the required information is not of an overwhelming volume today and on the contrary that perhaps a large volume of detailed information is necessary for other items under the fair value measurement approach too.

The remainder of the introduction to the thesis proceeds as follows. Section two presents a brief overview of IFRS and real estate industry and third section summarizes the earlier literature concerning IFRS and fair value measurement. To close, the fourth section summarizes the four essays that compose this dissertation.

2   A BRIEF OVERVIEW OF THE IFRS AND THE REAL ESTATE INDUSTRY

2.1   What is the IFRS?

The current IFRS regulations began to evolve in the 1970s, in the field of professional accounting of Australia, Canada, France, Germany, Japan, Mexico, Netherlands, United Kingdom/Ireland, and the United States formed by the International Accounting Standards Committee (IASC) (IASB, 2018b). In 2000, the committee, since renamed the IASB, decided that it should continue the process of developing the standards under the name IFRS. The IFRS began as an effort to match accounting across the EU and later attracted interest from all over the world. The original norms were original named the IAS. The IASB has continued to develop standards, calling the new standards the International Financial Reporting Standards or IFRS.

The IFRS comprise a set of accounting rules that control how transactions and other essential accounting actions are reported in financial statements. They are supposed to maintain credibility and transparency in the financial sector, which allows investors and other stakeholders in the business environment to make educated financial decisions. Paragraph 16 of IAS 1 demands: "An entity whose financial statements comply with IFRSs shall make an explicit and unreserved statement of such compliance in the notes. An entity shall not describe financial statements as complying with IFRSs unless they comply with all the requirements of IFRSs." The IFRS is considered a common global language for the business activities of companies that allows different stakeholders to compare them internationally.

In 2019, the whole institution consists of 28 IAS standards, 17 IFRS standards, 28 rules of interpretation (eight interpretations initiated from the rules of interpretation Standing Interpretations Committee (SIC) and later 20 from the International Financial Reporting Interpretations Committee (IFRIC)) and a theoretical frame of reference (IASB, 2018a). The IASB will continue to develop standards in the future.

The basic idea of the IFRS norms is to facilitate the clear presentation of income statements and balance sheets so that investors can obtain easily understandable and reliable information on an organization's accounts. The IASB has presented the most important principles in the Conceptual Framework for Financial Reporting and in IAS 1: a fair presentation and compliance with IFRS, going concern, the accrual basis of accounting, materiality and aggregation, offsetting, the frequency of reporting, comparative information and the consistency of presentation (IASB, 2018c).

Fundamental qualitative characteristics of financial information include relevance and faithful representation; enhancing qualitative characteristics include comparability, verifiability, timeliness and understandability (IASB, 2018d). Fair values of investment properties are probably more relevant than cost model values, but fair values might also be

more biased. That situation might imply fair values are less likely to be faithfully reported than cost model values, which makes the situation challenging. This advisable information is useful for forecasting how efficiently and effectively management will utilize the company's economic opportunities in the future and how exactly future net cash inflows can be predicted.

The expectations relating to the adoption of IFRS standards are in addition to the above-mentioned benefits for the stakeholders of the company and especially for investors. The use of IFRS financial statements should reduce the costs of comparing different investments and increase the quality of information. At the same time, investors will be more willing to provide financing for companies (IASB, 2018d). Companies that are involved in international businesses achieve benefits because of the increased comparability of a set accounting standard. However, there has also been some criticism of the total cost of the international standard in comparison to its quantifiable benefits. Ball (2016) argues that the expected advantages are unattainable and the regional differences in accounting could become hidden behind a brand. The same study suggests only the next major financial crisis will reveal to lenders what fair value means in practice.

Regulation (EC) No. 1606/2002 of the European Parliament and the Council prescribes that public companies must apply IFRS from the fiscal year 2005. Under IAS 40, companies can use two models to valuate investment properties: cost and revaluation. Investment properties are primarily measured at cost and are regularly measured using a cost model or fair value model. Under the cost model, cost less accumulated depreciation and less accumulated impairment losses are reported. Fair value is the amount that would be gained from selling an asset or the price paid to transfer a liability in an arranged transaction between market actors at the date of measurement. Unrealized changes under the fair value model are reported in the income statement. IAS 40 relates the accounting for property (land and buildings) held to get rentals or for capital gain (IASB, 2018e). According to the standard for example land for long-term capital gain, land for a presently undetermined future use, buildings leased out under an operating lease, available buildings held to be leased out under an operating lease, and property that is being built or settled for future use as investment property have also been included under the remit of IAS 40.

The findings of this thesis are mainly connected with fair value measurement. The IASB has merged all the requirements on fair value measurement into IFRS 13. This standard, applied to fiscal years beginning on or after 1 January 2013, offers guidance on how to measure the fair value of both financial and non-financial assets and liabilities. While IAS 40 gives guidance concerning the choice between the fair value and the cost models, IFRS 13 provides rules for the measurement of fair value. It is based on the idea that fair value is an exit price and utilizes market information. IFRS 13 provides a hierarchy of methods for estimating fair values (Level 1 is preferable) (IASB, 2018a). Most investment properties qualify for Levels 2 or 3. Therefore, due to a unique structure, the choice of suitable valuation technique becomes important. IFRS 13 describes three valuation techniques: the market approach, the income approach, and the cost approach. When the market approach

is selected, companies use "prices and other relevant information generated by market transactions involving identical or comparable similar assets or liabilities." The use of the income technique means that the company uses, for example, discounted cash flows (DCF) when future cash flows are converted to a current amount (IASB, 2018a).

According to IAS 40, companies must report in income statements rental income from investment property and operating expenses (including repairs and maintenance) (IASB, 2018e). Companies must report through the notes sections provided whether the fair value or the cost model is used and, if the fair value model is used, whether property interests held under operating leases are classified and accounted for as investment property. The published information must contain the degree to which the fair value of investment property is based on a valuation by a qualified independent appraiser. If the valuation is produced internally, that must be disclosed (IASB, 2018e).

2.2 The real estate industry in the EU

Real estate is real property that includes land and developments, which in turn encompasses buildings, roads, structures, and service structures. Real estate can be classified into four categories: residential, commercial, industrial, and land. Ownership confers rights to the land, improvements, and natural resources (minerals, water, etc.) within the property boundaries. The real estate industry in the case of this thesis consists mainly of commercial properties including buildings used to deliver income such as warehouses, hotels, offices, and other services. Industrial properties include structures used in manufacturing. It is commonly said that industrial relates to the making of goods and commercial to the distribution of goods. Land properties would normally include land or farms even if vacant.

The EU consists of 28 member states (at the end of 2019), with a commercial real estate market value of 6.5 trillion euro (2017). More than half of the population is domiciled in the three largest economies of France, Germany, and the United Kingdom. According to The European Public Real Estate Association (EPRA), the value of the listed real estate companies is estimated at 350 billion euro (EPRA, 2017). The number of EPRA member companies in Europe was 104 in 2017. The total value of the industry is composed mainly of office buildings, shopping malls, and industrial buildings. Real estate companies purchase, lease, develop, sell, and manage investment property to create profits through rents or transactions. Companies currently more often operate internationally, instead of solely in the domestic environment.

The business of the real estate industry under IAS 40 and IFRS 13 does, however, have some specific features. For example, a large portion of investment property on the balance sheet normally signifies a long life cycle of properties, which creates considerable uncertainty over the value of a real estate portfolio and makes the chosen valuation procedure very significant in terms of both the income statement and balance sheet. The

whole valuation process of investment properties is not strictly regulated. Appraisers often use the international standards supported by The Royal Institution of Chartered Surveyors (RICS). The RICS Valuation - Global Standards (known as the Red Book) contains rules, best practice guidance, and actual comments on valuations (RICS, 2017). The Red Book complies with the International Valuation Standards, which guarantees that RICS members apply systematic practices all over the world. Following the guidance of the Red Book is mandatory for all RICS members and also normally accepted by non-RICS appraisers. There are also some other valuation guidelines in the European real estate sector, such as those created by the European Group of Valuers' Associations (TEGoVA) and local ones, for instance those published by the Authorised Property Valuers (AKA) in Finland. The European Public Real Estate Association (EPRA) is the most famous organization in this field (Nellessen & Zuelch, 2010).

3   THE LITERATURE INFORMING THIS THESIS

The most important issues in this thesis focus on the choice of investment property appraisal, managers' disclosure decisions, disclosures mandated by standard-setters, and the role of analyst reporting. This section presents the most important studies and literature concerning the research questions guiding this dissertation. The common theme of all four essays is IAS 40 and IFRS 13. The data in every essay are the same, real estate companies situated in the EU region. The methodology is also the same; every essay uses OLS (ordinary least squares) or corresponding regressions.

3.1   Fair value accounting and the quality of financial statements

The possible benefits of the adoption of IFRS rely on the assumption that the adoption offers better quality information to stakeholders and/or increased accounting comparability to previous accounting rules (e.g., Horton et al., 2013). Several studies show that IFRS adoption will lead to better accounting quality arising from access to more significant information (Bartov et al., 2005), reduced discretionary accruals (Chen et al., 2010), and predictability of earnings (Artikis & Doukakis, 2010). Hence, mandatory IFRS adoption has the potential to enable comparability internationally, increase reporting transparency, decrease information costs and information asymmetry, and so increase the effectiveness, liquidity, and competence of markets (e.g., Choi & Meek, 2005; Ball, 2006). In addition, Ball (2006) studies IFRS adoption and fair value accounting and argues that the fair value model produces better information in financial statements than the cost model. Barth (1994), Barth et al. (1996), and Dietrich et al. (2000) support that observation when they show that the fair value model in financial reporting provides clearer and more consistent financial information than the historical cost method.

Most of the earlier studies concerning fair values are made in the field of financial instruments, because their impact is normally prevalent. Armstrong et al. (2010) support the assumption that investors suppose IFRS adoption will advance information quality. In addition, De Fond et al. (2014) notice that fair value reporting gives better opportunities for companies to clarify their performance in financial statements and to be more precise and transparent with their information. Therefore, Barlev and Haddad (2003) argue that the historical cost model leaves the true financial position and earnings unclear.

Nevertheless, the disadvantages of IFRS can include the significant costs linked with adopting the standards, which may overshadow the benefits, and that U.S. GAAP is the main standard in the United States (e.g., Ball, 2016). Critics claim that fair value accounting leads to noisy information with manipulated estimations or measurement errors (e.g., Barth et al., 1995; Van Tendeloo & Vanstraelen, 2005). Many studies (e.g., Barth et al., 1995; Petroni, & Wahlen 1995; Barth et al., 1996; Nissim, 2003) offer evidence that some financial instruments can have worse value relevance under fair value accounting, the

incentives of managers can affect earnings manipulation, and companies with weak performance can embellish their financial statements.

Investment properties are normally the largest asset entries for real estate companies, so imprecision in the appraisal of properties has a significant effect on the bottom line (Muller et al., 2011). The same features of benefits and disadvantages of using fair value accounting can also be observed in the real estate industry. That branch is typically subject to very cyclical markets, which can lead to a large difference between the historical and fair values of investment properties (Dietrich et al., 2000; Muller et al., 2011). Liang and Riedl (2014) studied investment property companies reporting historical cost values under GAAP (in the United States) versus companies reporting fair values under IFRS (in the UK) and obtained significant results indicating that the fair value choice reduces earnings and forecasts insecurity. In addition to the above-mentioned study, Conaway et al. (2017) show that investors see the use of the fair value method as a positive choice offering more reliable information.

The quality of accounting information is important for the stakeholders of a company in two important ways. Higher quality financial statements allow investors to monitor the capital they have invested and also give capital providers a chance to more easily compare the prospects of future investments (Beyer et al., 2010). Another practice to examine the impact of accounting quality is to divide the stakeholders into groups of insiders and outsiders in relation to the firm. Normally, insiders (i.e., managers and owner-managers) have more information (and in a more precise form) on the status of the company. The incentives of managers result in information asymmetry between insiders and outsiders (see, "the lemon case" of Akerlöf, 1970). One method of reducing that asymmetry is by producing higher quality financial statements (e.g., Glosten & Milgrom, 1985; Leuz & Verrechia, 2000, Francis & Wang, 2008).

The studies find that companies with higher quality disclosures have lower effective bid-ask spreads and lower quoted depths (e.g., Heflin et al., 2005). Lang and Lundholm (1993) discovered that companies with higher quality financial reporting have more accurate earnings forecasts, a larger group of analysts following, and less deviation in analyst forecasts. That is to say, informative and precise reporting reduces information asymmetry. Furthermore, the studies mentioned show that, on the question of information asymmetries between investors and managers, the situation can be different: Managers having better knowledge about the economic situation of the company can result in even greater information asymmetry. Prior examinations conclude that while more informative disclosure reduces information asymmetry, it also decreases the cost of capital (Diamond & Verrechia, 1991; Verrechia, 2001; Botosan, 2006). Nevertheless, the literature only offers limited support to the cost of capital proxy (Gao, 2010; Artiach & Clarkson, 2011).

Because the adoption of IAS/IFRS is currently mandatory in many countries, the effects of that adoption have been very popular research subjects (De George et al., 2016). Early studies in particular show that the adoption of the IFRS has benefits companies regarding

enhanced transparency, lower costs of capital, and better market liquidity (Verrechia, 2001), as well as in prompting better comparability of financial reports, and larger amount of analysts following the firms concerned (e.g., Leuz & Verrechia, 2000; Daske et al., 2008; Christensen et al., 2013; Daske et al., 2013). Moreover, Muller et al. (2011) find that the mandatory disclosure of fair values of investment properties under IAS 40 reduces bid-ask spreads. The significance of high quality financial reporting will be emphasized when it is known that analysts use more publicly available financial data than information received from the management of companies (Byard & Shaw, 2003).

Although these benefits and the reliability of fair values vary significantly across companies in terms of the volume of measurement inaccuracy and source of the estimates (Landsman, 2007), more recent studies offer some evidence that the earlier recognized benefits could not be so significant due only to the influence of the adoption of the IFRS (e.g., Barth & Israeli, 2013). Contrary to the findings derived from companies undertaking voluntary adoption, the evidence from mandatory adopters shows more mixed results on whether adoption advances the quality of financial reporting. However,, there are many studies that argue that the use of capital-market-based proxies (e.g., trading volume and liquidity) offers better accounting quality after IFRS adoption (De George et al., 2016).

3.2 Investment property companies: Appraisal and information asymmetry

The valuation of real estate companies and fair value accounting for investment properties under IAS/IFRS are tightly connected to each other because investment properties constitute such a significant proportion of the balance sheet. Therefore, it is obvious that scholars try to examine how precise and reliable investment property valuations are. Those researchers are also motivated by revelations of discrepancies; for example, the Netherlands Authority for the Financial Markets (AFM) (2012) found that four of every seven real estate companies in the EU publish investment property valued at approximately 15 percent below the estimated fair values. Nellessen and Zuelch (2010) argue that the main reason is lack of confidence in the evaluations of investment property fair value because of the limitations inherent in appraisals. These limitations might include an insufficient reaction to new market information, ignorance regarding the production of fair value estimates and a tendency to give smoothened estimations.

An alternative view is provided by Dietrich et al. (2000) who examined the reliability of mandatory annual fair values in UK investment property companies and found that fair value estimations were six percent lower than selling prices. These conservative appraisers' estimates are also less biased than historical cost amounts. The same study also highlights the issue of managers' opportunism, which leads them to publish higher earnings via suitable accounting methods, to smooth earnings changes and to overestimate fair values before debt negotiations. Overall, the Dietrich et al. (2000) research reports valuations are

more reliable when conducted by external appraisers and Big 6 auditors than by other experts.

The role of managers in the conversation about appraisal and information asymmetry is notable. Muller et al. (2015) research pricing differences of disclosed fair values in European real estate companies who have applied the IFRS. The study finds evidence that a recognized lower association between equity prices and disclosed investment property fair values is compensated by the lower information processing costs and higher reliability of external appraisers. Another study concentrating on the incentives of companies and managers is that of Israeli (2015), which shows that management is willing to operate according to its own incentives. At the same time when documented and disclosed quantities are similarly relevant to outcoming financial results, investors do not rate disclosed amounts to be as important when they are estimating the value of companies.

There are quite a number of studies concerning the choice of appraisers in real estate companies, but few offer novel insights. As one foundation of this study, Muller and Riedl (2002) show that in the UK the use of external appraisals in the valuation of investment properties relates to the level of information asymmetry. Muller and Riedl investigate UK investment property companies and find that market makers considered information asymmetry to be lower for companies employing external appraisers than for those employing internal appraisers. The difference in monitoring by external appraisers can therefore influence the cost of capital for companies. However, the same research did not find a similar effect for companies employing Big 6 as against those employing non-Big 6 auditors. Muller et al. (2011) examine if the mandatory adoption of IAS 40 (Investment Property) in European real estate companies has a relationship with smaller information asymmetry among stakeholders. The study finds that mandatory adoption companies have a larger fall in information asymmetry than companies voluntarily publishing fair values when bid-ask spreads are used as a measure. However, mandatory adoption companies still have greater information asymmetry over time than voluntary adoption companies. This indicates stakeholders have greater confidence in voluntarily published information.

Quagli and Avallone (2010) test how information asymmetry, agency costs and managerial incentives can affect the fair value choice in real estate companies in European countries. The study offers a significant result: size as the proxy of political costs decreases the willingness to adopt fair values when market-to-book ratio is negatively related with the fair value choice. At the same time, leverage as the proxy of contracting costs does not have the same kind of effect on the choice.

Only a few researchers have published documents about the relations of management and company specialists (Messier, 2018). These specialists (e.g., in appraisals and auditing) can have an important role in the practice of producing financial statements. Specialists employed by real estate companies are important because they are able to define so many uncertain factors during the valuation of investment properties. It is also notable that

appraisals can prefer valuation smoothing and lag the true level of values (Baum, Crosby, & McAllister, 2002).

3.3 The choice of auditors

According to earlier studies, Big 4 auditors are worried about their response to litigation and risk to their reputation (e.g., Francis & Wang, 2008; Liao & Radhakrishnan, 2016). The common impact is that Big 4 auditors advise their clients to adopt conservative accounting practices to minimize their own exposure to risk. Unconditional conservatism is higher under IFRS when a Big 4 auditor is involved (Piot et al., 2010) and several studies show more conservative practices are evident when companies use Big 4 auditors (e.g., Francis & Wang, 2008; Chung et al., 2014). Big 4 auditing companies can be considered the same kind of professional elite monitors as large valuation companies with many of the same kinds of working incentives.

Prior studies have produced contradictory results on the connection between information asymmetry and Big 4 auditing. Hakim and Omri (2010) point out that bid-ask `spread is` smaller in companies audited by Big 4 auditors. Lawrence et al. (2011) argue that alterations in proxies between Big 4 and non-Big 4 auditors are largely the result of client characteristics, for instance the size of company. Lawrence et al. suggest that tendency score matching (PSM) on client characteristics eliminates the Big 4 effect. The study of DeFond et al. (2016) proposes that this result may be affected by PSM's sensitivity to its design choices and by the strength of the audit quality measures. The last study also finds that it is too early to propose that PSM negates the Big 4 effect.

4. SUMMARY OF THE ESSAYS

The aim of the current doctoral thesis is to give new information on features, for example conservatism and information asymmetry, occurring in accounting and financial reporting of companies, in this case especially of real estate companies. This dissertation involves four essays addressing issues relating to IFRS standards, more specifically to IAS 40, and to the phenomenon around it. The results of this thesis can be divided into two main groups, decisions made by the company itself (e.g., appraisal and auditing choices) and the external prevailing conditions (e.g., ownership structure, origin, and analyst coverage). This dissertation offers important evidence as to why a company would select the fair value method and the effects of that choice.

The basis of the thesis is a comprehensive dataset of European real estate companies and the results are obtained through applying quantitative methods (regressions). These specific regression methods include both significant variables from earlier studies and variables studied in this thesis. Research questions are addressed through the earlier literature and practical observations or paradigms. The thesis produces new generalizable information about the phenomena around fair value estimations. The representative sample used is collected from Bureau van Dijk Orbis, Thomson Reuters Worldscope, and manually from annual reports. Most of the dummy variables are collected from annual reports, ownership data from Orbis, and financial ratios from Worldscope. Hand-collected information from the notes includes the discount rate, the amount of qualitative information, the vacancy rate, the use of sensitivity analyses, the use of Big 4 auditors, the EPRA membership, the change of fair values and the appraiser type. At its widest, the data covers the period from 2007 to 2016.

The first and second essays both address the choice of investment property appraisal and Big 4 auditor. The first essay focusing on the relative changes of fair values and the second on information asymmetry. The third essay focuses on ownership dispersion and accounting method choice. The last essay shows that disclosure quality is higher under IFRS 13 and that the quality is generally associated with analyst following and bid-ask spreads.

4.1 The role of investment property appraisal in European real estate companies

There has been considerable discussion of firm-level conservatism and its meaning. The aim of this essay is to research seldom-perceived factors such as the type of property appraisal, the choice of auditors and how those factors connect to the willingness to change the fair values of investment properties when financial statements are made under IAS 40 and IFRS 13. It is also possible that companies of a certain kind choose an external valuation more often than other types of firm. The contribution of this study is revealed through the fact that only a few studies examine the interactions of management with these

company specialists (Messier, 2018) despite such specialists in, for example, appraisals and auditing, potentially having an important role in the process of publishing financial statements.

The whole valuation process is relatively lightly regulated. The appraisal firms mainly work on a contract basis. The appointment of an appraiser is usually made by the board of directors, but the management can propose an appropriate appraiser. The auditor can also make suggestions. Valuations are normally made under the international standards promoted by The Royal Institution of Chartered Surveyors (RICS) and the specific responsibilities of the assignment are agreed upon before commencement. The maximum amount charged usually accords with the value of the agreement when there is no serious carelessness. The length of contract is not regulated. In the case of conflict between the firm and an appraiser, the parties will generally initially negotiate and check the basic information informing their calculations. Therefore, there have been discussions on whether to regulate the valuation process as is the case with auditing.

Nellessen and Zuelch (2010) describe uncertainty concerning a belief that fair values of investment properties are imprecise. They claim that the process through which fair values are produced is unclear. The human nature of the appraisers, the process itself, the probable incentives offered to stakeholders and the structure of the property market can lead to biased results. Brown and Matysiak (2000) list important reasons for inaccurate valuations; including the issue that properties can be appraised only selectively once per year because of cost efficiency. Appraisals showing no change or changes so small that an appraiser does not change values are common, but over time the need for change will accumulate. The customer may also be dissatisfied, which requires courage on the part of the appraiser to change investment property values to reflect the realistic market level. That uncertainty of customer satisfaction can induce a smoothing effect that devalues the true volatility of returns on the market. Nevertheless, Easton et al. (1993) argue that the main reason managers revalue assets is to produce fair financial statements, but the second important purpose is to affect debt-to-equity ratios for debt contracting purposes. As opposite to frictionless world incentives as stock options and bonuses for managers as well the terms of covenants and lower interest rates can outcome on valuation decisions (e.g., Healy, 1985; Franz et al., 2014).

The study uses the financial data of publicly traded real estate companies from EU member states and covers the period from 2007 to 2016. The real estate sector is selected because of the importance of investment property fair values in financial statements. The essay uses the relative change of investment property fair values as a dependent variable.

It is possible and often even expected that the choice of an appraiser is an endogenous process. That means bigger companies with better performance are more willing to adopt the same well-known and often-used appraisal companies. That is why this study tests if the most important earnings properties have an effect on the appraisal adoption. The

results indicate that the link is obvious and it is considered in the methodology development.

The main result of this research is the finding that the choice of investment property appraiser is affected by earnings properties and that, once adopted, the appraiser gives valuations whose quality depends on whether or not the appraiser is an external one. Companies using external property valuation services publish more conservative fair value estimates. The use of a Big 4 auditor has a very significant, moderate impact on relative investment property fair value changes. It is notable that both the external appraisers and Big 4 auditors affect fair value changes in the same way, although auditors face a large litigation and reputation risk (e.g., Khurana & Raman, 2004), while external appraisers operate more on an agreement basis. On the other hand, smaller companies with lower performance will more often adopt internal valuation instead of a renowned external appraiser. The previous following it would cause less confusion if the external valuation of investment properties were mandatory.

4.2 External appraisal, auditing, and information asymmetry: A study of fair values in European real estate companies under IFRS

One of the subjects frequently examined in accounting and finance research is that of information asymmetry. That phenomenon appears in transactions where one actor has more relevant information than the other. Information asymmetry can generate an inequality in transactions. In the business world, for example, concepts like adverse selection, moral hazard, and monopolies of knowledge are used in this context. Akerlöf (1970), in a fundamental and well-known article, shows the main problems related to asymmetric information that lead to disorder in the markets. Almost all transactions contain at least some information asymmetry.

The topic of the second essay has been a very popular one in recent years. The essay examines decisions made by real estate companies or their stakeholders and the effects on information asymmetry. Information is published via financial reports (e.g., the financial statements, management reports and reports of audit committees), voluntary management forecasts, analysts' forecasts, press releases and internet sites. The purpose is to investigate the same seldom-examined factors like the external valuation of investment properties and the choice of a Big 4 auditor, as in the previous essay, and the connection of those factors to information asymmetry when financial statements are made under IAS 40 and IFRS 13. The adoption itself has already initiated a positive (declining) effect on information asymmetry (Abad et al., 2018).

This essay studies the associations between the external valuation of investment properties, the choice of a Big 4 auditor, and information asymmetry. The study uses share price spreads (e.g., Muller & Riedl, 2002) and a standard deviation of recommendations made

by analysts as measures of information asymmetry. The data is collected from the annual reports of publicly traded real estate companies in EU member states and covers the period from 2007 to 2016.

The empirical findings of the study indicate that information asymmetry is affected by the choice of investment property appraisal. The use of external valuation specifies less information asymmetry, and in the case of less well-known appraisers, the effect is more significant. Correspondingly, even if the endogenous choice process is considered, the use of internal appraisers indicates increased information asymmetry. Nevertheless, the adoption of a Big 4 auditor results very clearly in a decreasing impact on information asymmetry when the bid-ask spreads are used as a dependent variable. Because of differences between external and internal valuations concerning information asymmetry, standard-setters should consider whether using external appraisers should be mandatory or at least request more detailed information in the notes.

4.3 Ownership structure and accounting method choice: A study of European real estate companies

The third essay of this dissertation studies the relationship between ownership structure and accounting method choice. According to prior studies, financial reports play a more important role for stakeholders if a company has dispersed ownership. Normally, the communication between stakeholders is more instant and private if there are only a few owners. The situation is more challenging with a large number of investors (e.g., Ball & Shivakumar, 2005; Burgstahler et al., 2006). This study focuses on a particular accounting choice, the choice between the fair value and cost models under IAS 40 (Investment Properties). This essay used a sample of 98 publicly traded real estate companies registered in the EU with a sample of 389 firm years. The companies concerned act chiefly in the EU region and are listed on stock exchanges in EU countries. The data covers years from 2009 to 2013. Companies in the EU started to follow IFRS in 2005 and by 2009 had been able to utilize the flexibility of IFRS and adopt the most suitable accounting policy (Kvaal & Nobes, 2012).

The choice between the fair value model and cost model is perhaps the most important accounting policy choice in the real estate sector, partially because investment properties are such a notable contributor to the balance sheet. When the fair value model is applied under IAS 40, fair values of investment properties are reported on the balance sheet and changes in fair values are reported on the income statement. In contrast, when the cost method is applied, the historical cost less accrued depreciation is recognized on the balance sheet and the fair value of the property is disclosed in the notes.

The study examines two hypotheses: Companies with concentrated ownership are more likely to choose the cost model and the owner type is not associated with the fair value or the historical cost choice. The empirical findings of the essay offer novel evidence that listed

companies with a corporate investor, foundation, municipality, or other governmental authority as the largest owner are less likely to use the fair value model and trade smaller amounts on the stock market than companies owned by a bank or finance company. Often, corporate owners are more longstanding owners than banks and financial companies.

Earlier studies show that the quality of disclosures is contingent upon ownership type (e.g., Dam & Scholtens, 2012). Generally, the results of this essay are consistent with the view that companies are more likely to choose the cost model if financial reports are not a key component of cooperation with shareholders. In other words, the results are dependent on the fact that financial reports do not have a big implication in companies with concentrated ownership. At the same time, the differences between the ownership types are small, which suggests that companies with one big shareholder are less willing to use the fair value model regardless of the owner type. In addition, the results specify that companies with concentrated ownership are less actively traded on the stock market.

One notable finding in the study is that there is significant cross-country variation in the use of the fair value and cost models. This study uses the legal origin classification by La Porta et al. (1998) and find that companies from the Scandinavian region and English-speaking countries more often use the fair value method than companies from German- or French-speaking countries. The history of accounting legislation before IAS is probably one reason for that difference (e.g., Kvaal & Nobes, 2012).

4.4 Analyst coverage, market liquidity and disclosure quality: A study of fair value disclosures by European real estate companies under IAS 40 and IFRS 13

The fourth essay concentrates on two questions: Does the quality of fair value disclosures improve with the adoption of more detailed IFRS 13 and what are the implications of disclosure quality with analysts following and market liquidity? This essay focuses on companies presenting fair values on their balance sheets using an income approach (discounted cash flows, the fair value measurement of the properties is based on Level 3 inputs). The data informing this essay consist of 289 observations for 57 companies in the EU and covers the period 2009 to 2014. Following earlier studies (e.g., Botosan, 1997; Clarkson et al., 2006; Shalev, 2009), this essay uses a self-developed disclosure quality index. The items on the index are the discount rate, estimated vacancies, estimated cash flows and a sensitivity analysis.

The basic topic for the debate prompted by this essay is if the adoption of IFRS 13 has made financial statements unwieldy because the notes are too extensive without any improvement in quality and thus lead to information overload (The European Financial Reporting Advisory Group, 2012, p. 6). An alternative view is that more extensive guidance increases comparability and verifiability and reduces opportunities for earnings management (eg., Schipper, 2003). As a summary, IFRS 13 produces fewer options for

evaluation by managers. That means mandatory disclosure is more significant under IFRS 13 than under IAS 40.

Verrechia (2001) argues that a more informative disclosure reduces information asymmetry and at the same time increases liquidity. The relationship between fair value disclosures, analysts following, and market liquidity is often unclear. Higher quality fair value disclosures may reduce information asymmetry and increase analysts' willingness to follow a company. At the same time, stakeholders can become fatigued by extra information and the message can remain unclear (New Zealand Institute of Chartered Accountants & The Institute of Chartered Accountants of Scotland, 2011).

The findings reported in this essay show that companies publish significantly more information in disclosures under IFRS 13 than under IAS 40. There is a significant positive association between disclosure quality and the likelihood of analysts following. When the bid-ask spread, zero-returns, the price-impact and the Fong et al. (2017) measure of total trading costs are used as liquidity proxies, the findings show that disclosure quality is positively related with the smaller bid-ask spread. The other liquidity proxies are not significant. Neither disclosures published under IFRS 13 give significant positive evidence concerning analyst coverage or market liquidity. Investors and standard-setters can learn at least two facts from the results: High quality disclosures are positively appreciated by investors and all information essential to users should be disclosed, but the short and simple guideline under IAS 40 seems to be as effective as the more diverse one under IFRS 13.

References

Abad, D., Cutillas-Gomariz, M. F., Sánchez-Ballesta, J. P., & Yagüe, J. (2018), Does IFRS mandatory adoption affect information asymmetry in the stock market? *Australian Accounting Review* 28(1), 61–78. https://doi.org/10.1111/auar.12165

Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics* 84(3), 488–500. https://doi.org/10.2307/1879431

Armstrong, C. S., Barth, M. E., Jagolinzer, A. D., & Riedl, E. J. (2010). Market reaction to the adoption of IFRS in Europe. *The Accounting Review*, 85(1), 31–61. https://doi.org/10.2308/accr.2010.85.1.31

Artiach, T., & Clarkson, P. (2011). Disclosure, conservatism and the cost of equity capital: A review of the foundation literature. *Accounting and Finance* 51(1), 2–49. https://doi.org/10.1111/j.1467-629X.2010.00387.x

Artikis, G., & Doukakis, L. (2010). The persistence of earnings and earnings components after the adoption of IFRS. *Managerial Finance* 36(11), 969–980. https://doi.org/10.1108/03074351011081286

Ball, R. (2006). International Financial Accounting Standards (IFRS): Pros and cons for investors. *Accounting and Business Research* (Special Issue), 5–27. https://doi.org/10.1080/00014788.2006.9730040

Ball, R. (2016). IFRS – 10 years later. *Accounting and Business Research* 46(5), 545–571. https://doi.org/10.1080/00014788.2016.1182710

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics* 39(1), 83–128. https://doi.org/10.1016/j.jacceco.2004.04.001

Barlev, B., & Haddad, J. R. (2003). Fair value accounting and the management of the firm. *Critical Perspectives on Accounting,* 14(4), 383–415. https://doi.org/10.1016/S1045-2354(02)00139-9

Barth, M. E. (1994). Fair value accounting: Evidence from investment securities and the market valuation of banks. *The Accounting Review*, 69(1), 1–25. Retrieved from http://www.jstor.org/stable/248258

Barth, M. E., Landsman, W. R., & Wahlen, J. M. (1995). Fair value accounting: Effects on banks' earnings volatility, regulatory capital, and value of contractual cash flows. *Journal of Banking & Finance*, 19(3–4), 577–605.

Barth, M. E., Beaver, W. H., & Landsman, W. R. (1996). Value-relevance of banks' fair value disclosures under SFAS No. 107. *The Accounting Review*, 71(4), 513–537. Retrieved from https://www.jstor.org/stable/248569

Barth, M. E., & Israel, D. (2013). Disentangling mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics*, 56(2-3, supp1), 178–188. https://doi.org/10.1016/j.jacceco.2013.11.002

Bartov, E., Goldberg, S., & Kim, M. (2005). Comparative value relevance among German, US and international accounting standards: a German stock market perspective. *Journal*

of Accounting, Auditing and Finance, 20(2), 95–119. https://doi.org/10.1177/0148558X0502000201

Baum, A., Crosby, N., & McAllister, P. (2002). *Appraiser behaviour and appraisal smoothing: some qualitative and quantitative evidence.* Working paper, presented at the Annual Meeting of American Real Estate Society, Naples, Florida, April 2002.

Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics*, 50(2-3), 296–343. https://doi.org/10.1016/j.jacceco.2010.10.003

Botosan, C. (1997). Disclosure level and cost of capital. *The Accounting Review*, 72(3), 323–349. https://doi.org/10.1002/mde.1256

Botosan, C. (2006). Disclosure and the cost of capital: What do we know? *Accounting and Business Research*, 36(sup1), 31–40. https://doi.org/10.1080/00014788.2006.9730042

Brown, G. R., & Matysiak, G. A. (2000). Sticky valuations, aggregation effects, and property indices. *Journal of Real Estate Finance and Economics*, 20(1), 49–66. https://doi.org/10.1023/A:1007879805481

Burgstahler, D., Hail, L., & Leuz, C. (2006). The importance of reporting incentives: Earnings management in European private and public firms. *The Accounting Review* 81(5), 983–1016. doi.org/10.2308/accr.2006.81.5.983

Byard, D., & Shaw, K. W. (2003). Corporate disclosure quality and properties of analysts' information environment. *Journal of Accounting, Auditing & Finance* 18(3), 355–378. https://doi.org/10.1177/0148558X0301800304

Chen, H., Tang, Q., Jiang, Y., & Lin, Z. (2010). The role of international financial reporting standards in accounting quality: evidence from the European Union. *Journal of International Financial Management and Accounting*, 21(3), 220–278. https://doi.org/10.1111/j.1467-646X.2010.01041.x

Choi, F. D. S., & Meek, G. (2005). *International accounting*, 5th ed. Upper Saddle River, NJ, Prentice Hall.

Christensen, H., Hail, L., & Leuz, C. (2013). Mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics* 56(2-3), 147–177. https://doi.org/10.1016/j.jacceco.2013.10.007

Chung R., Firth M., Kim J. B., & Pang L. (2014). Big 4 conservatism around the world. In: Boubaker, S., & Nguyen, D. (eds) *Corporate Governance in Emerging Markets. CSR, Sustainability, Ethics & Governance*. Springer, Berlin, Heidelberg, 197–238.

Clarkson, P., Van Bueren, A.-L., & Walker, L. (2006). Chief executive officer remuneration disclosure quality: Corporate responses to an evolving disclosure environment. *Accounting and Finance*, 46(2-3), 771–796. https://doi.org/10.1111/j.1467-629X.2006.00197.x

Conaway, J. L. Liang, L. L., & Riedl, E. J. (2017). Market perceptions of the informational and convergence effects of fair value reporting for tangible assets: US and Cross-Country evidence. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2802192

Dam, L., & Scholtens, B. (2012). Does ownership type matter for corporate social responsibility? *Corporate Governance: An International Review* 20(3), 233–252. https://doi.org/10.1111/j.1467-8683.2011.00907.x

Daske, H., Hail, L., Leuz, C., & Verdi, R. (2008). Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research* 46(5), 1085–1142. https://doi.org/10.1111/j.1475-679X.2008.00306.x

Daske, H., Hail, L., Leuz, C., & Verdi, R. (2013). Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. *Journal of Accounting Research* 51(3), 495–547. https://doi.org/10.1111/1475-679X.12005

De Fond, M. L., Hung, M., Li, S., & Li, Y. (2014). Does mandatory IFRS adoption affect crash risk? *The Accounting Review*, 90(1), 265–299. https://doi.org/10.2308/accr-50859

DeFond, M., Erkens, D. H., & Zhang, J. (2016). Do client characteristics really drive the Big N audit quality effect? New evidence from propensity score matching. *Management Science* 63(11), 3628–3649. https://doi.org/10.1287/mnsc.2016.2544

De George, E. T., Li, X., & Shivakumar, L. (2016). A review of the IFRS adoption literature. *Review of Accounting Studies* 21(3), 898–1004. https://doi.org/10.1007/s11142-016-9363-1

Diamond, D., & Verrechia, R. (1991). Disclosure, liquidity, and the cost of capital. *Journal of Finance* 46(4), 1325–1359. https://doi.org/10.1111/j.1540-6261.1991.tb04620.x

Dietrich, J. R., Harris, M. S., & Muller, K. A., III. (2000). The reliability of investment property fair value estimates. *Journal of Accounting and Economics*, 30(2), 125–158. https://doi.org/10.1016/S0165-4101(01)00002-7

Easton, P. D., Eddey, P. H., & Harris, T. S. (1993). An investigation of revaluations of tangible long-lived assets. *Journal of Accounting Research* 31(Studies on International Accounting), 1–38. https://doi.org/10.2307/2491161

The European Financial Reporting Advisory Group (EFRAG) (2012). *Towards a disclosure framework for the notes*. (Discussion paper).

The European Public Real Estate Association (EPRA) (2017). *Total markets table*. Retrieved from http://www.epra.com/application/files/6215/0592/3119/EPRA_Total _Markets_Table__June_2017.pdf

EY (2019). *Financial reporting developments, a comprehensive guide. Fair value measurement*. Retrieved from https://go.ey.com/2U7UVrr

Fong, K. Y. L., Holden, C. W., & Trzcinka, C. (2017). What are the best liquidity proxies for global research? *Review of Finance* 21(4), 1355–1401. https://doi.org/10.1093/rof/rfx003

Francis, J. R., & Wang, D. (2008). The joint effect of investor protection and Big 4 audits on earnings quality around the world. *Contemporary Accounting Research* 25(1), 157–191. https://doi.org/10.1506/car.25.1.6

Franz, D. R., HassabElnaby, H. R., & Lobo, G. J. (2014). Impact of proximity to debt covenant violation on earnings management. *Review of Accounting Studies* 19(1), 473–505. https://doi.org/10.1007/s11142-013-9252-9

Gao, P. (2010). Disclosure quality, cost of capital, and investor welfare. *The Accounting Review*, 85(1), 1–29. https://doi.org/10.2308/accr.2010.85.1.1

Glosten, L. R., & Milgrom, P. R. (1985). Bid, ask and transaction prices in a specialist market with heterogeneously informed traders. *Journal of Financial Economics* 14(1), 71–100. https://doi.org/10.1016/0304-405X(85)90044-3

Hakim, F., & Omri, M. A. (2010). Quality of the external auditor, information asymmetry, and bid-ask spread: Case of the listed Tunisian firms. *International Journal of Accounting & Information Management* 18(1), 5–18. https://doi.org/10.1108/18347641011023243

Healy, P. M. (1985). The effect of bonus schemes on accounting choices. Journal of Accounting and Economics 7(1-3), 85–107. https://doi.org/10.1016/0165-4101(85)90029-1

Heflin, F., Shaw, K., & Wild, J. (2005). Disclosure policy and market liquidity: Impact of depth quotes and order sizes. *Contemporary Accounting Research* 22(4), 829–865. https://doi.org/10.1506/EETM-FALM-4KDD-9DT9

Horton, J., Serafeim. G., & Serafeim, I. (2013). Does mandatory IFRS adoption improve the information environment? *Contemporary Accounting Research* 30(1), 388–423. https://doi.org/10.1111/j.1911-3846.2012.01159.x

The International Accounting Standards Board (IASB) (2018a). *List of IFRS Standards.* Retrieved from https://www.ifrs.org/issued-standards/list-of-standards/

The International Accounting Standards Board (IASB) (2018b). *Who we are.* Retrieved from https://www.ifrs.org/ about-us/who-we-are/#history

The International Accounting Standards Board (IASB) (2018c). *IAS 1, Presentation of Financial Statements.* Retrieved from https://www.iasplus.com/en/standards/ias/ias1

The International Accounting Standards Board (IASB) (2018d). *The Conceptual Framework for Financial Reporting.* Retrieved from https://www.ifrs.org/issued-standards/list-of-standards/conceptual-framework/

The International Accounting Standards Board (IASB) (2018e). *IAS 40 Investment Property.* Retrieved from https://www.ifrs.org/issued-standards/list-of-standards/ias-40-investment-property/

Israeli, D. (2015). Recognition versus disclosure: evidence from fair value of investment property. *Review of Accounting Studies*, 20(4), 1457–1503. https://doi.org/10.1007/s11142-015-9335-x

Khurana, I. K., & Raman, K. K. (2004). Litigation risk and the financial reporting credibility of Big 4 versus Non-Big 4 audits: Evidence from Anglo-American countries. *The Accounting Review* 79(2), 473–495. https://doi.org/10.2308/accr.2004.79.2.473

Kvaal, E., & Nobes, C. (2010). International differences in IFRS policy choice: a research note. *Accounting and Business Research* 40(2), 173–187. https://doi.org/10.1080/00014788.2010.9663390

Kvaal, E., & Nobes, C. (2012). IFRS policy changes and the continuance of national patterns of IFRS practice. *European Accounting Review* 21(2), 343 – 371. https://doi.org/10.1080/09638180.2011.611236

Landsman, W. (2007). Is fair value accounting information relevant and reliable? Evidence from capital market research. *Accounting and Business Research* 37(supplement), 19–30. https://doi.org/10.1080/00014788.2007.9730081

Lang, M., & Lundholm, R. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research* 31(2), 246–271. https://doi.org/10.2307/2491273

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy* 106(6), 1113–1155. https://doi.org/10.1086/250042

Lawrence, A., Minutti-Meza, M., & Zhang, P. (2011). Can Big 4 versus Non-Big 4 differences in audit-quality proxies be attributed to client characteristics? *The Accounting Review* 86(1), 259–286. https://doi.org/10.2308/accr.00000009

Leuz, C., & Verrechia, R. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research* 38(supplement), 91–124. https://doi.org/10.2307/2672910

Liang, L. L., & Riedl, E. J. (2014). The effect of fair value versus historical cost reporting model on analyst forecast accuracy. *The Accounting Review*, 89(3), 1151–1177. https://doi.org/10.2308/accr-50687

Liao, P-C., & Radhakrishnan, S. (2016). The effects of the auditor's insurance role on reporting conservatism and audit quality. *The Accounting Review* 91(2), 587–602. https://doi.org/10.2308/accr-51167

Messier Jr., W. F. (2018). *Task level research within the audit process: An update.* Presentation in 7th Workshop on Audit Quality. SDA Bocconi, 2018.

Muller III, K. A., & Riedl, E. J. (2002). External monitoring of property appraisal estimates and information asymmetry. *Journal of Accounting Research* 40(3), 865–881. https://doi.org/10.1111/1475-679X.00074

Muller III, K., Riedl, E., & Sellhorn, T. (2011). Mandatory fair value accounting and information asymmetry: Evidence from the European real estate industry. *Management Science* 57(6), 1138–1153. https://doi.org/10.1287/mnsc.1110.1339

Muller III, K., Riedl, E., & Sellhorn, T. (2015). Recognition versus disclosure of fair values. *The Accounting Review*, 90(6), 2411–2447. https://doi.org/10.2308/accr-51044

Nellessen, T., & Zuelch, H. (2010). The reliability of investment property fair values under IFRS. Journal of Property Investment & Finance 29(1), 59–73. https://doi.org/10.1108/14635781111100209

The Netherlands Authority for the Financial Markets (AFM) (2012). *Valuation and disclosure of investment property: Supervision of financial reporting.* October 2012. Retrieved from https://www.afm.nl/~/profmedia/files/doelgroepen/effectenuitgevende-ondernemingen/financiele-verslaggeving/2012/engels/themaonderzoekias40.pdf%3Fla%3 Den&prev=search

New Zealand Institute of Chartered Accountants, & The Institute of Chartered Accountants of Scotland (2011). *Losing the excess baggage reducing disclosures in financial statements to what's important.* (ISBN 978-1-904574-82-8).

Nissim, D. (2003). Reliability of banks' fair value disclosure for loans. *Review of Quantitative Finance and Accounting* 20(4), 355–384. DOI: 10.1023/A:1024072317201

Penman, S. H. (2007). Financial reporting quality: is fair value a plus or a minus? *Accounting and Business Research*, 37(sup1), 33–44. https://doi.org/10.1080/00014788. 2007.9730083

Petroni, K. R., & Wahlen, J. M. (1995). Fair values of equity and debt securities and share prices of propertyliability insurers. *Journal of Risk and Insurance*, 62(4), 719–737. https://doi.org/10.2307/253592

Piot, C. Janin, R., & Dumontier, P. (2010). *IFRS consequences on accounting conservatism within Europe.* Presented at CAAA Annual Conference 2011, Available at SSRN: https://ssrn.com/abstract=1724635 or https://doi.org/10.2139/ssrn.1724635.

PriceWaterhouseCoopers (PWC) (2017). *Applying IFRS for the real estate industry.* Retrieved from https://www.pwc.com/gx/en/audit-services/ifrs/publications/applying-ifrs-for-the-real-estate-industry.pdf

Quagli, A., & Avallone, F. (2010). Fair value or cost model? Drivers of choice for IAS 40 in the real estate industry. *European Accounting Review*, 19(3), 461–493. https://doi.org/10.1080/09638180.2010.496547

Royal Institution of Chartered Surveyors (RICS) (2017). RICS Valuation – Global Standards 2017 (the 'Red Book'). Retrieved from http://www.rics.org/uk/upholding-professional-standards/sector-standards/ valuation/red-book/

Schipper, K. (2003). Principles-based accounting standards. *Accounting Horizons* 17(1), 61–72. https://doi.org/10.2308/acch.2003.17.1.61

Shalev, R. (2009). The information content of business combination disclosure level. *The Accounting Review* 84(1), 239–270. https://doi.org/10.2308/accr.2009.84.1.239

Van Tendeloo, B., & Vanstraelen, A. (2005). Earnings management under German GAAP versus IFRS. *European Accounting Review*, 14(1), 155–180. https://doi.org/10.1080/0963818042000338988

Verrechia, R. (2001). Essays on disclosure. *Journal of Accounting and Economics*, 32(1-3), 97–180. https://doi.org/10.1016/S0165-4101(01)00025-8

The role of investment property appraisal in European real estate companies

Juha Mäki

School of Accounting and Finance, University of Vaasa, Vaasa, Finland

Abstract

Purpose – This paper aims to examine the connection between appraisals of investment properties and earnings properties in companies from two perspectives: what kinds of companies employ the most reputable appraisers and how appraisers produce estimations.

Design/methodology/approach – The research uses annual reports of European Union (EU) publicly traded real estate companies and examines the period 2007-2016.

Findings – The contribution of this study lies in establishing that some indicators and features of real estate companies affect the choice of appraiser and also in illustrating differences in the results of property valuations. In short, smaller companies with weaker performance are less willing to use external valuation, and external appraisers produce more conservative estimations for investment properties.

Practical implications – The research produces beneficial information for investors and other stakeholders interested in the real estate industry.

Originality/value – This is the first novel study to examine the link between appraisals of investment properties and earnings properties in companies in detail.

Keywords IFRS, Appraisal type, Earnings properties

Paper type Research paper

1. Introduction

There has been a great deal of discussion concerning the International Accounting Standards (IFRS) and the guidance on investment property when financial statements are made under the disclosure requirements of IAS 40 (International Accounting Standards, Investment Property) and IFRS 13 (International Financial Reporting Standards, Fair Value Measurement). This research stems from the debate among managers, investors, capital market officials and other stakeholders on the recognition of long-term nonfinancial assets at fair value, rather than at depreciated historical cost. The aim of this paper is to study factors that have received less research attention; that is, the choice of investment property appraisal, the use of Big 4 auditors in that context and the endogenous relationship between earnings properties and appraiser choice under IFRS. Few studies have been conducted on the interactions of management with company specialists (Messier, 2018), but those specialists (e.g. appraisers and auditors) can have an influential role in producing financial statements. Specialists employed by real estate companies are important because so many uncertain factors affect the valuation of investment properties.

It is an interesting research area because of the volume of debate on the accuracy of fair-value measures in financial statements. At the same time, those responsible for drafting standards are looking for best practice to produce more useful financial reports. Selected actions and the stakeholders of a company can have a great impact on both that company's income statement and balance sheet.

Pre-IFRS practices in the EU region were heterogenous and not standardized from one country to another. In Germany, for example, revaluations were not allowed at all, while in Greece, it was possible to reevaluate fixed assets every four years following a special revaluation index. Under Finnish and Swedish regulation, revaluation would be possible if fair values were thinkable to calculate precisely enough. At the same time, in Italy and Spain an asset revaluation was allowed only if a special law gives a possibility and in France only if it included all fixed and long-term financial assets (Quagli and Avallone, 2010). Regulation (EC) No. 1606/2002 of the European Parliament and the Council decrees that public companies must apply IFRS from the fiscal year 2005. Under IAS 40, companies can use two models to valuate investment properties: cost and revaluation. From the beginning, some countries (e.g. the UK) required that investment properties must be valuated using the revaluation model and recording changes in the balance sheet. Some other countries (e.g. Italy) required that investment property be valuated under the cost model. Several other countries (e.g. France and Germany) also required the cost model in practice because those countries do not separately address reporting for this special tangible asset. Several countries (e.g. Finland) allowed companies to choose either the cost or revaluation model. However, IAS 40 requires companies using the cost model to also disclose investment property fair values in the notes (Muller *et al.*, 2011).

Since the beginning of 2013, real estate companies have also followed IFRS 13. The new standard provided a framework for measuring fair value and required disclosures about fair-value measurement. IFRS 13 provides a hierarchy of methods for arriving at fair value: Level 1: unadjusted quoted prices for identical assets and liabilities in active markets (preferable); Level 2: other observable inputs for the asset or liability, such as quoted prices in active markets for similar assets or liabilities or quoted prices for identical assets or liabilities in markets that are not active; and Level 3: unobservable inputs for the asset or liability (The International Accounting Standards Board (IASB), 2018).

Estimated fair values could produce an uninformative balance sheet and inaccuracy in income statements, especially if properties are valuated at Level 3. Fair values estimated can also affect trading shares in and out because of unreliable estimations (Penman, 2007). Investment property valuations of the real estate industry are normally categorized as Level 2 or Level 3 valuations (PriceWaterhouseCoopers (PWC), 2017).

The current research uses annual reports of publicly traded real estate companies from EU member states and covers the period 2007-2016. The starting year of the research was chosen because it is two years after the IFRS regulations became mandatory for publicly traded companies and, thus, the policies of companies would have stabilized by that point. The real estate sector is selected because of the outstanding weight of investment property fair values and of the changes they bring to the balance sheet. Empirical tests are conducted on a sample of 699 firm-years for publicly traded real estate companies in the EU region.

In contrast to auditing, the whole valuation process is very lightly regulated, and it is difficult to find scientific material on it. The interviews with experts working in valuation firms and real estate companies reveal that an appraiser is normally appointed by the board of directors, but typically, the appointment follows a suggestion of a suitable appraiser made by management or the incumbent auditor. The responsibility for valuations is normally agreed upon in the assignment. The upper limit is usually the value of the agreement, on the condition there is no serious lack of care apparent. The fact is that in the UK and Central Europe, the level of compensation is usually higher than in the Nordic countries. Today, the duration of an appraisal contract is not regulated, and that fact can affect certain actions of appraisers. There have been discussions around regulating such contracts in a similar way to those relating to auditing. There are also no clear rules to call

upon if a company is not satisfied with the valuation. An attempt is made to proceed through negotiation in such cases and to ensure that the source information informing the fair value calculations was correct. In the worst case, the company can disregard the valuation, but doing so would create doubt among stakeholders and incur extra costs for the monitored company. Because external well-known appraisers can be considered similar qualified experts to the Big 4 auditors and probably have a similar attitude to the reputation and litigation risk, an assumption can be that they are working under principles of the same kind and they deviate from other appraisers.

In the frictionless world, there are no incentives for companies or appraisers that affect the choice of appraisal or the way the different types of appraiser manage investment property valuations. In the real world, it is typical that successful actors seek their way of operating with successful famous partners, and it is clear that incentives, for example, stock option offerings and bonuses for managers, or the terms of covenants or lower interest rates for companies, can affect their decisions maybe in the valuation process (Healy, 1985). According to The Netherlands Authority for the Financial Markets (AFM) (2012), in their small sample with external valuations of investment properties, four of seven companies had investment property with a market price of approximately 15 per cent below the valuated figure.

The hypothesis tested are if the use of an external appraiser produces more conservative valuations in the fair value accounting of investment properties than undertaking an internal valuation (H_1) and if earnings properties of real estate companies are linked to the type of appraiser who performs the investment property appraisal (H_2).

The main contribution of this study is that the choice of investment property appraisers is affected by some earnings properties. In addition, the valuations proposed by appraisers differ according to whether that appraiser is an external appointment or an internal one. External appraisers produce more conservative estimations than do internal appraisers. The use of internal appraisals indicates increased relative fair value changes. The difference is most clearly illustrated through a comparison with significant results of other less well-known and often commissioned external appraisers. The use of a Big 4 auditor has a very significant reduction impact on relative investment property fair value changes at the 0.01 level. It is interesting to note that the use of both external appraisers and Big 4 auditors affect fair value changes in the same way, although auditors must bear a large litigation and reputation risk (Khurana and Raman, 2004), while external appraisers can make valuations without concerns over strict regulation.

Nevertheless, other company-specific features like ownership structure and the origin of the company are also significantly linked to the choice of appraiser. Companies with one dominant owner are more willing to adopt an internal valuation procedure and companies from both the UK and Central Europe commission more external valuations than companies from Nordic countries.

2. Prior literature

When we are studying the role of appraisals and their effects on the valuation of material assets, it is interesting to first examine the reasons behind and the incentives involved in the process of adopting an appraiser. The revaluations made under IAS 40 affect both the income statement (the changes of investment property values) and the balance sheet (the amount of total assets). That information is used as a substance in debt contracts, accounting-based debt covenants and as a guideline in corporate acquisitions as well as in managerial stock-based compensation, stock ownership and stock option agreements (The International Accounting Standards Board (IASB), 2018; Ball, 2016). Both political and

economic powers determine the incentives of the players (managers, auditors, boards, regulators, courts, analysts, press and educators). For example, Ball (2016) argues that earnings management may contribute to financial reports that present an excessively positive opinion of a company's actions and economic situation.

The fair value measurement of IFRS allows stakeholders and managers certain options in their accounting estimates (Ball *et al.*, 2015). Generally, fair value manipulation takes one of two forms: trading at period-end to manipulate asset prices in poorly liquid markets (Heaton *et al.*, 2010) or manipulating fair value estimations when traded prices are unavailable (Watts, 2003; Benston, 2008). Managers in listed real estate companies have the opportunity to embrace sales, cost and expense manipulation (Hou and Li, 2016) or, and perhaps the most important way to embellish source information, selectively use interest and vacancy rates.

Aboody *et al.* (1999) report revaluations reveal changes in the values of assets related to future operating performance, and at least some of them are well-timed. They argue that fixed assets' fair values are not necessarily unreliable, but that revaluations and future performance, returns and prices may be influenced by many different factors. The same study also shows that the revaluation is significantly positively linked to share prices and returns. Easton *et al.* (1993) show that the main reason managers revalue assets is to publish fair financial statements, but the second most common motivation is to affect debt-to-equity ratios, perhaps to for reasons connected to debt contracting.

When fair-value measurement gives managers more opportunities to adjust accounts, it creates doubts among stakeholders, and especially among lenders, who can see uncertainties and try to transfer that uncertainty into the interest rate. Ball *et al.* (2015) stated that financial statements presented under IFRS could be less useful in debt contracts, even if they offer more information useful to the valuation process. Li (2010) finds that so-called transitory earnings, including asset revaluations, are rather less valuable in measuring company performance for debt contracting than the net income approach, which has a ruling role in efficient contracting, especially in the case of longer loan maturity. Christensen and Nikolaev (2012) reported that financial covenants can be shared between two different mechanisms. Capital covenants enforce expensive limitations on the capital structure and performance covenants involve comparable accounting information being provided. Both earnings variables and asset measures are then less efficient under IFRS. Ball *et al.* (2015) show a significant decrease in accounting-based debt covenants after mandatory IFRS adoption. Demerjian (2011) shows that when standard setting has moved toward a balance sheet approach and is predicted to be less useful for contracting, borrowers with higher volatility ratios are less likely to have balance sheet-based covenants. Nellessen and Zuelch (2010) explain that there is realistic doubt over whether fair values of investment properties are inaccurate. They argue that the process by which fair values are derived is open to criticism. The human nature of the appraisals, the nature of the process and the structure of the property market where appraisals are operating can increase the likelihood of biased estimations.

Brown and Matysiak (2000) tell important reasons for inexact valuation. They show that only the small proportion of properties is valuated per year because of lower costs reporting no change or minor changes so that an appraiser does not change values at all, but over time, the need for change will cumulate. In addition to the courage of the appraiser to change investment property values toward the realistic market level because of the customer's dissatisfaction, that uncertainty can bring a smoothing effect that devalues the true volatility of returns on the market. Pinto and Pais (2015) find that, for example, under great

market pressure to meet financial reporting purposes, managers are more willingly to smooth book value returns.

Nevertheless, there are many studies arguing IFRS regulation has developed accounting and the whole valuation process. Aharony *et al.* (2010) report the improved value relevance of asset revaluations that can lead to improved debt service capacity, and Barth *et al.* (2012) report increased value relevance in financial statements made under IFRS. Herrmann *et al.* (2006) argue that fair value measures for property, plant and equipment are more reflective of historical cost based on the features of analytical value, feedback value, timeliness, neutrality, comparability and reliability. In summary, the apparent incoherence mentioned above increases the importance of the choices made by an investment property appraiser.

It is difficult to find research on the incentives influencing asset appraisal and their effect on earnings quality. The International Valuation Standards Council (IVSC) (2017) has identified globally accepted principles and definitions. Professional appraisers may be involved in reporting the value of company assets and liabilities for use in financial statements or in assisting the auditor of the company's statements in defining whether the values reported by the company are realistic and reliable. Professional appraisers need guidance on how they can help both auditors and companies during the process. The IVSC emphasizes that some appraisers are worried about developing too close a relationship with a client (as are auditors), because doing so can threaten their independence and neutrality. It is generally known that the work of appraisers is less regulated than that of auditors, as demonstrated, for example, by the fact that the length of the appraisal agreement is not yet monitored. That can tempt appraisers to offer valuations that please the management and the company and will secure a contract extension.

Appraisers often use the international standards promoted by The Royal Institution of Chartered Surveyors (RICS). Professionals holding RICS qualifications may use the designations AssocRICS (Associate), MRICS (Member) FRICS (Fellow), and they are also known as chartered surveyors. RICS Valuation – Global Standards (known as the *Red Book*) contains rules, best practice guidance and related commentary on all asset valuations (The Royal Institution of Chartered Surveyors (RICS), 2017). The Red Book follows the International Valuation Standards, which ensures that RICS members follow regular practices internationally. Adhering to the procedures of the Red Book is mandatory for all RICS members and also normally referred to by non-RICS appraisers. There are also some other valuation standards and guidelines in the European real estate sector such as the European Group of Valuers' Associations (TEGoVA) and local guidelines, including instructions published by Authorized Property Valuers (AKA) in Finland. The European Public Real Estate Association (EPRA) is the best-known institution in this sector (Nellessen and Zuelch, 2010). Both global investment markets and international consulting/valuating firms (such as CBRE, DTZ and JLL) are some of the drivers of using international valuation standards instead of local guidelines (Bellman and Lind, 2019).

3. Methodology and Data
3.1 Real estate companies in the European Union
The EU consists of 28 member states, with a collective commercial real estate market value of approximately €6.5tn (2017). The value of the listed real estate companies is estimated at €350bn (The European Public Real Estate Association (EPRA), 2017). The number of EPRA member companies in Europe was 104 during 2017. The majority of investment properties comprise office buildings, shopping centers and industrial buildings. Real estate companies acquire (purchase, lease and develop), sell and manage investment property to generate

profits through rents or transactions. Companies in this sector are both domestic and, more often, international.

I have found no other recent studies examining the effects and prevalence of the appraisal choice in the real estate industry under IFRS. The business of the real estate industry under IAS 40 and IFRS 13 does, however, have some specific features; for example, a large portion of investment property on the balance sheet normally signifies a long lifecycle of properties, that creates considerable uncertainty over the value of a real estate portfolio and makes the chosen valuation procedure very significant in terms of both the income statement and balance sheet.

3.2 Methodology development

Under IAS 40.75, company annual reports must record the extent to which the fair value of investment property is based on a valuation and the efforts of a qualified independent appraiser to check the company's calculations and basic information. The valuation of property can also be conducted as an internal process. This study examines whether a large, well-known, external appraiser (*VALEXTL*), a less prominent external appraiser (*VALEXTO*) or a valuation without an external appraiser (*NOVALEXT*) has a link with the earnings properties of real estate companies or affects the level of investment property changes in financial statements. A large, well-known appraiser of property is in this case an appraiser that has been used at the beginning of a period three or more times per year in companies in the sample. There are six appraisers of that type (Allsop LLP, CBRE, DTZ (from 2015 together with Cushman and Wakefield), Forum Fastighetsekonomi Ab, Jones Lang LaSalle and Lambert Smith Hampton[1]). Some are mainly local actors, such as Forum Fastighetsekonomi Ab, while CBRE, for example, is a global appraisal company. The names of appraisers are collected from the notes of annual reports and are encoded as an external appraisal if even a part of assets is evaluated by external appraisals. The entire sample comprises 26 companies conducting valuations of investment properties, and the large ones have a collective market share of almost 50 per cent. The number of valuation companies that valuated only one real estate company was 13, while seven valuated two real estate companies. In this study, external valuation is split into two parts, large well-known and less prominent valuation companies.

Logically, the choice of the appraisal is an endogenous process. It is possible that the real estate companies with the best performance are willing to choose a large, renowned and probably more reliable appraiser whose estimations do not result in over- or under-valuations. On the other hand, more local appraisers can also have a better professional knowledge of local markets (Kahr and Thomsett, 2006), but in this study, it is assumed that particularly large appraisers could act like Big 4 auditors and avoid (DeAngelo, 1981; Francis and Krishnan, 1999; Khurana and Raman, 2004; Liao and Radhakrishnan, 2016) reputation and litigation risk with more precisely produced conservative valuations.

Companies, owners and managers, who have an important role in choosing the form of appraisal, can have their own incentives depending, for example, on the company's profitability or leverage. The first two multinomial logistic regressions (Models 1 and 2) contain important earnings property variables and basic characteristics of companies testing the link between the appraisal type and company-specific features. The dependent dummy variable (*VAL*) reflects the variables *NOVALEXT*, *VALEXTO* and *VALEXTL* (descriptions after models). A variable *LEADVAL* try to explain if current earnings properties will affect the choice of appraiser the following year.

The models control for firm size by including the variable *LNTA* and the performance of the company by including *ROA*, *LEV*, *SALESGR* and *CFO*/T*A*. For example,

Ahmed *et al.* (2002) argue that profitable firms tend to favor more conservative accounting; however, large companies are likely to incur large political costs, which encourages them to ensure they adopt a moderate form of accounting (Watts and Zimmerman, 1978). Conservatism of accounting is controlled by the market-value based measure market-to-book ratio, *MTB*; positive values for which indicate greater conservatism (Roychowdhury and Watts, 2007).

A variable *BIG4* is included in the regression because several studies show using Big 4 auditors promotes greater conservatism (Chung *et al.*, 2014; Francis and Wang, 2008). Prior studies show that Big 4 auditors are concerned about their exposure to litigation and risks to their reputation (Francis and Wang, 2008; Liao and Radhakrishnan, 2016), one consequence of which is that they recommend conservative accounting practices to their clients.

Prior studies have clarified that overall accounting decisions are affected, for example, by arrangements, taxation, litigation, regulation and managerial decisions, as well as ownership structure (Watts, 2003; LaFond and Watts, 2008); accordingly, a variable *OSHIP* is included in the regression. One controlling shareholder can attempt to advance their own interests by manipulating reported performance (Hope, 2013). Even at the EU country level, culture, legal history, traditions, governance, investor protection and public enforcement regimes are different, which can have an impact on accounting; however, standardization can reduce the extent of such separation. For example, André and Filip (2012) find weak evidence that insider economies with weak enforcement continue to exhibit a lower level of conservatism, and the reduction in conservatism is most significant in countries that diverge most from the IFRS. According to La Porta *et al.* (1998), the countries included in this kind of sample have different legal and enforcement policies. Included in the multinomial logistic regressions are indicator variables for the UK and Central European origin as controls (*ORI1*, *ORI2*). Companies from Nordic countries, according to the classification by La Porta *et al.* (1998), are in the reference group (Denmark, Finland and Sweden). All companies are based in the EU.

Models 3-6 examine the actions of appraisers after they are hired in the endogenous process. It can be assumed that companies have reasons for hiring a certain kind of appraiser. The models use the relative change of estimated values in real estate assets (*DFV/FV*) as a dependent variable and typical company-specific variables to control the second-stage self-model, where the inverse Mills ratios are included (Models 4 and 6). Prior studies often used MTB or net asset value (NAV) to estimate the validity of property valuations. The variable *DFV/FV* can more precisely measure the validity of the change in investment properties without bias because there is no need to use share prices that are affected by many other factors. The variable *DFV/FV* shows how moderate or conservative investment property valuations can be:

$$VAL_{it} = \beta_0 + \beta_1{}^*BIG4_{it} + \beta_2{}^*ORI1_{it} + \beta_3{}^*ORI2_{it} + \beta_4{}^*OSHIP_{it}$$
$$+ \beta_5{}^*LNTA_{it} + \beta_6{}^*ROA_{it} + \beta_7{}^*LEV_{it} + \beta_8{}^*SALESGR_{it} + \beta_9{}^*CFO/TA_{it}$$
$$+ \beta_{10}{}^*MTB_{it} + \sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it} \tag{1}$$

$$LEADVAL_{it} = \beta_0 + \beta_1{}^*BIG4_{it} + \beta_2{}^*ORI1_{it} + \beta_3{}^*ORI2_{it} + \beta_4{}^*OSHIP_{it}$$
$$+ \beta_5{}^*LNTA_{it} + \beta_6{}^*ROA_{it} + \beta_7{}^*LEV_{it} + \beta_8{}^*SALESGR_{it}$$
$$+ \beta_9{}^*CFO/TA_{it} + \beta_{10}{}^*MTB_{it} + \sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it} \tag{2}$$

JERER

$$DFV/FV_{it} = \beta_0 + \beta_1*NOVALEXT_{it} + \beta_2*BIG4_{it} + \beta_3*ORI1_{it}$$
$$+ \beta_4*ORI2_{it} + \beta_5*OSHIP_{it} + \beta_6*LNTA_{it} + \beta_7*ROA_{it}$$
$$+ \sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it} \qquad (3)$$

$$DFV/FV_{it} = \beta_0 + \beta_1*NOVALEXT_{it} + \beta_2*BIG4_{it} + \beta_3*ORI1_{it}$$
$$+ \beta_4*ORI2_{it} + \beta_5*OSHIP_{it} + \beta_6*LNTA_{it} + \beta_7*ROA_{it}$$
$$+ \beta_8*MILLSNOEXT_{it} + \sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it} \qquad (4)$$

$$DFV/FV_{it} = \beta_0 + \beta_1*VALEXTO_{it} + \beta_2*VALEXTL_{it} + \beta_3*BIG4_{it}$$
$$+ \beta_4*ORI1_{it} + \beta_5*ORI2_{it} + \beta_6*OSHIP_{it} + \beta_7*LNTA_{it}$$
$$+ \beta_8*ROA_{it} + \sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it} \qquad (5)$$

$$DFV/FV_{it} = \beta_0 + \beta_1*VALEXTO_{it} + \beta_2*VALEXTL_{it} + \beta_3*BIG4_{it}$$
$$+ \beta_4*ORI1_{it} + \beta_5*ORI2_{it} + \beta_6*OSHIP_{it} + \beta_7*LNTA_{it}$$
$$+ \beta_8*ROA_{it} + \beta_9*MLLSEXTO_{it} + \beta_{10}*MLLSEXTL_{it}$$
$$+ \sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it} \qquad (6)$$

where:

DFV/FV_{it} = Change in fair value of investment property divided by fair value of investment property and multiplied by –1 at the end of the fiscal year t;

VAL_{it} = A dependent variable taking value 1 if a company is not using an external property appraiser, value 2 when using an external but not a large appraiser and value 3 when using an external large appraiser in the fiscal year t;

$LEADVAL_{it}$ = A lead dependent variable taking value 1 if a company is not using an external property appraiser, value 2 when using an external but not a large, property appraiser and value 3 when using an external large property appraiser in the fiscal year $t + 1$;

$NOVALEXT_{it}$ = An indicator variable taking value 1 if a company is not using an external property appraiser in the fiscal year t;

$VALEXTO_{it}$ = An indicator variable taking value 1 if a company is using an external but not a large property appraiser in the fiscal year t;

$VALEXTL_{it}$ = An indicator variable taking value 1 if a company is using an external large property appraiser in the fiscal year t;

$BIG4_{it}$ = An indicator variable taking value 1 if a company is using Big 4 auditor in the fiscal year t;

$ORI1_{it}$ = An indicator variable taking value 1 if a company is located in the UK;

$ORI2_{it}$	= An indicator variable taking value 1 if a company is located in Central EU countries;
$OSHIP_{it}$	= An indicator variable taking value 1 if the biggest shareholder owns more than 50 per cent of shares in the fiscal year t;
$LNTA_{it}$	= Logarithm of total assets (tEUR) in the fiscal year t;
LEV_{it}	= The total debt divided by total assets in the fiscal year t;
ROA_{it}	= Return on assets in the fiscal year t;
$SALESGR_{it}$	= The growth of sales (per cent) in the fiscal year t;
CFO/TA_{it}	= Cash flows from operations divided by total assets in the fiscal year t;
MTB_{it}	= Market value of the company (a price at the end of year t multiplied by the number of shares) divided by the book value of company (total assets minus liabilities) at the end of the fiscal year t; and
$MILLSX$	= The inverse Mills' ratio of different appraisal types. Independent variables from Model 1 are used in first step Probit regression.

The data are derived from 121 real estate companies in EU countries covering the period 2007-2016 and after adjustments and removing defective data, 699 firm-years remain. The sample and all companies in the sample use the IAS 40 standard reporting fair values in disclosures, and investment property should make up more than half of the total property plant and equipment in 2007 (the first year studied). The continuous variables are winsorized 1 per cent (i.e. the transformation of statistics to reduce the effect of extreme values, here all outliers are set between 1st and 99th percentile of the data). Both years and companies are clustered in regressions and the models have year fixed effects. The data are collected from Bureau van Dijk Orbis, Thomson Reuters Worldscope and manually from annual reports. Most of the dummy variables are collected from annual reports, ownership data from Orbis and financial ratios from Worldscope. (Table I)

4. Empirical results
4.1 Descriptive statistics
Table II summarizes the dependent and independent variables. The ratio of fair value change in the investment properties (*DFV/FV*) varies between –43.5 and 31.8 per cent, while the mean is 0.3 per cent. The mean market value of companies is only 74.2 per cent of their book values in accounts (*MTB*). That result conforms the research of Nellessen and Zuelch (2010) and can

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
The UK	16	18	18	15	15	14	14	14	13	13	150
The Netherlands	2	2	2	2	2	2	1	1	2	2	18
Belgium	5	5	5	5	5	5	5	4	5	5	49
France	10	13	15	14	15	12	11	11	9	9	119
Greece	2	3	3	2	2	3	3	3	1	1	23
Italy	3	3	3	3	3	3	2	3	3	1	27
Spain	2	2	2	2	2	1	2	2	2	1	18
Austria	2	2	2	2	2	2	2	2	2	2	20
Germany	14	14	14	15	13	11	9	8	7	7	112
Denmark	3	3	5	5	5	5	3	4	3	4	40
Finland	3	3	3	3	3	3	3	3	3	3	30
Sweden	10	10	10	10	10	9	9	9	8	8	93
Total	72	78	82	78	77	70	64	64	58	56	699

Table I.
Breakdown of
companies by
country and year
after adjustments

JERER

	N	Mean	Std	Minimum	Q1	Median	O3	Maximum
DFV/FV	575	−0.003	0.086	−0.318	−0.036	−0.007	0.017	0.435
VAL	699	2.363	0.664	0	1	2	3	1
NOVALEXT	699	0.104	0.306	0	0	0	1	1
VALEXTO	699	0.428	0.495	0	0	0	1	1
VALEXTL	699	0.468	0.499	0	0	0	1	1
BIG4	699	0.724	0.447	0	0	0	1	1
ORI1	699	0.215	0.411	0	0	0	1	1
ORI2	699	0.552	0.498	0	0	0	1	1
OSHIP	699	0.373	0.484	0	0	0	1	1
LNTA (tEUR)	699	13.427	1.672	8.48	12.296	13.524	14.646	16.72
LEV	699	0.47	0.198	0	0.348	0.5	0.612	0.986
ROA	699	3.78	6.74	−28.1	1.49	4.21	6.96	22.04
SALESGR	699	22.56	98.44	−86.65	−4.33	4.82	19.33	1088.89
CFO/TA	699	0.016	0.045	−0.201	0.007	0.021	0.033	0.162
MTB	699	0.742	0.481	0.07	0.488	0.688	0.913	5.196

Table II.
Descriptive statistics   **Note:** Variables are defined in the text

cause friction in the market. Some problems can occur during the economic downturn, acquisitions between real estate companies can be more complicated and bankers can be less confident.

Firm-years of companies using an external appraisal account for nearly 90 per cent of all firm-years in the sample and the percentage of large external appraisers is approximately 47 per cent. The appraisers are those used in this sample in the year 2007 three or more times. The value for companies using Big 4 auditors is over 72 per cent, and one large owner is present in approximately 37 per cent of firm-years. Slightly more than 20 per cent of companies come from the UK, while more than 55 per cent come from Central EU countries. Appraisal contracts are quite long in real estate industry, but during the period of this sample, there are 46 changes between large external appraisers and other appraisers, likewise 34 changes between the internal and external appraisal.

The total assets held per company varies between €4.8m and €18,255.9m, and the mean is almost €700m. The mean of leverage ratio (*LEV*) ratio is 0.47, and there are companies without (or almost without) debts. The mean of return on assets ratio (*ROA*) is approximately 3.78, and the growth of sales is approximately 22.56 per cent per year. The variable *CFO/TA* (cash flows from operations divided by total assets) has a mean of 0.016, while the range is from –0.201 to 0.162.

Table III shows the Pearson correlations of the variables used in this paper. The highest correlation is –0.73 between external but not a large property appraisers (*VALEXTO*) and external large property appraiser (*VALEXTL*), which is understandable. As the second highest correlation –0.60 is between companies situated in the UK (*ORI1*) and Central Europe (*ORI2*), variables in this format can be used.

4.2 Results from regressions
Table IV presents the estimates for dependent variables *VAL* and *LEADVAL,* which reflect the appraiser type, as the result of multinomial logistic regressions (Models 1-2) and Table V the relative change in fair value of investment property (*DFV/FV*) as a result of both ordinary least squares (OLS) regression and selection models with the inverse Mills' ratio (*MILLSX*) (Models 3-6). The R^2 values of regressions are 20-36 per

	DFV/FV	NOVALEXT	VALEXTO	VALEXTL	BIG4	ORI1	ORI2	OSHIP	LNTA (tEUR)	ROA	LEV	SALESGR	CFO/TA	MTB
DFV/FV	1.00													
NOVALEXT	−0.04	1.00												
VALEXTO	0.05	−0.37***	1.00											
VALEXTL	−0.02	−0.36***	−0.73***	1.00										
BIG4	0.05	−0.04	−0.26***	0.28***	1.00									
ORI1	0.09**	−0.07**	−0.14***	0.19***	−0.09***	1.00								
ORI2	−0.01	−0.03	0.18***	−0.16***	−0.13***	−0.60***	1.00							
OSHIP	−0.01	0.16***	0.03	−0.15***	−0.15***	−0.17***	0.31***	1.00						
LNTA (tEUR)	−0.10***	−0.19***	−0.24***	0.38***	0.42***	−0.07**	−0.00	−0.13***	1.00					
ROA	−0.53***	−0.08**	−0.05	0.11***	0.04	0.00	−0.10***	−0.01	0.21***	1.00				
LEV	0.12***	−0.04	0.08**	0.04	−0.10***	−0.12***	−0.05*	−0.07**	0.23***	−0.20***	1.00			
SALESGR	0.03	0.01	0.08**	−0.09**	−0.13***	−0.06**	0.03	0.05*	−0.12***	0.04	0.06*	1.00		
CFO/TA	−0.08**	−0.12***	0.03	0.06*	0.06*	−0.03	0.01	0.01	0.14***	0.21***	−0.17***	−0.02	1.00	
MTB	−0.20***	0.16***	−0.12***	0.01	0.11***	−0.09***	0.12***	0.04	−0.01	0.03	0.03	−0.02	−0.08**	1.00

Notes: *, ** and *** denote significance of the Pearson correlations at the 0.10, 0.05 and 0.01 levels, respectively; variables are defined in the text

Table III.
Pearson correlations

JERER

VALEXTL base outcome	Model 1 *VAL* *NOVALEXT*	*VALEXTO*	Model 2 *LEADVAL* *NOVALEXT*	*VALEXTO*
BIG4	−0.893	−1.316	−1.317	−1.398
	0.045**	0.000***	0.005***	0.000***
ORI1	−3.940	−1.722	−4.515	−1.720
	0.000***	0.000***	0.000***	0.000***
ORI2	−2.380	−0.031	−2.675	−0.018
	0.000***	0.902	0.000***	0.945
OSHIP	1.738	−0.257	1.922	−0.220
	0.000***	0.202	0.000***	0.295
LNTA (tEUR)	−0.655	−0.406	−0.600	−0.408
	0.000***	0.000***	0.000***	0.000***
ROA	−0.029	−0.007	−0.089	−0.020
	0.312	0.722	0.012**	0.307
LEV	2.422	0.886	2.577	0.864
	0.003***	0.102	0.003***	0.121
SALESGR	−0.002	−0.001	−0.002	−0.001
	0.083*	0.561	0.100*	0.641
CFO/TA	−3.268	−0.199	−1.961	−1.165
	0.249	0.932	0.541	0.651
MTB	−0.011	−0.390	−0.058	−0.344
	0.963	0.077*	0.859	0.143
CONS	8.823	7.349	8.081	7.304
	0.000	0.000	0.000	0.000
N	699	699	639	639
R^2	0.204	0.204	0.217	0.217

Table IV.
Regressions concerning company-specific factors affecting on the choice of appraisal

Notes: Coefficient estimates and standard deviations for both multinomial logistic regressions are reported in Table IV. The standard errors are robust errors clustered by year and company. The models also have year fixed effects. *, ** and *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels respectively. The continuous variables are winsorized 1% in each tail. Variables are defined in the text

cent. All regressions are clustered on both company and year. The models have year fixed effects.

As described earlier, this research includes testing the seldom-observed investment property appraisal choice together with the connection with the earnings properties and firm-specific features of companies. First this study examines what kind of companies will hire a certain type of appraiser. Table IV shows that when *VAL* is used as a dependent variable with 699 firm-years, the internal appraiser (*NOVALEXT*) is adopted in smaller, more often indebted companies with a slower growth rate than in a comparison category. In addition, companies who use an external (but less often used) appraiser (*VALEXTO*) seem to be smaller than companies that choose the often-used well-known appraiser (*VALEXTL*) defined as a base outcome. There is some evidence that companies with less conservative accounting measured by *MTB* more commonly have *VALEXTO* appraisers than *VALEXTL* ones.

The companies that adopt the *NOVALEXT* or *VALEXTO* valuation options less frequently commission Big 4 auditing (*BIG4*), and there seems to be a link between the Big 4 auditing and the use of an external large investment property appraiser. That test expresses the association between one large share owner of company and a disinclination to commission an external valuation. The data also reveal some country-specific or mimicking

DFV/FV	Model 3	Model 4	Model 5	Model 6
NOVALEXT	−0.016	−0.017		
	0.080*	0.072*		
VALEXTO			0.018	0.017
			0.065*	0.098*
VALEXTL			0.014	0.016
			0.184	0.165
BIG4	0.017	0.017	0.018	0.066
	0.025**	0.018**	0.017**	0.011**
ORI1	0.013	0.013	0.014	0.063
	0.176	0.610	0.172	0.028**
ORI2	0.004	0.006	0.004	−0.012
	0.469	0.781	0.503	0.270
OSHIP	−0.004	−0.002	−0.003	0.020
	0.563	0.872	0.606	0.076*
LNTA (tEUR)	−0.001	−0.001	−0.001	−0.011
	0.519	0.761	0.646	0.080*
ROA	−0.006	−0.006	−0.006	−0.006
	0.000***	0.000***	0.000***	0.000***
MILLSNOEXT		−0.001		
		0.949		
MILLSEXTO				−0.106
				0.018**
MILLSEXTL				0.005
				0.869
CONS	0.020	0.016	−0.001	−0.121
	0.516	0.625	0.978	0.316
N	597	575	597	575
R^2	0.337	0.349	0.338	0.360
Test VALEXTL=VALEXTO F-value			0.27	0.02
Test NOVALEXT = BIG4 F-value	7.29***	7.45***		
Test VALEXTO = BIG4 F-value			0.09	2.98*
Test VALEXTL=BIG4 F-value			0.00	3.36*

Notes: Coefficient estimates and standard deviations for OLS regressions are reported in Table V. The standard errors are robust errors clustered by year and company. The models also have year fixed effects. *, ** and *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels respectively. The continuous variables are winsorized 1 % in each tail. Variables are defined in the text

Investment property appraisal

Table V.
Regressions concerning the relative fair value change and the choice of appraisal

features, so especially in the UK, there are more real estate companies using an external large (*VALEXTL*) investment property appraiser.

The second test (Model 2) investigates if there are some features of companies that can predict the choice of appraisal in the future; to assist, a lead valuation dummy (*LEADVAL*) is used as a dependent variable. Investment property valuations contracts are normally long-lasting, and changing the appraiser is not easily done. The results from Model 2 are similar to those of Model 1; but in Model 2, the variable *ROA* becomes significant at the 0.05 level, which shows that companies with inferior performance are more willing to have an internal valuation routine in the following years.

Table V illustrates what kind of relative fair values the different types of appraisers produce for real estate companies. The variable *DFV/FV* (the relative change in fair value of investment property) is used as a dependent variable. Multiplying the variable by −1 produces larger values that reveal some evidence of more extensive conservatism in

accounting. Because the choice of appraisal can be endogenous, in this study includes the inverse Mills' ratio (*MILLSX*) – which controls for potential self-selection bias in the second stage – as an additional independent variable. Although some multicollinearity is evident in the selection model, it is still well specified, the main observable variables (*NOVALEXT, VALEXTO, VALEXTL* and *BIG4*) are dummies and remain stable in all regressions (Lennox *et al.*, 2012).

In Table V[2], a sample with 575-597 firm-years covering the period 2007-2016, *DFV/FV* indicates that companies not using external appraisers (*NOVALEXT*) to valuate their investment property results in less conservative values. The variable of the internal appraiser is significant at the 0.1 level, and the coefficient has a negative value of –0.017 in Model 4. The result is notable because the two first models applied in this study show companies with weaker performance are more likely to choose an internal valuation instead of an external one, and presumably, the changes to the fair values are less extensive. Likewise, in Model 4, the *BIG4* variable is significant (at least at the 0.05 level), and the sign is opposite to that of the *NOVALEXT* appraisal type. It is noteworthy that *ROA* records smaller significant values (at least at the 0.01 level) compared with higher investment property values.

Models 5 and 6 demonstrate that the use of an external but not large appraiser (*VALEXTO*) produces more conservative fair values of investment property. The coefficients of the external large appraiser (*VALEXTL*) show the same kind of tendency with positive coefficients, but they are not significant. The Wald test slightly shows that *VALEXTO, VALEXTL* and *BIG4* differ from each other. *BIG4* records positive coefficients showing conservative estimations at the 0.05 level.

As a supplementary test, the effect of the variable NAV was tested as a dependent variable in place of *DFV/FV*. NAV is a relatively new ratio in the real estate industry and is still used mainly in top-level companies and reported on the whole very sketchily among the sample companies. The sample size is small and almost all companies employ external valuations, which accounts for why the variable was calculated using the share prices of companies. These results do not offer any significant appraisal type results from the data set. Instead, the variable *BIG4* records negative coefficients at the 0.01 level, showing an effect on the more conservative NAV ratios.

In summary, this study's assumptions from effects on earnings properties to the choice of appraisal and differences in the results produced by different types of appraisers are relevant. Therefore, the results support *H1* and *H2*.

5. Conclusions

This study analyzes the role of investment property appraisers and their effect on the properties of earnings in two directions in a sample of European real estate firms using the fair value model. It is a research analyzing a single but important industry. One topic is the question of the kind of features that could lead real estate companies to adopt a particular type of appraiser. Another issue examined is how the appointed appraisers then affect the firm's accounts. The sample covers the period 2007-2016 and therefore includes years marked by both upward turns and recession in the European economy.

The starting point for the analysis was the intent to examine a seldom-measured factor, companies' choice of appraisal. The findings reveal that the way in which companies organize the valuation of investment properties is to some extent a result of the company's features; in addition, the evaluations of appointed appraisers differ. Among company-specific features that influence the choice of appraisal the most significant impacts are the size of the company, its current auditors being part of the Big 4 and the company's country

of origin. A firm opting against an external valuation is likely to be influenced by leverage and ownership structure, too. When companies make decisions relating to the future, ROA also affects the decision whether to commission an external valuation.

With regard to another main topic, there is evidence that the relative changes to the fair value of investment properties differ depending whether the value is a result of an external appraisal or an internal one. External appraisers valuate investment properties more conservatively. Their actions are similar in direction to the work of Big 4 auditors, which is important to note, because both are specialist stakeholders of companies, but only auditing is stringently regulated. The results show a clear distinction between decisions made by internal appraisers and those of Big 4 auditors.

Prior research shows some contradictory results concerning the effects of conservative accounting on the development of companies. For example, Gigler *et al.* (2009) find that accounting conservatism actually decreases the efficiency of debt contracts, contrary to many earlier studies (Watts, 2003). On the other hand, García Lara *et al.* (2016) conclude that conservative companies invest more and have less overinvestments.

Because the variances in the evaluations appear between the different types of appraisers, it is important that the information has been presented as precisely as possible in notes. Standard-setters could still sharpen recording demands: for example, how, how often (every quarter or once a year) and what percentage of the whole investment property is valued external. This might ease the decision-making of stakeholders (e.g. the investors, financiers). One big question to be thought could be if the external appraisal should be mandatory, because the difference between internal and external valuation seems to be significant.

An interesting option for future research would be to concentrate on the same kind of routines in a certain country. The reasons for mimicking other companies can include local regulations or merely habit. Many companies even use the same sentences in the notes reporting on the valuation process. It would also be interesting to examine how the company's current auditor affects the choice of investment property appraisal.

Notes

1. Revenues of large valuation companies: International companies CBRE US\$14.2bn (2017), Cushman and Wakefield (DTZ) US\$6.9bn (2017), Jones Lang LaSalle €6.8bn (2016) and local market leaders Allsop LLP US\$52m (2017), Forum Fastighetsekonomi Ab SEK59m (2016) and Lambert Smith Hampton US\$113m (2017). The revenues of international companies in particular also include many other income streams such as those from consulting and auctions.

2. The first stage probit regressions (*NOVALEXT*, *VALEXTO* and *VALEXTL* as a dependent variable) use the same independent variables as Model 1, give similar results, and are therefore not reported. When the interaction variables *VALEXTO*ROA* and *VALEXTL*ROA* are included in Table V they are significant at the 0.05 level and have opposite signs: *VALEXTO* has a bigger and *VALEXTL* a smaller effect when profitability is better. When in Table V *ROA* is replaced with *ROA* before the fair value change of investment property, the variable *NOVALEXT* takes a negative coefficient at the 0.1 level.

References

Aboody, D., Barth, M.E. and Kasznik, R. (1999), "Revaluations of fixed assets and future firm performance: evidence from the UK", *Journal of Accounting and Economics*, Vol. 26 Nos 1/3, pp. 149-178, doi: 10.1016/S0165-4101(98)00040-8.

JERER

Aharony, J., Barniv, R. and Falk, H. (2010), "The impact of mandatory IFRS adoption on equity valuation of accounting numbers for security investors in the EU", *European Accounting Review*, Vol. 19 No. 3, pp. 535-578, doi: 10.1080/09638180.2010.506285.

Ahmed, A.S., Billings, B.K., Morton, R.M. and Stanford-Harris, M. (2002), "The role of accounting conservatism in mitigating bondholder–shareholder conflicts over dividend policy and in reducing debt costs", *The Accounting Review*, Vol. 77 No. 4, pp. 867-890, doi: 10.2308/accr.2002.77.4.867.

André, P. and Filip, A. (2012), "Accounting conservatism in Europe and the impact of mandatory IFRS adoption: do country, institutional and legal differences survive?", *SSRN Electronic Journal*, available at: www.researchgate.net/publication/228318404 (accessed 10 November 2018).

Ball, R. (2016), "IFRS – 10 years later", *Accounting and Business Research*, Vol. 46 No. 5, pp. 545-571, doi: 10.1080/00014788.2016.1182710.

Ball, R., Li, X. and Shivakumar, L. (2015), "Contractibility and transparency of financial statement information prepared under IFRS: evidence from debt contracts around IFRS adoption", *Journal of Accounting Research*, Vol. 53 No. 5, pp. 915-963, doi: 10.1111/1475-679X.12095.

Barth, M.E., Landsman, W.R., Lang, M. and Williams, C. (2012), "Are IFRS-based and US GAAP-based accounting amounts comparable?", *Journal of Accounting and Economics*, Vol. 54 No. 1, pp. 68-93, doi: 10.1016/j.jacceco.2012.03.001.

Bellman, L. and Lind, H. (2019), "Valuation standards and methods: are Sweden's (still) different?", *Journal of European Real Estate Research*, Vol. 12 No. 1, pp. 79-96, doi: 10.1108/JERER-04-2018-0020.

Benston, G.J. (2008), "The shortcomings of fair-value accounting described in SFAS 157", *Journal of Accounting and Public Policy*, Vol. 27 No. 2, pp. 101-114, doi: 10.1016/j.jaccpubpol.2008.01.001.

Brown, G.R. and Matysiak, G.A. (2000), "Sticky valuations, aggregation effects, and property indices", *The Journal of Real Estate Finance and Economics*, Vol. 20 No. 1, pp. 49-66, doi: 10.1023/A:1007879805481.

Christensen, H.B. and Nikolaev, V.V. (2012), "Capital versus performance covenants in debt contracts", *Journal of Accounting Research*, Vol. 50 No. 1, pp. 75-116, doi: 10.1111/j.1475-679X.2011.00432.x.

Chung, R., Firth, M., Kim, J.B. and Pang, L. (2014), "Big 4 conservatism around the world", in Boubaker, S. and Nguyen, D. (Eds), *Corporate Governance in Emerging Markets. CSR, Sustainability, Ethics and Governance*, Springer, Berlin, Heidelberg, pp. 197-238.

DeAngelo, L.E. (1981), "Auditor size and audit quality", *Journal of Accounting and Economics*, Vol. 3 No. 3, pp. 183-199, doi: 10.1016/0165-4101(81)90002-1.

Demerjian, P.R. (2011), "Accounting standards and debt covenants: has the 'balance sheet approach' led to a decline in the use of balance sheet covenants?", *Journal of Accounting and Economics*, Vol. 52 Nos 2/3, pp. 178-202, SSRN available at: https://ssrn.com/abstract=1892236

Easton, P.D., Eddey, P.H. and Harris, T.S. (1993), "An investigation of revaluations of tangible long-lived assets", *Journal of Accounting Research*, Vol. 31, Studies on International Accounting, pp. 1-38, doi: 10.2307/2491161.

Francis, J.R. and Krishnan, J. (1999), "Accounting accruals and auditor reporting conservatism", *Contemporary Accounting Research*, Vol. 16 No. 1, pp. 135-165, doi: 10.1111/j.1911-3846.1999.tb00577.x.

Francis, J.R. and Wang, D. (2008), "The joint effect of investor protection and big 4 audits on earnings quality around the world", *Contemporary Accounting Research*, Vol. 25 No. 1, pp. 157-191, doi: 10.1506/car.25.1.6.

García Lara, J.M., García Osma, B. and Penalva, F. (2016), "Accounting conservatism and firm investment efficiency", *Journal of Accounting and Economics*, Vol. 61 No. 1, pp. 221-238, doi: 10.1016/j.jacceco.2015.07.003.

Gigler, F., Kanodia, C., Sapra, H. and Venugopalan, R. (2009), "Accounting conservatism and the efficiency of debt contracts", *Journal of Accounting Research*, Vol. 47 No. 3, pp. 767-797, doi: 10.1111/j.1475-679X.2009.00336.x.

Healy, P.M. (1985), "The effect of bonus schemes on accounting choices", *Journal of Accounting and Economics*, Vol. 7 Nos 1/3, pp. 85-107, doi: 10.1016/0165-4101(85)90029-1.

Heaton, J.C., Lucas, D. and McDonald, R.L. (2010), "Is mark-to-market accounting destabilizing? Analysis and implications for policy", *Journal of Monetary Economics*, Vol. 57 No. 1, pp. 64-75, doi: 10.1016/j.jmoneco.2009.11.005.

Herrmann, D., Thomas, W.B. and Saudagaran, S.M. (2006), "The quality of fair value measures for property, plant, and equipment", *Accounting Forum*, Vol. 30 No. 1, pp. 43-59, doi: 10.2139/ssrn.312150.

Hope, O.-K. (2013), "Large shareholders and accounting research", *China Journal of Accounting Research*, Vol. 6 No. 1, pp. 3-20, doi: 10.1016/j.cjar.2012.12.002.

Hou, X. and Li, X. (2016), "The influence of listed real estate companies' competition to real earnings management", Presentation in International Conference on Construction and Real Estate Management 2016, Edmonton, doi: 10.1061/9780784480274.110.

Kahr, J. and Thomsett, M.C. (2006), *Real Estate Market Valuation and Analysis*, John Wiley and Sons, Hoboken.

Khurana, I.K. and Raman, K.K. (2004), "Litigation risk and the financial reporting credibility of big 4 versus non-big 4 audits: evidence from Anglo-American countries", *The Accounting Review*, Vol. 79 No. 2, pp. 473-495, doi: 10.2308/accr.2004.79.2.473.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (1998), " "Law and finance", *Journal of Political Economy*, Vol. 106 No. 6, pp. 1113-1155, doi: 10.1086/250042.

LaFond, R. and Watts, R.L. (2008), "The information role of conservative financial statements", *The Accounting Review*, Vol. 83 No. 2, pp. 447-478, doi: 10.2308/accr.2008.83.2.447.

Lennox, C.S., Francis, J.R. and Wang, Z. (2012), "Selection models in accounting research", *The Accounting Review*, Vol. 87 No. 2, pp. 589-616, doi: 10.2308/accr-10195.

Li, N. (2010), "Negotiated measurement rules in debt contracts", *Journal of Accounting Research*, Vol. 48 No. 5, pp. 1103-1144, doi: 10.1111/j.1475-679X.2010.00386.x.

Liao, P.-C. and Radhakrishnan, S. (2016), "The effects of the auditor's insurance role on reporting conservatism and audit quality", *The Accounting Review*, Vol. 91 No. 2, pp. 587-602, doi: 10.2308/accr-51167.

Messier, W.F. Jr, (2018), "Task level research within the audit process: an update", Presentation in 7th Workshop on Audit Quality, SDA Bocconi.

Muller, K.A., III, Riedl, E.J. and Sellhorn, T. (2011), "Mandatory fair value accounting and information asymmetry: evidence from the European real estate industry", *Management Science*, Vol. 57 No. 6, pp. 1138-1153, doi: 10.1287/mnsc.1110.1339.

Nellessen, T. and Zuelch, H. (2010), "The reliability of investment property fair values under IFRS", *Journal of Property Investment and Finance*, Vol. 29 No. 1, pp. 59-73, doi: 10.1108/14635781111100209.

Penman, S.H. (2007), "Financial reporting quality: is fair value a plus or a minus?", *Accounting and Business Research*, Vol. 37 No. 1, pp. 33-44, doi: 10.1080/00014788.2007.9730083.

Pinto, I. and Pais, M. (2015), "Fair value accounting choice", *Journal of European Real Estate Research*, Vol. 8 No. 2, pp. 130-152, doi: 10.1108/JERER-09-2014-0032.

PriceWaterhouseCoopers (PWC) (2017), "Applying IFRS for the real estate industry", available at: www.pwc.com/gx/en/audit-services/ifrs/publications/applying-ifrs-for-the-real-estate-industry.pdf (accessed 10 November 2018).

Quagli, A. and Avallone, F. (2010), "Fair value or cost model? Drivers of choice for IAS 40 in the real estate industry", *European Accounting Review*, Vol. 19 No. 3, pp. 461-493, doi: 10.1080/09638180.2010.496547.

JERER

Royal Institution of Chartered Surveyors (RICS) (2017), "RICS valuation – global standards 2017", The "Red Book", available at: www.rics.org/uk/upholding-professional-standards/sector-standards/valuation/red-book/ (accessed 10 November 2018).

Roychowdhury, S. and Watts, R.L. (2007), "Asymmetric timeliness of earnings, market-to-book and conservatism in financial reporting", *Journal of Accounting and Economics*, Vol. 44 No. 1-2, pp. 2-31, doi: 10.1016/j.jacceco.2006.12.003.

The European Public Real Estate Association (EPRA) (2017), "Total markets table", available at: www.epra.com/application/files/6215/0592/3119/EPRA_Total_Markets_Table__June_2017.pdf (accessed 10 November 2018).

The International Accounting Standards Board (IASB) (2018), "The conceptual framework for financial reporting", available at: http://eifrs.ifrs.org/eifrs/ViewContent?num=0&fn=Conceptual_Framework (accessed 10 November 2018).

The International Valuation Standards Council (IVSC) (2017), "International valuation standards 2017", available at: www.cas.org.cn/docs/2017-01/20170120142445588690.pdf (accessed 10 November 2018).

The Netherlands Authority for the Financial Markets (AFM) (2012), "Valuation and disclosure of investment property: supervision of financial reporting", October 2012, available at: www.afm.nl/~/profmedia/files/doelgroepen/effectenuitgevende-ondernemingen/financiele-verslaggeving/2012/engels/themaonderzoek-ias40.pdf%3Fla%3Den&prev=search (accessed 10 November 2018).

Watts, R.L. (2003), "Conservatism in accounting part I: explanations and implications", *Accounting Horizons*, Vol. 17 No. 3, pp. 207-221, doi: 10.2308/acch.2003.17.3.207.

Watts, R.L. and Zimmerman, J.L. (1978), "Toward a positive theory of the determination of accounting standards", *The Accounting Review*, Vol. 53, pp. 112-134, available at: www.jstor.org/stable/245729

Corresponding author
Juha Mäki can be contacted at: juha.maki@uva.fi

External Appraisal, Auditing, and Information Asymmetry: A Study of Fair Values in European Real Estate Companies under IFRS

Juha Mäki

School of Accounting and Finance

University of Vaasa, Vaasa, Finland

Abstract

This study investigates whether the certain appraisal type or the adoption of Big 4 auditors reduces information asymmetry across market participants in real estate industry. The research exploits the annual reports of EU publicly traded real estate companies of the years 2007–2016. The main measures used are the company's percentage bid-ask spread and the standard deviation of recommendations made by analysts. The research finds evidence that companies adopting an external property valuation trigger less information asymmetry among investors than companies using internal valuation processes. Consistent with this, when the company's percentage spread is used as a measure the study shows the same kind of decreasing effect concerning the adoption of a Big 4 auditor. As well, the findings indicate that the greater amount of analysts monitoring a company and the adoption of a Big 4 auditor can be seen as substitutes for each other.

Keywords: information asymmetry, appraisal type of investment property, Big 4, IFRS

1. Introduction

This study investigates whether the use of external investment property appraisers or Big 4 auditors by real estate companies reduces information asymmetry across market participants when financial statements are made under IAS 40 (International Accounting Standards, Investment Property). The implementation of IAS 40 offers an exceptional opportunity to examine whether the adoption of the fair value method affects the quality of financial reporting and that way information asymmetry. The research focuses on the real estate industry and uses annual reports of European Union member states on publicly traded real estate companies and covers the period from 2007 to 2016. Empirical tests were conducted on a sample of 299–696 firm-years of publicly traded real estate companies in the EU region.

In recent decades one of the most researched topics in the accounting field has been that of information asymmetry and its impact on the operations of investors and other stakeholders. Corporate financial reporting is important for the functioning of an efficient capital market, and interested parties obtain information via financial reports (e.g., financial statements, management reports, and reports of audit committees), voluntary management forecasts, analysts' forecasts, press releases, and the Internet. Hence, investors might use both regulated and unregulated information to support their decision making.

Accounting information has two significant roles in market-based economies. First, it allows capital providers (shareholders and creditors) to estimate the sense of investments. Second, accounting information allows capital providers to monitor the use of their committed capital (Beyer, Cohen, Lys, & Walther, 2010). Theoretical accounting research (e.g., DeAngelo, 1981) shows that quality differences should occur across types of external monitors. The study of Dietrich, Harris, and Muller (2000) support this theory within the UK investment

property sector. They find that external property appraisals are significantly less biased and more accurate estimates for market prices than internal appraisals. The need for accounting information produced by outsiders ("third parties") occurs because typically managers have more exact information about the expected financial status of the company. This information asymmetry makes it possible for outside stakeholders to make wrong financial decisions because insiders have always their own incentives (Beyer et al., 2010). Already Akerlof (1970) presented that ''the case of lemons''. Taken together, finance theory proposes that companies' cost of capital increases when market makers set broader spreads due to observed higher information asymmetry (i.e. bigger estimation risk) across traders (e.g., He, Lepone, & Leung, 2013; Artiach & Clarkson, 2011).

The European Parliament and the Council first required public companies to apply the International Financial Reporting Standards (IFRS) when reporting on the fiscal year 2005. The international accounting standard (IAS) 40 permits companies to use two different ways to valuate investment properties: cost and revaluation. However, IAS 40 requires companies using the cost model to disclose the fair value of investment property in the notes (Muller, Riedl, & Sellhorn, 2011). From the beginning of 2013, real estate companies have followed the IFRS 13 (Fair Value Measurement) standard, which provides a framework for measuring fair value and reporting on fair value measurement (IASB, 2018).

The mandatory adoption of the IFRS is highly relevant for both investors and managers. There are relatively few studies on the interactions of management with company specialists such as appraisers and auditors (Messier, 2018) who can play a considerable role in a process of producing financial statements. Especially in real estate companies, where the valuation of investment properties is marked by so many uncertain factors, the type of specialist employed by companies is important. The evidence of this study can add to the debate on fair value

accounting by indicating that the choice of high-level specialists (appraisers or auditors) can reduce information asymmetry differences across companies.

This paper investigates if there are differences in terms of information asymmetry connected to the type of appraisal of investment properties, or the auditing firms involved. The paper also reviews how results vary depending on the measure applied. This paper uses both share price spreads (e.g., Muller & Riedl, 2002) and a standard deviation of recommendations made by analysts as a dependent variable.

The empirical tests provide evidence that information asymmetry is affected by the choice of the form of investment property appraisal. The use of internal appraisals indicates increased information asymmetry. The difference is the most clearly seen in comparison with significant results of other, not so much applied external appraisers. The adoption of a Big 4 auditor has a very significant, decreasing impact on information asymmetry at the 0,01 level (see Panel A).

The main contribution of the study is to establish that appraisals investment property conducted by either large well-known or other external appraisal firms have a similar effect in terms of reducing information asymmetry, but in case of less well-known appraisals the effect is more significant. The results contribute to the debate over the recognition of fair value estimates for investment properties by reporting that the reliability of experts, like appraisers and auditors, monitoring can affect information asymmetry, and at the same time companies' cost of capital. The data cover the whole EU region and the sample period is sufficiently long after the adoption of the IFRS. The study shows that in spite of use of the standard there are differences arising from variation in institutional structures and implementations.

The remainder of the paper is organized as follows. Section 2 presents the prior literature and hypotheses. Section 3 presents the methodology used to measure information asymmetry and the data used in the study. Section 4 presents empirical results and Section 5 draws conclusions.

2. Prior literature and hypotheses

Information asymmetry among stakeholders appears when some of them have private information about the company's value and business predictions while other less-informed investors depend only on public information. In earlier studies Healy, Hutton, and Palepu (1999) find that there is a negative connection between disclosure quality and the bid-ask-based measurement of information asymmetry. In other words, the quality of a company's disclosures is related to the average level of information asymmetry among equity investors (e.g., Daske, 2006; Li, 2010; He et al., 2013). This asymmetry leads to an imbalance of knowledge in transactions, which can sometimes cause a significant distraction in the market. Almost all transactions have at least some amount of information asymmetry.

Lang and Lundholm (1993) found that companies producing financial reporting on the basis of quality information have more accurate earnings forecasts, a larger group of analysts following them, and less deviation between the analysts' forecasts. That is to say a more informative reporting policy reduces information asymmetry. The same study also shows that the issue of information asymmetry can differ for investors and managers. Managers having access to performance information can foster even greater information asymmetry. For example Francis and Wang (2008) likewise Roychowdhury, Shroff, and Verdi (2019) pointed out that a high-quality reporting policy reduces information asymmetry between a firm's various stakeholders. Glosten and Milgrom (1985) apply a model to establish that information

asymmetry within a company increases when the amount and quality of information financial reporting decrease.

Brown and Hillegeist (2007) offer two main reasons for the negative association of information asymmetry with financial reporting quality: Although information asymmetry is positively associated with the absolute amount of trading by uninformed and informed traders, it is negatively associated with the relative amount of informed trading, and is negatively associated with the frequency with which informed investors discover and trade on private information. Byard and Shaw (2003) concludes that analysts use publicly available financial data more than they rely on liaison with the management of their client companies. Property valuations with sensitivity analyses for instance are more valuable when analysts produce the relevant forecasts (Laakso, 2017).

Kim and Verrecchia (1994) pointed out that bid-ask spreads may increase around earnings announcements when information asymmetry between informed and less-informed market-makers increases. Some market-makers try to protect themselves by manipulating quoted bid and ask prices and the quoted depths associated with those prices in the presence of a great deal of noisy information. The same study highlights that a contrast between earnings announcements and management earnings forecasts versus analyst earnings forecasts is temporary. According to the study's findings, all three information release types lead to a reduction in information asymmetry after the short-window announcement period.

Amiram, Owens, and Rozenbaum (2016) report that an analyst forecast is an information release by a well-informed producer who processes public and private information. So financial analysts are often considered to proxy for well-informed stakeholders in capital markets (e.g., Allee, Bhattacharya, Black, & Christensen, 2007; Ramnath, Rock, & Shane,

2008). In other words, information from analyst forecasts—unlike information from earnings announcements and management forecasts—will be new only to unsophisticated investors (Amiram et al., 2016). So, while both earnings announcements and management forecasts increase information asymmetry within the announcement, analyst forecasts have the opposite effect. Nevertheless, only a very small proportion of investors consider that information useful (Brown, Call, Clement, & Sharp, 2015). It is also noteworthy that Kadan, Michaely, and Moulton (2014) report how sophisticated investors can probably get information from analysts before an announcement because institutions trade before analyst information is released, while unsophisticated investors mostly trade after such releases.

The earnings forecasts of analysts are more precise than time-series models of earnings because analysts are able to monitor companies and economic news affecting their forecasts more intensively than is possible with time-series models (e.g., Fried & Givoly, 1982). Moreover, analysts' earnings forecasts and recommendations affect stock prices (e.g., Francis & Soffer, 1997). Early studies on bias indicated that analysts' earnings forecasts tended to be optimistic and that their recommendations too often favored buys (Brown, Foster, & Noreen, 1985), albeit recent research shows a change in that level of optimism of analysts' earnings forecasts (e.g., Matsumoto, 2000).

Hodgdon, Tondkar, Harless, and Adhikari (2008) suggest that the adoption of the IFRS reduces information asymmetry and makes it easier for analysts to produce more precise forecasts. Jiao, Koning, Mertens, and Roosenboom (2012) argue that in the European context, forecasts have become more precise since the adoption of the IFRS. At the same time, the dispersion of forecasts seems to decrease.

Financial reporting made under IFRS standards and strict regulation is more informative and reduces information asymmetry (Healy & Palepu, 2001; Houqe, 2018). Conaway, Liang, & Riedl (2018) study the likelihood of US adoption of fair value reporting for investment properties and find a significantly positive market reaction to fair value reporting. The standard provides a hierarchy of methods for arriving at the fair value: Level 1; unadjusted quoted prices for identical assets and liabilities in active markets (preferable), Level 2; other observable inputs for the asset or liability such as quoted prices in active markets for similar assets or liabilities or quoted prices for identical assets or liabilities in markets which are not active, and Level 3; unobservable inputs to the asset or liability (IASB, 2018).

The study of Muller et al. (2002) indicates that in the UK the use of external appraisals in the valuation of investment properties affects the level of information asymmetry. On the other hand, that study did not find a significant connection between information asymmetry and Big 6 auditors. Overall, earlier studies offer contradictory results on the relation between information asymmetry and auditing by the Big 4. Hakim and Omri (2010) for instance argue that bid-ask spread is lower for companies audited by the Big 4. Lawrence, Minutti-Meza, and Zhang (2011) suggest that differences in proxies between Big 4 and non-Big 4 auditors largely reflect client characteristics, for example the size of a company. This last study suggests that propensity score matching (PSM) on client characteristics eliminates the Big 4 effect. The recent study of DeFond, Erkens, and Zhang (2016) suggests that this result may be affected by PSM's sensitivity to its design choices and by the validity of the audit quality measures. The study concludes that it is too early to suggest that PSM eliminates the Big 4 effect.

Almutairi, Dunn, and Skantz (2009) argued that a high-quality audit reduces information asymmetry and increases the amount of special information for investors. Dunn and Mayhew (2004), for example, find high-quality auditing decreases information asymmetry

in an open market situation. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) found different legal and enforcement qualities among the countries included in their sample; in Europe, the UK generally has the strongest legal protection for investors, and Central European civil law countries the weakest, with Germany and the Scandinavian countries located in the middle.

Under IAS 40.75 companies' annual reports must document the extent to which the fair value allocated to investment property is based on a valuation by a qualified independent appraiser. Property valuation can also be an internal process. Nellessen and Zuelch (2010), for example, argue that there is understandable doubt that fair values can be imprecise. They argue that the process how investment property fair values are derived is unclear and the reliability of real estate appraisals within stakeholders is low. They show that the human nature of the appraiser, the process itself, the incentives of appraisers, auditors and managers, such as litigation risk or conservatism, likewise the property market situation increases the likelihood of biased fair values (e.g., Liu & Elayan, 2015). That can be one reason why Muller et al. (2002) reports that in the UK the use of external appraisals affects the level of information asymmetry.

Given the background reported above, this paper proposes the following hypotheses:

H_1: The choice of external appraisers in real estate companies has decreasing effect on the information asymmetry of accounting.

H_2: The adoption of either elite specialists, an external appraisal firm or a Big 4 auditor, has a similar decreasing effect on the information asymmetry of accounting.

3. Methodology and data

3.1 Real estate companies and information asymmetry

The European Union has a commercial real estate market value of approximately EUR 6.5 trillion (2017). The value of the listed real estate companies is estimated at EUR 350 billion (EPRA, 2017). The number of EPRA (European Public Real Estate Association) member companies in Europe was 104 at the end of 2017. The main investment properties consist of office buildings, shopping centers, and industrial buildings. Real estate companies purchase, lease, develop, sell and manage investment property to generate profit through rents or transactions.

The author is not aware of recent studies examining the effect and the form of information asymmetry in the real estate industry compared with property valuation. The business of the real estate industry under IAS 40 (and IFRS 13) has some specific features: a long life cycle for properties, considerable uncertainty over the values of real estate portfolios (see Level 2 and Level 3 above) and the notable significance of the chosen valuation procedure to both the income statement and balance sheet.

3.2 Methodology development

The information asymmetry of accounting has been measured in several ways. It has been used as a proxy for the bid-ask spread, dispersion, or standard deviation in analyst forecasts, the number of analysts monitoring companies, forecast errors, the proportion of intangible assets in company value, the probability of the informed trading measure (PIN)

(Eastley, Hvidkjaer, & O'Hara, 2002), the drop in share price at the moment of an IPO, the lack of information on planned changes in R&D budgets, and even a lack of liquidity. The degree of information asymmetry is not directly observable and therefore researchers need to rely on proxy variables (Healy et al., 2001); for the same reason it is difficult to empirically test the adequacy of various proxies.

The bid-ask spread is often used if it is available or if the trade is large enough. It is a popular choice from among many noisy measures although it also suffers from many interpretation difficulties (e.g., Callahan, Lee, & Lombardi Yohn, 1997; Heflin & Shaw, 2005). This study utilizes the studies of Muller et al. (2002) and Muller et al. (2011) as a basic research when developing the model supplemented by control variables describing the company and Inverse Mills Ratios observing the endogenous factors. A considerable volume of research suggests that analysts and their coverage play a significant role with regard to the information asymmetry within firms. Many results indicate that minor coverage by analysts with larger spreads and smaller trading (e.g., Amiram et al., 2016; Eleswarapu, Thompson, & Venkataraman, 2004) increases information asymmetry.

As mentioned above, all information asymmetry measures incorporate some inaccuracy. Accordingly, the current research uses two models: the company's percentage spread (*LNSPREADit*) and the standard deviation of recommendations given by analysts (*STDDEVit*) as dependent variables.

This study examines if the type of appraiser—be that an internal (*NOVALEXT*), a large well-known external appraiser (*VALEXTL*), or another not so much used external appraiser (*VALEXTO*)—affects the level of information asymmetry. In this study *VALEXTL* is an appraiser that has been used at the beginning of a research period three or more times per year

by the companies within the sample. Six appraisers meet the criterion for a large appraiser (Allsop LLP, CBRE, DTZ (from 2015 together with Cushman & Wakefield following the merger of the two firms), Forum Fastighetsekonomi Ab, Jones Lang LaSalle, and Lambert Smith Hampton[1]). Allsop LLP, Forum Fastighetsekonomi Ab, and Lambert Smith Hampton are local market-leaders and the others are global property consultants. This sample has 26 companies valuating investment properties and the abovementioned large ones have a market share of about 48 percent. The number of valuation companies who conducted only one real estate company valuation during the first year was 13, and seven appraisal firms valuated two real estate companies. Muller et al. (2002) report that market-makers perceive less information asymmetry across traders for companies commissioning external appraisals in the UK instead of conducting an internal valuation. In this study, the external valuation is differentiated by those conducted by large appraisers and others.

Results can also be affected by the processes of appraisal smoothing in the private market. Appraisals of investment properties have to make the best estimation of value based on uncertain variables. This process involves an optimal combination of past and current information and could lead to appraisal smoothing and a lag in the true level of values (Baum, Crosby, & McAllister, 2002).

Information asymmetry is reduced when the information level increases and reliable information is produced (e.g., Leuz & Verrecchia, 2000). There are many studies examining the relationship between auditing and the quality of accounting in companies that show a linear

---

[1] Revenues of large valuation companies: International companies CBRE 14,2 billion $ (2017), Cushman & Wakefield (DTZ) 6,9 billion $ (2017), Jones Lang LaSalle 6,8 billion € (2016) and local market-leaders Allsop LLP 52 million $ (2017), Forum Fastighetsekonomi Ab 59 million SEK (2016) and Lambert Smith Hampton 113 million $ (2017). Especially in international companies they have also many other activities like consulting and auctions included in revenues.

relationship with the increase in the quality of disclosed information and the decrease in information asymmetry (e.g. Krishnan & Visvanathan, 2008).

However, Muller et al. (2002) did not find a significant connection between information asymmetry and the use of a Big 6 auditor. Overall, prior studies have contradictory results on the relation between information asymmetry and Big 4 auditing (e.g. Lang & Lundholm, 1996). So, an independent variable *BIG4* is included in models. In Panel B *LNANALYST* is also used as an independent variable (see, e.g., Muller et al., 2011) because despite removing the least monitored firm-years there seems to be a connection between the standard deviation of recommendations given by analysts and the number of analysts following the company.

Also included in these ordinary least squares (OLS) regressions are company-specific indicator variables for the United Kingdom and Central European origin (*ORI1, ORI2*). Companies of Scandinavian origin, according to the La Porta et al. (1998) classification, are in the reference group (Denmark, Finland, and Sweden).

Information asymmetry can be negatively related to the presence of a controlling shareholder (e.g., Petersen & Plenborg, 2006). One controlling shareholder can attempt to advance their own purposes by manipulating reported performance (Hope, 2013). The dummy variable *OSHIP* is included in the regression and is assigned a value of one if one shareholder has more than 50 percent of the shares. The control variables *LNVOLATILITY* and *LNTURN* are included to control for market-makers' costs and risk. The control variable *LNTA* is included as a proxy for size (Muller et al., 2002).

With regard to information asymmetry in the accounting context, it is also important to choose the right point to monitor connections. Kim et al. (1994) noted that different kinds of reports and forecasts can affect information asymmetry differently over a short period.

Managerial and annual reports for example can increase information asymmetry around the day they are published. Some studies have applied a four-month lag after the end of the fiscal year when selecting the monitoring point (e.g., Muller et al., 2011). Most of the companies in this sample publish their annual report in March if the fiscal year ends in December, and often offer some income information even sooner on their websites. That is why in this research the monitoring point for variables *LNSPREAD*, *STDDEV,* and *LNANALYST* is four months after the end of fiscal year.

It can be expected that the choice of the appraisal is an endogenous process. It is possible that companies with better performance are more interested to choose large and well-known appraisers whose estimations are not resulting in over- or under-valuations. Companies, owners and managers, who have an important role in choosing the appraiser, can have their own incentives depending for example company´s profitability or leverage. That is why in Models 2, 4, 6 and 8 is used in the first stage probit regressions earnings property variables a logarithm of total assets, the total debt divided by total assets (leverage), return on assets (ROA), the growth of sales (%), cash flows from operations divided by total assets and market-to-book value of company (MTB) to control the endogeneity in the second-stage self-models, where the Inverse Mills Ratios[2] are included:

---

[2] The two-stage estimation procedure Inverse Mills Ratio is used to correct for the selection bias and control for endogeneity. The Inverse Mills Ratio is first generated from the estimation of a probit model when it is supposed that the error term follows a standard normal distribution. The estimated parameters are used to calculate the Inverse Mills Ratio, which is then included as an additional explanatory variable in the OLS estimation. In probit models of this study control variables are *VALX, LNTA*, leverage, ROA, sales growth (%), cash flows from operations divided by total assets and market-to-book value.

$$LNSPREAD_{it} = \beta_0 + \beta_1*NOVALEXT_{it} + \beta_2*BIG4_{it} + \beta_3*ORI1_{it} + \quad (1)$$
$$\beta_4*ORI2_{it} + \beta_5*OSHIP_{it} + \beta_6*LNVOLATILITY_{it} +$$
$$\beta_7*LNTURN_{it} + \beta_8*LNTA_{it} + \sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it}$$

$$LNSPREAD_{it} = \beta_0 + \beta_1*NOVALEXT_{it} + \beta_2*BIG4_{it} + \beta_3*ORI1_{it} + \quad (2)$$
$$\beta_4*ORI2_{it} + \beta_5*OSHIP_{it} + \beta_6*LNVOLATILITY_{it} +$$
$$\beta_7*LNTURN_{it} + \beta_8*LNTA_{it} + \beta_9*MILLSNOVALEXT_{it} +$$
$$\sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it}$$

$$LNSPREAD_{it} = \beta_0 + \beta_1*VALEXTO_{it} + \beta_2*VALEXTL_{it} + \beta_3*BIG4_{it} + \quad (3)$$
$$\beta_4*ORI1_{it} + \beta_5*ORI2_{it} + \beta_6*OSHIP_{it} +$$
$$\beta_7*LNVOLATILITY_{it} + \beta_8*LNTURN_{it} + \beta_9*LNTA_{it} +$$
$$\sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it}$$

$$LNSPREAD_{it} = \beta_0 + \beta_1*VALEXTO_{it} + \beta_2*VALEXTL_{it} + \beta_3*BIG4_{it} + \quad (4)$$
$$\beta_4*ORI1_{it} + \beta_5*ORI2_{it} + \beta_6*OSHIP_{it} +$$
$$\beta_7*LNVOLATILITY_{it} + \beta_8*LNTURN_{it} + \beta_9*LNTA_{it} +$$
$$\beta_{10}*MILLSEXTO_{it} + \beta_{11}*MILLSEXTL_{it} +$$
$$\sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it}$$

$$STDDEV_{it} = \beta_0 + \beta_1*LNANALYST_{it} + \beta_2*VALNOEXT_{it} + \beta_3*BIG4_{it} + \quad (5)$$
$$\beta_4*ORI1_{it} + \beta_5*ORI2_{it} + \beta_6*OSHIP_{it} +$$
$$\beta_7*LNVOLATILITY_{it} + \beta_8*LNTURN_{it} + \beta_9*LNTA_{it} +$$
$$\sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it}$$

$$STDDEV_{it} = \beta_0 + \beta_1*LNANALYST_{it} + \beta_2*VALNOEXT_{it} + \beta_3*BIG4_{it} + \quad (6)$$
$$\beta_4*ORI1_{it} + \beta_5*ORI2_{it} + \beta_6*OSHIP_{it} +$$

$$\beta_7*LNVOLATILITY_{it} + \beta_8*LNTURN_{it} + \beta_9*LNTA_{it} +$$

$$\beta_{10}*MILLSNOVALEXT_{it} + \sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it}$$

$$STDDEV_{it} = \quad \beta_0 \quad + \quad \beta_1*LNANALYST_{it} \quad + \quad \beta_2*VALEXTO_{it} \quad + \quad (7)$$

$$\beta_3*VALEXTL_{it} + \beta_4*BIG4_{it} + \beta_5*ORI1_{it} + \beta_6*ORI2_{it} +$$

$$\beta_7*OSHIP_{it} + \beta_8*LNVOLATILITY_{it} + \beta_9*LNTURN_{it} +$$

$$\beta_{10}*LNTA_{it} + \sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it}$$

$$STDDEV_{it} = \quad \beta_0 \quad + \quad \beta_1*LNANALYST_{it} \quad + \quad \beta_2*VALEXTO_{it} \quad + \quad (8)$$

$$\beta_3*VALEXTL_{it} + \beta_4*BIG4_{it} + \beta_5*ORI1_{it} + \beta_6*ORI2_{it} +$$

$$\beta_7*OSHIP_{it} + \beta_8*LNVOLATILITY_{it} + \beta_9*LNTURN_{it} +$$

$$\beta_{10}*LNTA_{it} + \beta_{11}*MILLSEXTO_{it} + \beta_{12}*MILLSEXTL_{it} +$$

$$\sum_{t=2008}^{2016} \delta_t year_t + \varepsilon_{it}$$

Where:

$LNSPREAD_{it}$	A logarithm of the company's percentage spread (the quoted spread divided by the mid-point price) calculated as average amounts over the fourth months after the end of the fiscal year t (Muller et al., 2002)
$STDDEV_{it}$	The standard deviation of recommendations given by analysts four months after the end of the fiscal year t from Worldscope. Those companies with fewer than three analysts have been excluded (Hutira, 2016).
$LNANALYST_{it}$	A logarithm of analysts' numbers following the company four months after the end of the fiscal year t

$NOVALEXT_{it}$	An indicator variable taking the value 1 if a company is not using an external property appraiser in the fiscal year t
$VALEXTO_{it}$	An indicator variable taking the value 1 if a company is using an external but not a large well-known property appraiser in the fiscal year t
$VALEXTL_{it}$	An indicator variable taking the value 1 if a company is using an external large well-known property appraiser in the fiscal year t
$BIG4_{it}$	An indicator variable taking the value 1 if a company uses a Big 4 auditor in the fiscal year t
$ORI1_{it}$	An indicator variable taking the value 1 if a company is located in the United Kingdom
$ORI2_{it}$	An indicator variable taking the value 1 if a company is located in Central Europe
$OSHIP_{it}$	An indicator variable taking the value 1 if the biggest shareholder owns more than 50 percent of company shares in the fiscal year t
$LNVOLATILITY_{it}$	A logarithm of the standard deviation between share prices in the fiscal year t
$LNTURN_{it}$	A logarithm of the number of shares traded daily divided by the number of shares outstanding in the fiscal year t
$LNTA_{it}$	A logarithm of total assets (EUR thousand) in the fiscal year t
$MILLSX_{it}$	The Inverse Mills Ratio of different appraisal types

The data are provided by real estate companies in EU countries (Table 1) and cover the period from 2007 to 2016. The sample and all companies in the sample conduct accounting

under IAS 40 showing fair values and investment property had to make up more than the half of the total property plant and equipment in 2007 (the first year studied). After omitting defective data, depending on the model 299–696 firm-years of companies are left. The continuous variables are winsorized by one percent. Within the regressions both years and companies are clustered and the models have year fixed effects. The data were collected from Bureau van Dijk Orbis, Thomson Reuters Worldscope, and companies' annual reports. Most of the dummy variables (*NOVALEXT*, *VALEXTO*, *VALEXTL*, *BIG4*, *ORI1,* and *ORI2*) are collected manually from annual reports, ownership data is drawn from Orbis, and the financial ratios from Worldscope.

[Insert Table 1 here]

4. Empirical results

4.1 Descriptive statistics

The variables used in this study are presented in Table 2. The mean of dependent variable *LNSPREAD* is -4,321 and the mean *STDEV* is 0,938 while the max value is 2,00.

[Insert Table 2 here]

The variable *LNANALYST* is a logarithm value and the mean is 4.6 analysts in the regressions and the largest number monitoring one company in this research is 27 analysts. The firm-years of companies using an external appraiser are close to 90 percent of all firm-years in the sample and the proportion of large external appraisers is approximately 47,5 percent. One major shareholder (*OSHIP*) is evident in approximately 38,5 percent of firm-years and the value

for companies adopting a Big 4 auditor is approximately 72,4. Over 21 percent of companies are from the United Kingdom and close to 54 percent are from Central European EU countries. The control variable *LNVOLATILITY* records the mean of 0,96. The variable *LNTA* indicates that the total assets of this sample are EUR 4,8–18255,9 million and the mean is approximately EUR 700 million.

Table 3 presents the Pearson correlations of the variables used in this research. The highest correlation 0,752 is between the variables *LNANALYST* and *LNTA*.

[Insert Table 3 here]

4.2 Information asymmetry regressions

In Table 4 dependent variables *LNSPREAD* and *STDDEV* are estimated with Models 1-8 and presented. R^2-values of regressions are 17,8-71,6 percent. All regressions are clustered both on company and year.

[Insert Table 4 here]

Panel A concludes that when *LNSPREAD* is used as a dependent variable the variable of internal valuation (*NOVALEXT*) gets a significant and positive coefficient showing bigger information asymmetry. In addition, the variable *BIG4* shows a positive coefficient at the 0,01 level. In other words, the use of external appraisals[3] decreases the dependent variable

---

[3] In Models 3 and 4 the variable *BIG4* seems to "hide" partly the effect of the variable *VALEXTL*. If the variable *BIG4* is omitted, *VALEXTO* gets in Model 4 a coefficient -0,280 at level 0,01 and *VALEXTL* a coefficient -0,178 at level 0,1. The same effect can be noticed in Panel B: corresponding coefficients in Model 8 are -0,204 at level 0,1 and -0,095 but not significant. Another supplementary test shows that if $LNSPREAD_{it}$ is used as a dependent variable and the interaction term $VALEXTL_{it}*BIG4_{it}$ is included that new variable gets a coefficient -0,493 at level 0,01. That indicates double decreasing effect on information asymmetry in question of both elite specialists.

LNSPREAD by approximately 20 percent and accordingly the adoption of Big 4 auditors by almost 25 percent.

Control variables *LNVOLATILITY*, *LNTURN*, and *LNTA* have negative significant coefficients at the 0,01 level. The result aligns with that of Liao, Kang, Morris, and Tang (2013) who show that using fair value estimates for valuation of net assets would increase the transparency of financial reporting and decrease information asymmetry among equity investors. They also argued that bid-ask spreads are the lowest for Level 1 (the most transparent valuation inputs) and highest for Level 3 (the least observable). The investment property valuations of the real estate industry are normally categorized as Level 2 or Level 3 valuations (PWC, 2017). The Wald test only slightly shows that *VALEXTO* and *VALEXTL* differ from each other at the 0,1 level.

The results displayed in Panel A show that market-makers rely on both external appraisals and adopting Big 4 auditors as specialists. They trust that the valuation of investment property will be accurate following an external appraisal. On the other hand, markets assume that Big 4 auditors and their routines are sufficiently assiduous.

When *STDDEV* is used as a dependent variable, Panel B in Models 7 and 8 illustrates the decreasing effect of external valuation on information asymmetry, but the results are all at least slightly insignificant (except Footnote 2). In Model 8 the use of external, not so well-known, property appraisals (*VALEXTO*) has an almost significant negative coefficient (*p*-value 0,112). The variable *LNANALYST* used as a control variable in these models indicates that a wider range of analysts monitoring a real estate company also means a bigger variable *STDDEV* at the 0,01 level.

Panel B in contrast to Panel A reflects how the adoption of Big 4 auditors shows a larger information asymmetry at the 0,01 level. It is possible that because of the smaller sample and the larger proportion of Big 4 auditors within it (85 percent) the results might be biased in this respect. The analyst recommendations are made by specialists for mainly unsophisticated investors (Amiram et al., 2016). On the other hand, additional regressions (Table 5, Models 9 and 10) show a negative connection between Big 4 auditing and an amount of analysts (who are well-informed stakeholders) monitoring a company. Together they give some evidence similar to research of Lang et al., (1996). They argue that among specialists involved in published information the demand of analysts can be compensated by better firm-provided disclosures (i.e. for example the adoption of Big 4 auditor). Their services can be that way substituted.

Therefore, based on earlier results of this paper, Hypotheses 1 and partly 2 can be accepted.

5. Conclusions

This study analyzes information asymmetry with two different measures in a sample of European real estate companies using the fair value model. The sample covers the period from 2007 to 2016.

The analysis was prompted by the need to monitor seldom-measured factors and the information asymmetry of financial reporting. The main finding of the research is that the choice of external valuation for investment properties will result in less information asymmetry around a company. With regard to the effect of involving a Big 4 auditor, the situation is more complicated and depends on the measurement used. The variable *LNSPREAD* as a dependent variable shows minor information asymmetry. Because the differences in the evaluations come

out between the different types of appraisers, standard-setters could still sharpen recording demands: for example how often (e.g. if valuation is made every quarter) and what percentage of the whole investment property is valued external. It would also be beneficial to think whether the demand from the mandatory external valuation should be requested, because the difference between internal and external valuation seems to be significant concerning information asymmetry. The conclusion is consistent with the study of Ghosh, Liang, & Petrova (2020) which shows the importance of availability of appraisal data to real estate investors as it reduces information asymmetry.

Prior research finds that the information asymmetry of accounting varies as a function of time. In the future it would be interesting to examine how results and conclusions change if a different time window and the exact day of announcing annual reports are used. Another extension could be an investigation of different kinds of ownership and information asymmetry in the real estate sector, for example that of banks and governments.

Today perhaps the best way to reduce information asymmetry would be to publish financial reporting on the Internet. This information is cheap and abundant. In the future it will be interesting to study how the Internet resettles information asymmetry in accounting environment.

References

Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics* 84:3, 488–500. DOI: 10.2307/1879431

Allee, K. D., Bhattacharya, N., Black, E. L., & Christensen, T. E. (2007). Pro forma disclosure and investor sophistication: external validation of experimental evidence using archival data. *Accounting, Organizations and Society* 32:3, 201–222. doi.org/10.1016/j.aos.2006.09.012

Almutairi, A. R., Dunn, K. A., & Skantz, T. R. (2009). Auditor tenure, auditor specialization, and information asymmetry. *Managerial Auditing Journal* 24:7, 600–623. doi.org/10.1108/02686900910975341

Amiram D., Owens, E., & Rozenbaum, O. (2016). Do information releases increase or decrease information asymmetry? New evidence from analyst forecast announcements. *Journal of Accounting and Economics* 62:1, 121–138. DOI: 10.1016/j.jacceco.2016.06.001

Artiach, T. C., & Clarkson, P. M. (2011). Disclosure, conservatism and the cost of equity capital: A review of the foundation literature. *Accounting & Finance* 51:1, 2–49. https://doi.org/10.1111/j.1467-629X.2010.00387.x

Baum, A., Crosby, N., & McAllister, P. (2002). *Appraiser behaviour and appraisal smoothing: some qualitative and quantitative evidence.* Working paper, presented at The Annual Meeting of American Real Estate Society, Naples, Florida, April 2002. doi.org/10.1080/0959991032000162347

Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics* 50:2-3, 296–343. http://lib.cufe.edu.cn/upload_files/other/dx.doi.org/10.1016/j.jacceco.2010.10.003

Brown. L. D., Call, A. C., Clement, M. B., & Sharp, N. Y. (2015). Inside the "black box" of sell-side financial analysts. *The Journal of Accounting Research* 53:1, 1–47. doi.org/10.1111/1475-679X.12067

Brown, P., Foster, G., & Noreen, E. (1985). Security analyst multi-year earnings forecasts and the capital market. *American Accounting Association*, Sarasota, Florida.

Brown, S., & Hillegeist, S. A. (2007). How disclosure quality affects the level of information asymmetry. *Review of Accounting Studies* 12:2-3, 443–477. doi.org/10.1007/s11142-007-9032-5

Byard, D., & Shaw, K. W. (2003). Corporate disclosure quality and properties of analysts' information environment. *Journal of Accounting, Auditing & Finance* 18:3, 355–378. doi.org/10.1177/0148558X0301800304

Callahan, C. M., Lee, C. M. C., & Lombardi Yohn, T. (1997). Accounting information and bid-ask spreads. *Accounting Horizons* 11:4, 50–60.

Conaway, J., Liang, L., & Riedl, E. (2018). Market perceptions of the informational and convergence effects of fair value reporting for tangible assets: US and Cross-Country evidence. Available at https://ssrn.com/abstract=2802192

Daske, H. (2006). Economic benefits of adopting IFRS or US-GAAP – have the expected cost of equity capital really decreased? *Journal of Business Finance and Accounting* 33:3-4, 329–373. https://doi.org/10.1111/j.1468-5957.2006.00611.x

DeAngelo, L. E. (1981). Auditor size and audit quality, *Journal of Accounting and Economics* 3:3, 183–199. https://doi.org/10.1016/0165-4101(81)90002-1

DeFond, M., Erkens, D. H., & Zhang, J. (2016). Do client characteristics really drive the Big N audit quality effect? New evidence from propensity score matching. *Management Science* 63:11, 3628–3649. doi.org/10.1287/mnsc.2016.2544

Dietrich, J. R., Harris, M. S., & Muller, K. A. (2000). The reliability of investment property fair value estimates. *Journal of Accounting and Economics* 30:2, 125–158. doi.org/10.1016/S0165-4101(01)00002-7

Dunn, K. A., & Mayhew, B. W. (2004). Audit firm industry specialization and client disclosure quality. *Review of Accounting Studies* 9:1, 35–58. doi.org/10.1023/B: RAST.0000013628.49401.69

Eastley, D., Hvidkjaer, S., & O'Hara, M. (2002). Is information risk a determinant of asset returns? *Journal of Finance* 57:5, 2185–2221. doi.org/10.1111/1540-6261.00493

Eleswarapu, V. R., Thompson, R., & Kumar Venkataraman, K. (2004). The impact of regulation fair disclosure: Trading costs and information asymmetry. *Journal of Financial and Quantitative Analysis* 39:2, 209–225. doi.org/10.1017/S0022109000003045

The European Public Real Estate Association (EPRA) (2017). *Total markets table*. Retrieved from http://www.epra.com/application/files/6215/0592/3119/EPRA_Total_Markets_ Table_-_June_2017.pdf

Francis, J. R., & Soffer, L. (1997). The relative informativeness of analysts' stock recommendations and earnings forecast revisions. *Journal of Accounting Research* 35:2, 193–211. DOI: 10.2307/2491360

Francis, J. R., & Wang, D. (2008). The joint effect of investor protection and Big 4 audits on earnings quality around the world. *Contemporary Accounting Research* 25:1, 157–191. doi.org/10.1506/car.25.1.6

Fried, D., & Givoly, D. (1982). Financial analysts' forecasts of earnings: A better surrogate for market expectations. *Journal of Accounting and Economics* 4:2, 85–107. doi.org/10.1016/0165-4101(82)90015-5

Ghosh, C., Liang, M., & Petrova, M. T. (2020). The effect of fair value method adoption: Evidence from real estate firms in the EU. *Journal of Real Estate Finance and Economics* 60:1, 1–33. https://doi.org/10.1007/s11146-019-09721-z

Glosten, L. R., & Milgrom, P. R. (1985). Bid, ask and transaction prices in a specialist market with heterogeneously informed traders. *Journal of Financial Economics* 14:1, 71–100. DOI: 10.1016/0304-405X(85)90044-3

Hakim, F., & Omri, M. A. (2010). Quality of the external auditor, information asymmetry, and bid-ask spread: Case of the listed Tunisian firms. *International Journal of Accounting & Information Management* 18:1, 5–18. doi.org/10.1108/18347641011023243

He, W. P., Lepone, A., & Leung, H. (2013). Information asymmetry and the cost of equity capital. *International Review of Economics & Finance* 27, 611–620. https://doi.org/10.1016/j.iref.2013.03.001

Healy, P. M., Hutton, A., & Palepu, K. G. (1999). Stock performance and intermediation changes surrounding sustained increases in disclosures. *Contemporary Accounting Research* 16:3, 485–520. doi.org/10.1111/j.1911-3846.1999.tb00592.x

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics* 31:1–3, 405–440. doi.org/10.1016/S0165-4101(01)00018-0

Heflin, F., & Shaw, K. W. (2005). Trade size and informed trading: which trades are "big"? *The Journal of Financial Research* 28:1, 133–163. doi.org/10.1111/j.1475-6803.2005.00118.x

Hodgdon, C, Tondkar R. H., Harless D. W., & Adhikari, A. (2008). Compliance with IFRS disclosure requirements and individual analysts' forecast errors. *Journal of International Accounting, Auditing & Taxation* 17:1, 1–13. doi.org/10.1016/j.intaccaudtax.2008.01.002

Hope, O-K. (2013). Large shareholders and accounting research. *China Journal of Accounting Research* 6:1, 3–20. doi.org/10.1016/j.cjar.2012.12.002

Houqe, N. (2018). A review of the current debate on the determinants and consequences of mandatory IFRS adoption. *International Journal of Accounting and Information Management* 26:3, 413–442. https://doi.org/10.1108/IJAIM-03-2017-0034

Hutira, S. (2016). *Determinants of analyst forecasting accuracy*. Joseph Wharton Scholars. Available at http://repository.upenn.edu/joseph_wharton_scholars/15

The International Accounting Standards Board (IASB) (2018). *The Conceptual Framework for Financial Reporting*. Retrieved from http://eifrs.ifrs.org/eifrs/ViewContent?num=0&fn= Conceptual _ Framework

Jiao, T., Koning, M., Mertens, G., & Roosenboom, P. (2012). Mandatory IFRS adoption and its impact on analysts' forecasts. *International review of financial analysis* 21, 56–63. doi.org/10.1016/j.irfa.2011.05.006

Kadan, O., Michaely, R., & Moulton, P. (2014). Speculating on private information: buy the rumor, sell the news. *Working paper*.

Kim, O., & Verrecchia, R. E. (1994). Market liquidity and volume around earnings announcements. *Journal of Accounting and Economics* 17:1-2, 41–67. DOI: 10.1016/0165-4101(94)90004-3

Krishnan, G. V., & Visvanathan, G. (2008). Does the SOX Definition of an Accounting Expert Matter? The Association between Audit Committee Directors' Accounting Expertise and Accounting Conservatism. *Contemporary Accounting Research* 25:3, 827–857. doi.org/10.1506/car.25.3.7

Laakso, R. (2017). Property valuation and sensitivity analysis – Does increased disclosure decrease uncertainty? *Nordic Journal of Surveying and Real Estate Research* 12:1, 38–58. Retrieved from https://journal.fi/njs/article/view/65294

Lang, M., & Lundholm, R. (1993). Cross sectional determinants of analyst rating of corporate disclosures. *Journal of Accounting Research* 31:2, 246–271. doi.org/10.2307/2491273

Lang, M., & Lundholm, R. (1996). Corporate disclosure policy and analyst behavior. *The Accounting Review* 71:4, 467–492. Retrieved from http://www.jstor.org/stable/248567

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy* 106:6, 1113–1155. DOI: 10.1086/250042

Lawrence, A., Minutti-Meza, M., & Zhang, P. (2011). Can Big 4 versus Non-Big 4 differences in audit-quality proxies be attributed to client characteristics? *The Accounting Review* 86:1, 259–286. doi.org/10.2308/accr.00000009

Leuz, C., & Verrecchia, R. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research* 38: Supplement Studies, 91–124. dx.doi.org/10.2307/2672910

Li, S. (2010). Does mandatory adoption of International Financial Reporting Standards in the European Union reduce the cost of equity capital? *The Accounting Review* 85:2, 607–636. https://doi.org/10.2308/accr.2010.85.2.607

Liao, L., Kang, H., Morris, R. D., & Tang, Q. (2013). Information asymmetry of fair value accounting during the global financial crisis. *Journal of Contemporary Accounting and Economics* 9:2, 221–236. doi.org/10.1016/j.jcae.2013.10.001

Liu, Z., & Elayan, F. A. (2015). Litigation risk, information asymmetry and conditional conservatism. *Review of Quantitative Finance and Accounting* 44:4, 581–608. https://doi.org/10.1007/s11156-013-0428-y

Matsumoto, D. A. (2002). Management's incentives to avoid negative earnings surprises. *The Accounting Review* 77:3, 483–514. doi.org/10.2308/accr.2002.77.3.483

Messier Jr., W. F. (2018). *Task level research within the audit process: An update*. Presentation in 7th Workshop on Audit Quality. SDA Bocconi, 2018.

Muller III, K. A., & Riedl, E. J. (2002). External monitoring of property appraisal estimates and information asymmetry. *Journal of Accounting Research* 40:3, 865–881. doi.org/10.1111/1475-679X.00074

Muller III, K. A., Riedl, E. J., & Sellhorn, T. (2011). Mandatory fair value accounting and information asymmetry: Evidence from the European real estate industry. *Management Science* 57:6, 1138–1153. doi.org/10.1287/mnsc.1110.1339

Nellessen, T., & Zuelch, H. (2010). The reliability of investment property fair values under IFRS. *Journal of Property Investment & Finance* 29:1, 59–73. DOI 10.1108/14635781111100209

Petersen, P., & Plenborg, T. (2006). Voluntary disclosure and information asymmetry in Denmark. *Journal of International Accounting, Auditing and Taxation* 15(2006), 127–149. dx.doi.org/10.1016

PriceWaterhouseCoopers (PWC) (2017). *Applying IFRS for the real estate industry*. Retrieved from https://www.pwc.com/gx/en/audit-services/ifrs/publications/applying-ifrs-for-the-real-estate-industry.pdf

Ramnath, S., Rock, S., & Shane, P. (2008). The financial analyst forecasting literature: a taxonomy with suggestions for further research. *International Journal of Forecasting* 24:1, 34–75. doi.org/10.1016/j.ijforecast.2007.12.006

Roychowdhury, S., Shroff, N., and Verdi, R. S. (2019). The effects of financial reporting and disclosure on corporate investment: A review. *Journal of Accounting and Economics* 68:2-3, 101246. https://doi.org/10.1016/j.jacceco.2019.101246

Table 1. Breakdown of companies by country and year after adjustments

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
the UK	15	17	17	16	15	14	13	13	13	12	145
Netherland	2	2	2	2	2	2	2	2	2	2	20
Belgium	5	5	5	5	5	5	5	5	5	5	50
France	11	13	14	13	13	11	11	9	9	10	114
Greece	0	0	2	2	1	2	3	2	2	2	16
Italy	2	2	2	2	2	2	2	2	2	1	19
Spain	1	2	2	2	2	1	2	2	2	1	17
Austria	0	2	2	2	2	2	2	2	2	2	18
Germany	13	13	13	13	13	11	9	8	7	7	107
Denmark	3	4	5	5	5	5	4	5	4	4	44
Finland	3	3	3	3	3	3	3	3	3	3	30
Sweden	10	10	10	10	10	9	9	9	8	8	93
Total	65	73	77	75	73	67	65	62	59	57	**673**

Table 2. Descriptive statistics

	N	Mean	Std	Min	Q1	Median	Q3	Max
LNSPREAD	673	-4,321	1,440	-7,708	-5,308	-4,334	-3,399	0,338
STDDEV	299	0,938	0,336	0	0,750	0,960	1,120	2,000
LNANALYST	445	1,531	0,990	0	0,693	1,792	2,398	3,296
NOVALEXT	673	0,096	0,300	0	0	0	1	1
VALEXTO	673	0,425	0,495	0	0	0	1	1
VALEXTL	673	0,475	0,500	0	0	0	1	1
BIG4	673	0,724	0,448	0	0	0	1	1
ORI1	673	0,215	0,411	0	0	0	1	1
ORI2	673	0,536	0,499	0	0	0	1	1
OSHIP	673	0,385	0,487	0	0	0	1	1
LNVOLATILITY	673	0,959	1,846	-3,537	-0,307	1,004	2,000	6,006
LNTURN	673	4,246	2,141	-3,507	2,976	4,609	5,831	8,050
LNTA (tEUR)	673	13,461	1,677	8,480	12,365	13,586	14,684	16,720

Variables are defined in the text.

Table 3. Pearson correlations

	LNSPREAD	STDDEV	LNANALYST	NOVALEXT	VALEXTO	VALEXTL	BIG4	ORI1	ORI2	OSHIP	LNVOLATILITY	LNTURN	LNTA (tEUR)
LNSPREAD	1,00												
STDDEV	0,09	1,00											
LNANALYST	-0,69***	0,18***	1,00										
NOVALEXT	0,20***	0,01	-0,27***	1,00									
VALEXTO	0,21***	-0,07	-0,03	-0,37***	1,00								
VALEXTL	-0,35***	0,06	-0,18***	-0,36***	-0,73***	1,00							
BIG4	-0,42***	0,09	0,17***	-0,04	-0,26***	0,28***	1,00						
ORI1	-0,01	0,92	0,04	-0,07**	-0,14***	0,19***	-0,09***	1,00					
ORI2	0,13***	0,14***	-0,05	-0,03	0,18***	-0,16***	-0,13***	-0,60***	1,00				
OSHIP	0,17***	-0,01	-0,23***	0,16***	0,04	-0,15***	-0,16***	-0,17***	0,31***	1,00			
LNVOLATILITY	-0,19***	-0,10*	0,02	0,05	-0,18***	0,15***	-0,01	0,52***	-0,39***	-0,13***	1,00		
LNTURN	-0,52***	-0,05	0,33***	-0,18***	-0,13***	0,26***	0,26***	0,26***	-0,45***	-0,35***	0,21***	1,00	
LNTA (tEUR)	-0,75***	0,07	0,75***	-0,19***	-0,24***	0,38***	0,42***	-0,07**	-0,00	-0,13***	0,13***	0,34***	1,00

Notes: *, **, *** denote significance of the Pearson correlations at the 0,10, 0,05 and 0,01 levels, respectively. Variables are defined in the text.

Table 4. Information asymmetry regressions

Panel A

LNSPREAD	Model 1	Model 2	Model 3	Model 4
NOVALEXT	0,200	0,211		
	0,034**	0,022**		
VALEXTO			-0,221	-0,241
			0,030**	0,016**
VALEXTL			-0,147	-0,104
			0,150	0,310
BIG4	-0,235	-0,224	-0,247	-0,258
	0,004***	0,007***	0,004***	0,003***
ORI1	0,181	0,256	0,157	0,236
	0,093*	0,016**	0,150	0,026**
ORI2	-0,192	-0,115	-0,200	-0,063
	0,015**	0,141	0,012**	0,411
OSHIP	-0,152	-0,207	-0,157	-0,193
	0,041**	0,005***	0,036**	0,008***
LNVOLATILITY	-0,142	-0,137	-0,144	-0,119
	0,000***	0,000***	0,000***	0,000***
LNTURN	-0,220	-0,221	-0,221	-0,215
	0,000***	0,000***	0,000***	0,000***
LNTA (tEUR)	-0,487	-0,624	-0,494	-0,278
	0,000***	0,000***	0,000***	0,006***
MILLSNOEXT		1,011		
		0,008***		
MILLSEXTO				-1,056
				0,001***
MILLSEXTL				0,496
				0,407
CONS	3,785	4,041	4,084	1,283
	0,000	0,000	0,000	0,555
N	696	647	696	647
R^2	0,680	0,706	0,681	0,716
Test VALEXTO=VALEXTL F-value			1,04	3,57*
Test NOVALEXT = BIG4 F-value	13,13***	13,36***		
Test VALEXTO = BIG4 F-value			0,04	0,02
Test VALEXTL=BIG4 F-value			0,50	1,15
Test ORI1=ORI2 F-value	9,90***	10,15***	8,90***	6,56**

Panel B

STDDEV	Model 5	Model 6	Model 7	Model 8
LNANALYST	0,155	0,173	0,156	0,163
	0,001***	0,002***	0,001***	0,003***
NOVALEXT	0,141	0,151		
	0,230	0,220		
VALEXTO			-0,182	-0,201
			0,133	0,112
VALEXTL			-0,114	-0,108
			0,345	0,398
BIG4	0,224	0,219	0,211	0,185
	0,000***	0,000***	0,000***	0,002***
ORI1	0,171	0,172	0,156	0,153
	0,009***	0,010***	0,015**	0,019**
ORI2	0,167	0,183	0,159	0,176
	0,004***	0,002***	0,007***	0,004***
OSHIP	-0,026	-0,013	-0,034	-0,029
	0,595	0,799	0,483	0,588
LNVOLATILITY	-0,045	-0,034	-0,047	-0,033
	0,003***	0,036**	0,002***	0,045**
LNTURN	-0,006	-0,003	-0,010	-0,009
	0,675	0,836	0,517	0,591
LNTA (tEUR)	-0,034	-0,102	-0,036	-0,075
	0,292	0,062*	0,263	0,436
MILLSNOEXT		0,420		
		0,170		
MILLSEXTO				-0,474
				0,090*
MILLSEXTL				-0,567
				0,312
CONS	1,055	1,296	1,269	2,797
	0,009	0,002	0,002	0,147
N	299	299	299	299
R²	0,178	0,184	0,186	0,196
Test *VALEXTO=VALEXTL F*-value			2,94*	4,88**
Test *NOVALEXT = BIG4 F*-value	0,40	0,25		
Test *VALEXTO = BIG4 F*-value			8,75***	7,68***
Test *VALEXTL=BIG4 F*-value			5,90**	4,22**
Test *ORI1=ORI2 F*-value	0,00	0,02	0,00	0,07

Notes: Coefficient estimates and standard deviations for regressions are reported. The standard errors are robust errors clustered by year and company. The models have also year fixed effects. *, **, *** denote two-tailed statistical significance at the 0,10, 0,05 and 0,01 levels, respectively. The continuous variables are winsorized one percent in each tail. Variables are defined in the text.

35

Table 5. Additional regressions

LNANALYST	Model 9	*ANALYST5*	Model 10
VALEXTO	0,478		1,224
	0,001***		0,002***
VALEXTL	0,483		1,572
	0,000***		0,000***
BIG4	-1,183		-4,222
	0,000***		0,000***
ORI1	-0,786		-3,590
	0,008***		0,000***
ORI2	0,414		-0,457
	0,002***		0,301
OSHIP	-0,657		-0,883
	0,000***		0,031**
LNVOLATILITY	-0,148		-0,135
	0,000***		0,124
LNTURN	-0,003		-0,051
	0,872		0,401
LNTA (tEUR)	0,384		1,156
	0,000***		0,000***
MILLSEXTO	2,743		3,101
	0,000***		0,025**
MILLSEXTL	0,162		-3,198
	0,626		0,023**
CONS	-5,839		-12,434
	0,000		0,011
N	440		440
R^2	0,685		0,583
Test *VALEXTO=VALEXTL F*-value	0,01		2,23
Test *VALEXTO = BIG4 F*-value	24,49***		29,05***
Test *VALEXTL=BIG4 F*-value	25,30***		30,17***
Test *ORI1=ORI2 F*-value	11,42***		10,23***

Notes: The variable *ANALYST5* is an indicator variable in a logit regression where the variable taking the value 1 if at least five analysts are following the company four months after the end of the fiscal year *t*. The dependent variable *ANALYST5* takes the mean value of 0,534, so 53 percent of companies have at least five analysts monitoring them.

Ownership Structure and Accounting Method Choice: A Study of European Real Estate Companies

JUHA MÄKI[*], ANTONIO SOMOZA-LOPEZ[**] and STEFAN SUNDGREN[†],[‡]

[*]*Department of Accounting and Finance, University of Vaasa, Vaasa, Finland,* [**]*Faculty of Economics and Business, Barcelona University, Barcelona, Spain,* [†]*Department of Business Adminstration, University of Vaasa, Vaasa, Finland and* [‡]*Umeå School of Business and Economics, Umeå, Sweden*

ABSTRACT   Companies can under IAS 40 *Investment Properties* choose between the fair value and the cost models. The fair value model arguably results in more relevant information but is also more costly to use. Based on studies suggesting that financial reports are a more important medium for communication with investors if ownership is dispersed, we hypothesize that the use of the fair value model is positively associated with ownership dispersion. We study European Real Estate firms and find support for this prediction. We also find a positive association between trade of shares and ownership dispersion, supporting the view that financial statements are less important if ownership concentration is high. Finally, we examine whether the choice depends on the identity of large owners. Companies with a financial company as the largest owner are somewhat more likely to choose the fair value model. Overall, the results indicate that accounting rules facilitating optional accounting policies have benefits.

Keywords: accounting method choice, IAS 40, ownership structure, investment property, fair value

1.   Introduction

Prior research suggests that financial reports play a more prominent role in communications with investors and other stakeholders if a company has dispersed ownership. The reason for this is that companies can communicate privately with investors on a needs-basis if there are few owners, while it is more efficient to communicate with a large number of investors via financial reports (e.g. Ball & Shivakumar, 2005; Burgstahler, Hail, & Leuz, 2006). Our study differs from previous studies in that we focus on a specific accounting choice, the choice between the fair value and cost models under IAS 40 *Investment Properties*, in contrast to earlier studies that have mainly used accruals-based measurements of earnings quality in tests of the theory (e.g. Ball & Shivakumar, 2005; Givoli, Hayn, & Katz, 2010; Wang, 2006).

Correspondence Address: Stefan Sundgren, Umeå School of Business and Economics, Umeå, Sweden. Email: stefan. sundgren@umu.se

2   *J. Mäki et al.*

The choice between fair value model and cost model is arguably the most important accounting policy choice in the real estate sector. If the fair value model is applied under IAS 40, fair values of investment properties are reported on the balance sheet and changes in fair values are reported in profit and loss. If the cost method is applied, the historical cost less accumulated depreciation is recognized on the balance sheet and the fair value of the property is disclosed in the notes to the financial statements. Thus, the choice between the fair value model and the cost model is essentially a choice between recognition and disclosure of fair values. There is an extensive body of research examining different aspects of disclosure or recognition (see Schipper, 2007 for a review). Much of the archival research focused on investor perceptions, as captured by the association between market variables and either recognized or disclosed items, support the view that recognized items are more relevant for investors (e.g. Ahmed, Kilic, & Lobo, 2006; Davis-Friday, Folami, Liu, & Mittelstaedt, 1999; Hirst, Hopkins, & Wahlen, 2004; Michels, 2015; Muller, Riedl, & Sellhorn, 2015; Yu, 2013). Libby, Nelson, and Hunton (2006) suggest a reason why information in footnotes could be less reliable, namely that auditors permit more misstatements in disclosed than recognized items.

Based on the suggestions that (i) financial reports have a more important role in communications with investors if ownership is dispersed, (ii) financial statements are more informative under the fair value model than under the cost model, and (iii) that the fair value model is more costly to apply, we predict that ownership dispersion is positively associated with the choice of the fair value model. We study a sample with 389 firm-years for 98 European Real Estate firms and find significant support for this prediction. Our results also show that companies with concentrated ownership are less actively traded at the stock market. Overall, these results are consistent with the view that companies are more likely to choose the cost model if financial reports are a less important medium for communicating with shareholders.

Prior studies suggest that the quality of disclosures depends on ownership type (e.g. Dam & Scholtens, 2012). Some of our results suggest that listed companies with a corporate investor, foundation, municipality or other type of governmental authority as the largest owner are less likely to use the fair value model and traded less at the stock market than companies owned by a bank or financial company. One possible explanation of these results is that those investors on average are more long-term owners than banks and financial companies, implying that current and future retail investors are less important.

Generally, the study suggests that companies choose their accounting policies based on costs and benefits with alternative accounting methods. Listed companies are a heterogeneous group implying that the cost–benefit trade-offs differ between companies. Thus, accounting rules imposing the same accounting policy on all listed companies irrespective of their characteristics might not be optimal. This conclusion contradicts the current trend in standard setting. Sunder (2010) points out that uniformity has long been the focus of rule-making in accounting. Increased uniformity has obviously also been the target of the International Accounting Standards Board (IASB) as they have repeatedly abolished alternative accounting treatments.[1] Sunder (2009) criticizes the current trend on the grounds that the benefits in the form of increased comparability is unlikely to be realized and that uniform standards will discourage discovery and evolution.

The study proceeds as follows: Section 2 includes an overview of the rules regulating the accounting of investment property under International Accounting Standards/International Financial Reporting Standards (IAS/IFRS). Section 3 presents prior related literature and the study's hypotheses. Section 4 presents the research design, and Section 5 includes the main results of the study. Section 6 presents the conclusions.

2.   Accounting for Investment Property Under IAS 40

This study focuses on accounting by listed real estate companies in the EU. The IAS/IFRS standards are also used in a large number of other countries, including Australia, Brazil and Canada. Furthermore, some other countries, such as China, use national standards that are substantially converged with IAS/IFRS. As explained more in Section 4, our study is partly based on data hand-collected from financial statements and we were therefore not able to conduct an international study.

The standard IAS 40 regulates the accounting of investment property and defines it as land, buildings or parts of buildings held by an owner to earn rental and capital appreciation rather than for production, administrative purposes, or sales in the ordinary course of business (IAS 40.5). After the initial recognition, IAS 40.30 allows a company to choose the fair value model or the cost model as its accounting policy. If the fair value model is chosen, it is applied to all the company's investment property (IAS 40.33) and the company shall recognize gains or losses from changes in fair value in profit or loss for the period in which these arise (IAS 40.35), what is more, investment property shall not be depreciated.

If the cost method is applied, investment property is depreciated over its useful life. Furthermore, an impairment loss is recognized if the carrying value is higher than the recoverable amount (see IAS 36). Companies choosing this alternative have to report fair values in the notes to the financial statements (IAS 40.79e).

This study investigates a sample from the years 2009 to 2013. Up to the beginning of 2013 guidance on fair value measurement could be found in IAS 40.45-46. Fair value is defined in IAS 40.36 as 'the price at which the property could be exchanged between knowledgeable, willing parties in an arm's length transaction'. This is expected to reflect market conditions at the end of the reporting period. IAS 40.45 stipulates that the best evidence of fair value is given by current prices in an active market for similar property in the same location and condition. However, if the prices in an active market for similar property in the same location and condition are not available, a company can use: (i) prices of property of a different nature or from a different location, (ii) recent prices of similar properties in less active markets, or (iii) discounted cash flow projections based on reliable estimates of future cash flows can be used to assess the fair values (IAS 40.46).

IFRS 13.9 defines fair value as the 'price that would be received to sell an asset … in an orderly transaction between market participants at the measurement date'. The standard recognizes the following three valuation techniques: market approaches, cost approaches and income approaches (IFRS 13.62). A cost approach was not allowed under IAS 40 and IFRS 13 does not explicitly exclude the use of the cost approach for investment properties. However, the practical implications of this change are argued to be limited, as the use of market or income approaches are the most likely methods to be in line with IFRS 13 requirements for investment properties (PwC, 2011, p. 5).

3.   Prior Literature and Hypothesis Development

This paper is related to literature about accounting in the real estate sector, as well as on the association between ownership structure and earnings quality. Relatively few studies have focused on factors that drive accounting choices in the real estate sector.

3.1. Ownership Structure and Accounting Choices

In this paragraph we analyze how ownership structure affects accounting choice and earnings quality from different points of view. First of all, there is a number of studies of the association

between the ownership structure and specific accounting choices. For example, Niehaus (1989) states that the selection between first-in first-out (FIFO) and last-in last-out (LIFO) has been influenced by ownership structure, in the sense that LIFO is negatively associated with managerial ownership and higher outside ownership concentration increase the likelihood of choosing LIFO.

The relationship between the quality of earnings and ownership composition has been the subject of research from different perspectives. Lamm-Tennant and Rollins (1984) establish a link between ownership control, earnings, size and how management insurers provide incentives to exercise income-increasing or decreasing accounting choices; Dempsey, Hunt, and Schroeder (1993) provide strong support for income-increasing behavior by non-owner managers; Carlson and Bathala (1997) suggest that ownership differences, managers' incentive structures and firm profitability are important in explaining smoothing behavior in firms; Astami and Tower (2006) state that lower ownership concentration is positively related to pursuing income-increasing accounting techniques.

Closely related to the former issue, other authors have compared the different behavior between public and private entities. Hope, Thomas, and Vyas (2013) attribute the differences according to the type of firm: in the public ones managers have incentives to give information demanded (agency theory) meanwhile in the second ones the demand is less obvious as major capital providers often have access to inside information and typically take a more active role in management. This implies that financial reporting in private firms is more likely to be influenced by factors as tax reporting or dividend policy (Ball & Shivakumar, 2005; Burgstahler et al., 2006). This is in contrast with public firms that should attend the demands of external parties which stimulate to manipulate earnings (Graham, Harvey, & Rajgopal, 2005). Other authors, like Givoli et al. (2010), reinforce the opportunistic behavior hypothesis as it dominates the actions of managers in publicly traded companies and conclude that investors and other stakeholders of public firms demand higher quality financial information. Likewise, Ball and Shivakumar (2005) and Burgstahler et al. (2006) argue that privately held firms have relatively concentrated ownership structures and hence, can efficiently communicate among shareholders via private channels, but in the case of private entities they have fewer incentives to report informative earnings, which implies that managers put different roles for reported information; Ball and Shivakumar (2005) maintain that these other uses render earnings less informative.

3.2. Prior Studies of the Real Estate Sector

Our study is most closely related to Quagli and Avallone (2010), Israeli (2015) and Muller et al. (2015). Quagli and Avallone (2010) study the choice between cost and fair value on a sample of 76 European real estate companies in the years following the adoption of IFRS. They base their hypotheses on contractual efficiency related arguments, and the notion that fair values can reduce information asymmetry and that the choice could be driven by managerial opportunism. They find that the size of the company and market-to-book calculated on accounting numbers before the adoption of IAS/IFRS is negatively associated with the use of fair values. Our study differs from this one in the following important ways. First, we focus on other factors that could drive the choice between the methods. Second, we use a larger sample from a more recent time period. An advantage with using a more recent sample is that it mitigates the impact of national pre-IFRS practices on the reporting to some extent.

Israeli (2015) studies (i) firms' choice between the fair value model and the cost model, (ii) tests whether recognized and disclosed fair values are valued equally by investors and (iii) tests whether these amounts are equivalently associated with future financial outcomes using a sample with European real estate firms. A first finding in the study is that contractual and

asset-pricing incentives explain the choice between the fair value and cost models. More specifically, Israeli finds that the firm's leverage is positively associated with the choice of the fair value model and that the existence of a blockholder controlling 5% or more of the shares is negatively associated with the choice of the fair value model. Leverage is suggested to measure the closeness to debt covenant violations, and the existence of large blockholders proxy the level or monitoring or the outside control imposed on the firm's managers. Furthermore, Israeli (2015) finds that the choice of the fair value model is positively associated with a measure of income smoothing (ratio of standard deviation of a firm's operating income to the standard deviation of cash flows) and with the difference between the fair value and the carrying amount of the beginning of the year to transaction to IFRS or adoption of the fair value model. These variables are suggested to be associated with asset-pricing incentives. In the next step of the analyses, price and return regressions based on the Ohlson's (1995) model were estimated and the general conclusion was that investors place a smaller weight on disclosed amounts than on recognized amounts.

Muller et al. (2015) also contribute to the disclosure versus recognition literature by examining pricing differences across recognized and disclosed fair values using a sample with European real estate firms. They find a lower association between equity prices and disclosed fair values than with recognized fair values. Thus, these results are qualitatively similar to the ones presented by Israeli. In the next step of their analyses, they analyze whether the pricing differences are driven by a lower reliability of the disclosed information or investors' higher related information processing costs. Their empirical results support both explanations so they conclude that fair value reliability and information processing costs provide complementary explanations for the observed pricing differences. However, the study does not examine in any more detail why companies choose the cost model, which is at a first glance not a rational choice given the pricing differences. Our study adds to the literature by a further examination of factors associated with the recognition versus disclosure decision.

There is also a number of other studies examining the relevance and reliability of fair values of investment properties. Dietrich, Harris, and Muller (2001) study the reliability of fair values of investment properties in the UK. They find that fair value estimates are more accurate measures of actual selling prices than cost. Muller and Riedl (2002) find that the use of external valuers reduce information asymmetry problems using bid-ask spreads as the measure. Muller, Riedl, and Sellhorn (2011) investigate whether the adoption of IAS 40 in Europe reduced information asymmetry across market participants. The evidence suggests that the mandatory reporting of fair values reduces, but not necessarily eliminates, information asymmetry differences across firms. Liang and Riedl (2014) study the effects of fair value versus cost on analyst forecast accuracy using a sample with companies from the USA and the UK. Overall, the results indicate that fair value reporting improves analysts' ability to forecast the balance sheet but reduces their ability to forecast net income. Finally, Vergauwe and Gaeremynck (2014) study the association between disclosure quality and measures of information asymmetry and market illiquidity. They find that the disclosure of assumptions applied in discounted cash flow calculations and other rent capital valuations are negatively associated with information asymmetry and market illiquidity. Overall, they suggest that extensive disclosures about assumptions in valuation techniques used to assess fair values increase reliability.

3.3. Hypothesis Development

Muller et al. (2015) suggest that recognized amounts are perceived as more value relevant for investors than disclosed amounts and suggest two reasons for this: the reliability of fair values is lower and/or investors' related processing costs are lower. In other areas, Davis-Friday, Liu, and Mittelstaedt (2004) compare the disclose vs. recognition of pension plans,

6   *J. Mäki et al.*

concluding that the first option is perceived as less reliable compared to the second one. Bratten, Choudhary, and Schipper (2013) make the same comparison between capitalized and operating leases, maintaining they are equally reliable when not based on management's estimates. A study suggesting that disclosed amounts could be more reliable is Choudhary (2011), who finds that managerial opportunism in assumptions used to estimate fair values of stock-options increase with recognition as compared to disclosure. Michels (2015) also finds that recognized amounts are more value relevant for investors than disclosed amounts. Furthermore, he presents some results that are consistent with the view that investor processing costs are higher for disclosed values, that is, disclosed values are requiring a greater level of effort or expertise to understand and use. Hirst et al. (2004) present experimental evidence showing that fair value gains and losses in profit and loss can aid analysts as they assess risk. Their results suggest that note disclosure is not a substitute for financial statement recognition.

In balance, research on investment properties as well as in other areas seems to suggest that recognized values are more relevant for investors than disclosed values. Furthermore, the research provides some support for the predictions that the differences are due to reliability as well as information processing costs although the findings are to some extent mixed.

Our study contributes to this literature by examining how the choice between recognition and disclosure is related to the role of accounting information in the communication with investors. We base our first hypothesis on the notion in Ball and Shivakumar (2005) that the demand for high-quality accounting information increases with ownership dispersion. They use a setting with private and public ownership as the starting point for the analysis, and suggest that private companies are more likely than public companies to communicate privately with share-holders. Private communication is comparatively less efficient for publicly held companies, because they often have a large number of anonymous shareholders. Furthermore, shareholders take a more active role in management in privately traded companies, which reduces their reliance on financial statements for monitoring managers. These arguments are transferable to a setting with high or low ownership concentration: in the first case, managers can communicate directly with key owners and furthermore, owners with a large stake in the company have incentives to monitor managers closely (cf. Shleifer & Vishny, 1986).

A factor that reduces the incentive to use the fair value model is that it is likely to be more costly to apply than the cost model. One reason for this is that fair values have to be estimated more frequently than under the cost model, because the fair values of investment properties are disclosed in interim reports in addition to the annual reports. Furthermore, as information in the notes to the financial statements typically receives less attention than information reported on the balance sheet (e.g. Hirst et al., 2004; Muller et al., 2015), one could surmise that on average companies spend more time and resources on the fair value measurement if the fair value model is used. A finding supporting this notion is that auditors seem to permit more misstatement in recognized amounts than in equivalent disclosed amounts (Libby et al., 2006).

Thus, if companies trade-off these benefits and costs with the use of the fair value model, and if financial statements have a more prominent role in the communication with investors and other stakeholders in a company with dispersed ownership, we get the following prediction:

   H_1: Companies with concentrated ownership are more likely to choose the cost model.

Different owner types are likely to have different incentives and this may also affect their accounting choices. For example, banks and institutional investors are likely to be predominantly financially motivated, while corporate investors can also have more long-term strategic motives for their share-holdings (Dam & Scholtens, 2012). We are not aware of any studies of the association between ownership type and accounting choices. However, the issue has

been studied in other settings. Dam and Scholtens (2012) confront corporate vs. individual ownership to evaluate the corporate social responsibility involvement. The authors conclude that ownership by employees, individuals and firms is associated with relatively poor corporate social policies. In contrast, the holdings owned by banks and institutional investors as well as the state appear to be neutral in this respect. As the literature does not suggest which owner types that could consider financial statements as a more important tool for communication with investors, we express the hypothesis in null-form.

H_2: The owner type is not associated with the fair value vs. historical cost choice.

4.   Data and Research Design

4.1. Sample

Our study is based on a sample of 389 firm-years for 98 publicly traded real estate companies within the European Union. The companies in the sample operate mainly in the EU region and are all listed at stock exchanges in EU countries. The data used in this study were obtained from the Orbis database and from the consolidated financial statements of the companies. The consolidated financial reports were retrieved from the companies' websites and the following variables used in this study were collected: information about whether the company used the cost or the fair value model, the use of the European Public Real Estate Association (EPRA) guidelines and the valuation technique used to measure fair values. Financial data, the proportion of shares held by the largest shareholders and the identity of the largest shareholders were taken from Orbis.

The data are from years 2009 to 2013. Companies in the European Union started to follow IFRS in 2005 and by 2009 had been able to exploit the flexibility of IFRS and adopt accounting policies that were in the best interest of the company (Kvaal & Nobes, 2012).

The sample was composed as follows. We started with all publicly traded companies in the Orbis database reporting real estate (NACE code 68) as their main activities in the European Union. This gave us a primary sample of 223 companies. For some of the companies investment property only constituted a small proportion of their assets. For inclusion in the sample we required that investment property should amount to more than half of the total assets. Furthermore, as we collected complementary data from the financial statements of the companies, only those whose financial statements were available on their websites were considered for inclusion. The above omissions left 389 firm-years for 98 companies. The origin of the companies is displayed in Table 1.

The fair value method is used by 78 companies (312 firm-years) and the cost method is used by 20 companies (77 firm-years). The mean (median) assets are €2093 (828) million, and the mean (median) revenues are €179 (69) million. The mean (median) book values of investment properties in relation to total assets are 87.2% (90.7%) for fair value users and 83.1% (86.2%) for cost model users. Thus, investment properties make up the great majority of all assets of the firm, suggesting that the choice between the fair value model and the cost model is one of the most significant accounting method choices for the companies in the sample.

Companies have to disclose the methods and significant assumptions applied in determining fair values of investment properties (IAS 40.75d; IFRS 13:93). We classified the companies into four categories, based on: (i) discounted cash flow predictions or other income based methods, (ii) prices for similar properties or (iii) a combination of the above methods in order to measure fair values. The fourth category includes companies that did not provide clear information about which method had been used. We found that in this sample 11 (2.83%) firm-years exclusively used a market comparable approach, 169 (43.44%) used discounted cash flows or another

8   *J. Mäki et al.*

Table 1.   Breakdown of companies by accounting method and country

Country	Fair value model	Cost model	Total
UK	17 (62)	0 (0)	17 (62)
Ireland	1(1)	0 (0)	1(1)
Belgium	5 (25)	0 (0)	5 (25)
France	15 (61)	10 (40)	25 (101)
Greece	3 (10)	0 (0)	3 (10)
Italy	1(5)	1(3)	2 (8)
Spain	0 (0)	4 (15)	4 (15)
Austria	3 (15)	0 (0)	3 (15)
Germany	11 (40)	4 (15)	15 (55)
Denmark	5 (21)	0 (0)	5 (21)
Finland	3 (15)	1 (4)	4 (19)
Sweden	14 (57)	0 (0)	14 (57)
Total	78 (312)	20 (77)	98 (389)

Note: The table reports the number of companies and observations per country. The number of observations are in parentheses.

income based approach, 148 (38.05%) used a combination of the methods and 61 (15.68%) did not provide clear information about which method was used. Thus, most of the companies in the sample use an income approach for the fair value measurement.

4.2. Research Design

We use the following regressions to test our hypothesis:

$$FV = \beta_0 + \beta_1 LARGEST + \beta_2 OWNER_{private} + \beta_3 OWNER_{other}$$
$$+ \beta_4 LNREVENUES + \beta_5 \Delta LNREVENUES + \beta_6 BIG4 + \beta_7 SOLVENCY + \beta_8 EPRA \quad (1)$$
$$+ \beta_9 ORIGIN_{German} + \beta_{10} ORIGIN_{French} + \varepsilon$$

$$FV = \beta_0 + \beta_1 LARGEST_{10-50} + \beta_2 LARGEST_{>50} + \beta_3 OWNER_{private} + \beta_4 OWNER_{other}$$
$$+ \beta_5 LNREVENUES + \beta_6 \Delta LNREVENUES + \beta_7 BIG4 + \beta_8 SOLVENCY + \beta_9 EPRA \quad (2)$$
$$+ \beta_{10} ORIGIN_{German} + \beta_{11} ORIGIN_{French} + \varepsilon$$

$$FV = \beta_0 + \beta_1 LARGEST_{10-50} + \beta_2 OWNER_{private} + \beta_3 OWNER_{other} + \beta_4 LARGEST_{10-50}*$$
$$OWNER_{private} + \beta_5 LARGEST_{10-50}*OWNER_{other} + \beta_6 LARGEST_{>50}*OWNER_{financial}$$
$$+ \beta_7 LARGEST_{>50}*OWNER_{other} + \beta_8 LNREVENUES + \beta_9 \Delta LNREVENUES + \beta_{10} BIG4$$
$$+ \beta_{11} SOLVENCY + \beta_{12} EPRA + \beta_{13} ORIGIN_{German} + \beta_{14} ORIGIN_{French} + \varepsilon$$

$$(3)$$

FV is an indicator variable taking the value one if the fair value model is used and zero if the cost model is used. The ownership structure is measured with *LARGEST* in regression 1, which is the proportion of shares directly or indirectly held by the largest shareholder. The exact definitions of all variables used in the study are presented in Appendix 1. In regression 2 we measure ownership with indicator variables capturing whether there is at least one large shareholder. A shareholder is defined as large if direct or indirect ownership is 10% or more

(following Laeven & Levine, 2008; LaPorta, Lopez-de-Silanes, & Shleifer, 1999). We include indicator variables for ownership between 10% and 50% and over 50% of the shares.

Hypothesis 2 predicts that the owner type affects the choice. Based on information in Orbis, we classified the owners into financial, private and other. Financial companies include companies owned by banks or other financial companies (e.g. a fund, an insurance company or a treasure holding company). Private companies include companies owned by a person or family, and 'other' companies include companies owned by an corporate investor, a governmental authority (e.g. municipality), a foundation and one observation where the company was 'self-owned' according to Orbis. We include $OWNER_{private}$ and $OWNER_{other}$ in the regressions. Financial companies are correspondingly in the comparison category. Finally, in regression 3 we study whether the effect of ownership concentration on the choice between the cost and the fair value model depends on the identity of the largest owner by including interactions between indicator variables for the type of owner and ownership concentration.

The following control variables are included in the regressions. According to LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (1998), the countries included in the sample have different legal and enforcement qualities. We include indicator variables for German and French origin as controls ($ORIGIN_{German}$, $ORIGIN_{French}$). Companies from English and Scandinavian origin countries, according to LaPorta et al.'s (1998) classification, are in the reference group (Ireland, the UK, Denmark, Finland and Sweden). We include companies with both a Scandinavian and an English origin in the comparison category because all companies in the sample with an Anglo-Saxon origin use the fair value model and most companies (95.6%) with a Scandinavian origin use the fair value model.

One would expect larger companies to provide higher quality accounting and disclosures due to their public exposure. We include the logarithm of sales as a control for this ($LNREVENUES$). Growing companies are more likely to need external financing, and some previous studies show that the cost of capital is negatively associated with disclosure quality (Botosan, 1997). We include growth in sales as a control in the regressions ($\Delta LNREVENUES$). Furthermore, Quagli and Avallone (2010) and Israeli (2015) find that leverage is associated with the choice of the fair value model. We use $SOLVENCY$ as the measure. Prior studies suggest that large international audit firms conduct higher quality audits than smaller audit firms (see Francis, 2004 for a review). A possible consequence of this is that the disclosure quality is higher. Same effects can be assumed with the membership of EPRA. We include a Big 4 and a membership of EPRA indicator variables as controls.

5.   Empirical Results

5.1. Descriptive Statistics

In Table 2 we present descriptive statistics on the variables. It can be seen that the mean value of $LARGEST$ is 30.8% among fair value appliers and 58.0% among cost model appliers (*p*-value < .001). The proportion of companies having at least one large shareholder is also considerably higher for the cost model appliers. The variable $LARGEST_{<10}$ takes the value one if the largest owner (directly or indirectly) controls less than 10% of the shares and it can be seen that 23.1% of the fair value model users and only 3.9% of the cost model users lack a large shareholder. It can also be seen from the table that 54.8% of the fair value users have an owner controlling between 10% and 50% of the shares and that 22.1% have an owner controlling over 50% of the shares. The corresponding figures for the cost model users are 42.9% and 53.2%. A chi-square test shows that the differences in the proportions are significant (*p*-value < .001).

10   *J. Mäki et al.*

Table 2.   Descriptive statistics

	Fair value model		Cost model		
	Mean	Std. Dev.	Mean	Std. Dev.	*p*-Value
LARGEST	0.308	0.243	0.580	0.280	.000
$LARGEST_{<10}$	0.231	0.422	0.039	0.195	
$LARGEST_{10-50}$	0.548	0.498	0.429	0.498	
$LARGEST_{>50}$	0.221	0.416	0.532	0.502	.000
$OWNER_{financial}$	0.135	0.342	0.091	0.289	
$OWNER_{private}$	0.571	0.496	0.312	0.466	
$OWNER_{other}$	0.295	0.457	0.597	0.494	.000
LNREVENUES	10.914	1.676	10.963	2.294	.832
ΔLNREVENUES	0.062	0.390	0.033	0.570	.599
BIG4	0.740	0.439	0.766	0.426	.641
SOLVENCY	0.394	0.190	0.296	0.249	.000
EPRA	0.455	0.499	0.364	0.484	.147
$ORIGIN_{German}$	0.176	0.382	0.195	0.399	
$ORIGIN_{English\ and\ Scandinavian}$	0.500	0.501	0.052	0.223	
$ORIGIN_{French}$	0.324	0.469	0.753	0.434	.000

Note: *p*-Values are for *t*-tests and chi-square tests for the continuous and dichotomous variables, respectively. The number of observations is 389 (312 for the fair value model and 77 for the cost model). The variables are explained in Appendix 1.

Furthermore, 13.5% of the fair value users have a bank or financial company as the largest owner, 57.1% a private owner (individual or family) and 29.2% an 'other' type of largest owner. The corresponding figures for the cost model users are 9.1%, 31.2% and 59.7%. The group 'other' includes in total 138 observations and a corporate investor is the largest owner of 88 companies and a municipality or other type of governmental authority is the largest owner of 45 companies. Eight companies owned by a foundation and one company claimed to be self-owned according to the information in Orbis is also included in the 'other' category. 36.4% of the companies with a corporate investor as the largest owner and 31.1% of the companies with a governmental authority use the cost model. These proportions are considerably higher than the overall average 19.8%.

There are 110 firm-years with an owner controlling more than 50% of the shares in the data. These firm-years are mainly from France (42 firm-years), Germany (23 firm-years) and Sweden (14 firm-years). There are 75 observations in which the largest owner controls less than 10% of the shares and the countries with the largest number in this group are the UK (34 firm-years), Sweden (13 firm-years) and Germany (9 firm-years). A Pearson chi-square test shows that there is a significant association between ownership concentration and country (*p*-value <.001). Furthermore, the ownership concentration also varies with the type of owner. For example, only 14.3% (7/49) of the firm-years with an individual or family as the largest owner have an owner controlling more than 50% of the shares. The corresponding percentages for companies with a bank or financial company as the largest owner is 22.8% (46/202), and it is 41.3% (57/138) if the largest owner is a corporate investor, a foundation, a municipality or other type of governmental authority. The data also reveal that the types of owners vary significantly between countries.

5.2. Logistic Regression Results

In Table 3 we present logistic regression results of the association between ownership structure variables, control variables and the choice between the fair value and cost models. We have

Table 3. Logistic regression results

	Reg. 1		Reg. 2		Reg. 3	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
LARGEST	−2.804	1.275**				
LARGEST$_{10-50}$			−0.881	0.757	−1.108	0.872
LARGEST$_{>50}$			−1.771	0.976*	−1.891	0.772**
OWNER$_{private}$	−0.185	0.712	−0.161	0.758	−0.653	1.832
OWNER$_{other}$	−0.659	0.469	−0.785	0.475*	−0.798	1.692
*LARGEST$_{10-50}$ * OWNER$_{private}$*					0.720	2.473
*LARGEST$_{10-50}$ * OWNER$_{other}$*					0.080	1.408
*LARGEST$_{>50}$ * OWNER$_{private}$*					−0.056	2.266
*LARGEST$_{>50}$ * OWNER$_{other}$*					−0.033	1.777
LNREVENUES	0.028	0.236	0.064	0.214	0.068	0.236
ΔLNREVENUES	0.054	0.295	−0.093	0.366	−0.092	0.363
BIG4	−0.969	0.462**	−1.102	0.491**	−1.085	0.529**
SOLVENCY	3.066	1.944	3.061	1.931	3.095	1.864*
EPRA	0.888	0.433**	0.881	0.386**	0.890	0.358**
ORIGIN$_{German}$	−2.173	1.377	−2.285	1.317*	−2.331	1.330*
ORIGIN$_{French}$	−3.224	1.422**	−3.351	1.365**	−3.402	1.464**
CONS	4.245	3.029	3.992	2.863	4.123	2.981
N	389		389		389	
Model chi-square (*p*-value)	35.96 (<0.001)		36.53 (<0.001)		61.56 (<0.001)	
Pseudo *R*^{2}	0.3420		0.3145		0.3154	

Note: *, **, *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. Robust standard errors clustered on company and country are used. The dependent variable in the logistic regression is an indicator variable taking the value one if the company applies the fair value model and zero if the company applies the cost model. The variables are explained in Appendix 1.

12   *J. Mäki et al.*

multiple observations for each firm and furthermore country-specific factors could have an effect on the choice. We therefore employ two-way clustering and cluster the standard errors both on company and country using the approach suggested by Cameron, Gelbach, and Miller (2006).[2] Low correlations between the independent variables as well as low variance influence factors (VIF) suggest that multicollinearity is not a problem in the logistic regressions. The highest VIFs in each of the regression is lower than three (not reported in tables).

The results reported in the first regression in the table show that *LARGEST* has a negative and significant coefficient (p-value = .028). Thus, companies with higher ownership concentration are more likely to choose the cost model. Furthermore, the negative coefficient of $LARGEST_{>50}$ in regression 2 shows, that companies in which the largest owner controls more than 50% of the shares are significantly less likely to use the fair value model than companies without a large shareholder (p-value = 0.070). The coefficient of $LARGEST_{10-50}$ is insignificant, showing that companies in which the largest owner controls between 10% and 50% of the shares are not significantly less likely to use the fair value model than companies in which the largest owner controls less than 10%. In sum, the logistic regression results support Hypothesis 1.[3] The finding that companies with more concentrated ownership are less likely to apply the fair value model corresponds with Israeli (2015).

Hypothesis 2 predicts that the choice between the fair value and cost models depends on the owner type. The results presented in the table provide some support for this prediction. It can be seen from the table that $OWNERTYPE_{other}$, taking the value one if the largest owner is a corporate investor, foundation, municipality or other type of governmental authority generally, has a negative coefficient significant at the 0.10 level in regression 2.[4] $OWNERTYPE_{private}$ is insignificant in all regressions.

In order to get a further understanding of the impact of ownership type and concentration, we interact the variables in regression 3. It can be seen that the interactions are insignificant, indicating that companies with an owner controlling more than 50% of the shares are more likely to use the cost model irrespective of the type of the owner. We also calculated the average marginal effects for the owner types with respect to ownership concentration (see Kohler & Kreuter, 2012, p. 384). The results show that companies with a financial owner owning more than 50% of the shares are on average 16.1% less likely to use the fair value model than when the company has a financial owner as the largest owner that owns less than 10% of the shares (not reported in tables). The corresponding percentages are 22.1% for private owners and 22.8% for 'other' owners. The p-values for the test that the average probabilities above are equal to zero are .035, .155 and .046, respectively. Overall, the differences between the owner types are small, which further support the conclusion that companies with a controlling shareholder are less likely to use the fair value model irrespective of the type of owner.

Control variables: A further observation that can be made from Table 3 is that *BIG4* has negative and significant coefficients in all regressions, indicating that Big 4 auditors avoid auditing the more uncertain balance sheet amounts which the fair value model results in. Furthermore, *EPRA* has a positive and significant coefficient in most of the regressions. This finding is consistent with the fact that the EPRA recommends fair value (see European Public Real Estate Association, 2014, p. 20). Moreover, there are significant countrywide variations in the use of the fair value model. English and Scandinavian origin companies are in the reference category in the analyses. Thus, the results show that companies from both French and German origin countries are more likely to use the cost model than companies from English and Scandinavian origin countries. We use a Wald-test to test the differences between the origin indicators and the coefficients of $ORIGIN_{German}$ are not significantly different from the coefficients of

$ORIGIN_{French}$. Finally, it can be seen that *LNREVENUES* and *ΔLNREVENUES* are insignificant in the regressions.

5.3. Additional Analyses of the Choice between the Cost and Fair Value Models

The univariate evidence presented in Section 5.1 shows that ownership structures vary between countries. We conducted a number of additional tests in order to study whether the associations could be driven by country factors (these results are not reported in tables). First, we attempted to run linear probability models in which we replaced the legal origin indicator variables with country indicator ones (for a brief discussion of the advantages and disadvantages of the linear probability model, see Horrace & Oaxaca, 2006). We used ordinary-least-square (OLS) with robust standard errors clustered on company to estimate the regressions. The following observations were made: *LARGEST* has a negative coefficient significant at the 0.01 level in regression 1. In regression 2, $LARGEST_{>50}$ has a negative coefficient with a *p*-value equal to .107. The coefficients of $OWNERTYPE_{other}$ and $OWNERTYPE_{private}$ were insignificant in the regression. Recall that the coefficient of $OWNERTYPE_{other}$ was significant at the 0.10 level so the linear probability models give less support for Hypothesis 2. In regression 3 we interact the ownership concentration variables with the owner type variables and this regression reveals no significant effects of ownership concentration on the probability that a company uses the fair value model. In conclusion, the linear probability model results are, except for the ownertype result commented above, consistent with the logistic regression results.

We concluded above that most companies from the UK use the fair value model. In the UK, SSAP 19 Accounting for Investment Properties was used prior to the adoption of IAS. Under this standard investment properties were re-valued on an annual basis (see e.g. Danboldt & Rees, 2008), and reported on the balance sheet. Thus, one possible contributory factor to the use of the fair value model in the UK is that pre-IFRS practices have had an impact on the choice of model under IAS 40. The frequent use of the fair value model in the UK is consistent with the view that accounting practices before IFRS had an impact on post-IFRS practices (Kvaal & Nobes, 2012). Sixty-two firm-years are from the UK and we attempted to exclude these observations and run logit regression comparable to the ones in Table 3. These results are qualitatively similar to the ones there: *LARGEST* has a negative coefficient significant at the 0.05 level in regression 1. In regression 2, $LARGEST_{>50}$ and $OWNERTYPE_{other}$ have negative coefficients significant at the 0.10 level.

Two countries in which companies extensively rely on the cost model are Spain and France. The results are qualitatively similar when we exclude the 15 observations from Spain. The coefficient of *LARGEST* is significant only at the 0.10 level when we exclude the 101 observations from France. Furthermore, although $LARGEST_{>50}$ yet has a negative coefficient in regression 2 as in Table 3, it is not significant. The magnitude of the coefficient is also lower (-0.98 compared to -1.77) indicating that companies from France significantly contribute to the positive association between ownership concentration and the use of the cost model. The coefficient of $OWNERTYPE_{other}$ is also insignificant when observations from France are omitted.

Forty-five of the companies in the sample have a governmental authority as their largest owner and these firms are more likely to use the fair value model as concluded above. We attempted to exclude these companies from the sample, leaving 344 observations. *LARGEST* is significant at the 0.10 level in regression 1 and $LARGEST_{>50}$ is significant at the 0.10 level in regression 2, showing that the results are not driven by the observations in which the company has a governmental authority as the largest owner.

The accounting choices may also be influenced by accounting choices of the largest owner. Most importantly, if the largest owner uses the fair value model in its accounting, it is possible

14   *J. Mäki et al.*

that it is applied also by the company in our sample because it is then less complicated to prepare consolidated financial statements. This is an issue only if the largest owner is another company controlling more than 50% of the shares. Based on the assumption that companies seldom change their accounting principles and that ownership structures are fairly stable, we studied the last annual report available of the owners controlling more than 50% of the shares and found 12 owners using the fair value model. We omitted all observations for those companies and re-run the logistic regressions reported in Table 3. The following observations were made. *LARGEST* had a negative coefficient significant at the 0.05 level in regression 1 and $LARGEST_{>50}$ had negative coefficients significant at the 0.05 level in regressions 2 and 3. All ownertype variables were insignificant. Ten of the ninety-eight companies were controlled by a real estate company. We also attempted to exclude those companies from the sample and the results were qualitatively similar to the ones commented above. In conclusion, the main results in the study do not seem to be driven by accounting choices of the owners.

To sum up, though the significance levels are lower in some regressions, the general conclusion is that the main results hold when we analyze different sub-samples and when we control for country effects in the regressions.

5.4. Ownership Structure and Trading of Shares in the Company

We suggest in the hypothesis development that when a company has a substantial percentage of outside equity investors, then the financial reporting turns into the main mean of communication between the firm and the shareholders. In order to provide evidence on the validity of this argument we study the association between the trade of the company's shares and the ownership structure.

Following prior studies (e.g. Gao, Dong, Ni, & Fu, 2015), we use a yearly average of the number of shares traded to the total number as the measure. The Orbis database reports the average daily volume of shares traded per month and we use the average of the monthly values during the annual period scaled by the number of shares outstanding in the end of the annual period as a percentage. The turnover is available for 315 firm-years. The mean (median) turnover for companies applying the cost model is 0.06% (0.03%). The corresponding values for fair value model users are 0.11% (0.06%), showing that the shares of companies applying the fair value model are more frequently traded (*p*-value for *t*-test = .004).

We use the logarithm of turnover (LNTURN) as the measure in the multivariate analyses. We attempted first to add *LNTURN* in the models reported in Table 3 (not reported in tables). The coefficients of *LNTURN* are positive in all regressions but significant at the 0.10 level only in regression 3. Thus, the logistic regression results provide only weak support for the prediction that more actively traded companies are more likely to apply the fair value model.

To study whether the ownership structure is associated with the trading of the shares, we regress *LNTURN* on ownership structure variables and control variables. These results are reported in Table 4. Generally, the results suggest that shares of the real estate companies in the sample are less frequently traded if the ownership concentration is high.[5] Furthermore, it can be seen from the table that $OWNERTYPE_{other}$ has negative coefficients significant at the 0.01 level. That is, companies owned by a corporate investor, foundation, municipality or other type of governmental authority are traded less at the stock market than companies owned by a financial owner.[6]

To sum up, the findings presented in this section are consistent with the view that financial reports are a less important medium for communication with investors in companies with concentrated ownership.

Table 4. Ownership structure and trading of the company's shares

	Reg. 1		Reg. 2		Reg. 3	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
$LARGEST$	−1.851	0.829**				
$LARGEST_{10-50}$			−0.088	0.365	0.000	0.469
$LARGEST_{>50}$			−0.841	0.461*	−0.875	0.580
$OWNER_{private}$	−0.039	0.350	−0.100	0.369	−0.160	0.451
$OWNER_{other}$	−0.362	0.136***	−0.508	0.189***	−0.032	0.351
$LARGEST_{10-50}*OWNER_{private}$					−0.154	0.711
$LARGEST_{10-50}*OWNER_{other}$					−0.555	0.423
$LARGEST_{>50}*OWNER_{private}$					0.739	1.898
$LARGEST_{>50}*OWNER_{other}$					−0.426	0.682
$LNREVENUES$	0.242	0.133*	0.255	0.127**	0.263	0.128***
$SOLVENCY$	0.472	0.514	0.528	0.586	0.531	0.595
$BIG4$	0.672	0.266**	0.612	0.273**	0.597	0.272**
$CONST$	−5.850	1.326***	−6.292	1.218***	−6.408	1.294***
N	315		315		315	
Model F-value	5.52***		4.35***		3.21***	
R^2	19.59%		16.10%		16.58%	

Note: *, **, *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. Robust standard errors clustered on company and country are used. The dependent variable in the OLS regression is LNTURN. The variables are defined in Appendix 1.

6. Conclusions

The choice between the fair value model and the cost model under IAS 40 is essentially a choice between recognition and disclosure of fair values of investment properties. Prior studies (e.g. Muller et al., 2015) suggest that recognized fair values are priced higher than disclosed fair values by investors, possibly because disclosed fair values are perceived as being more risky or that investors' processing costs are higher.

Our study makes contributions to the literature on ownership structure and accounting choices. Based on the notion that fair value is more relevant and reduce information asymmetry problems between the company and outside investors but also more costly to apply, we predict that companies with dispersed ownership are more likely to use the fair value model. The results presented in the study support this prediction. Our study differs from previous related studies in that we focus on an accounting policy choice. In contrast, earlier studies have mainly used accruals-based measurements of earnings quality in tests of the prediction that the ownership structure influences accounting choices (e.g. Ball & Shivakumar, 2005; Givoli et al., 2010; Wang, 2006). Recent studies suggest that ownership type may affect companies' decisions (Dam & Scholtens, 2012). Our study also contributes to the accounting choice literature by its examination of these variables and we find some support for the prediction that ownertype correlates with the accounting method choice.

Overall, the study suggests and presents empirical evidence consistent with the view that companies choose their accounting policies based on the perceived costs and benefits with alternative accounting policies. Listed companies vary in size and ownership structure, implying that the cost–benefit trade-off varies between companies. Thus, a policy implication of the study is that optional accounting policies have a role. Uniformity has long been the focus of rule-making in accounting and this trend has been criticized (e.g. Sunder, 2002, 2009, 2010). Sunder (2002) claims that regulatory competition would help to develop better rules and

16   *J. Mäki et al.*

lower the cost of capital. However, an alternative to competition between standard setters is to permit alternative accounting methods in standards.

A further noteworthy finding in the study is that there is considerable cross-country variation in the use of the fair value and cost models. We used the legal origin classification by LaPorta et al. (1998) and found that companies from Scandinavian and English origin countries were much more likely to use the fair value method than companies from German- or French-origin countries. One possible reason for this is that accounting practices in the countries before IAS adoption had some impact on post-adoption practices (e.g. Kvaal & Nobes, 2012).

Our study has some important limitations. Firstly, we only study one accounting choice, namely the choice between the fair value and cost model under IAS 40. The impact of the ownership structure on accounting choices might be different in other settings. We encourage future research on the association between ownership structure variables and different forms of accounting policy choices and/or disclosure choices. Secondly, the companies in the sample are from one industry, which reduces the generalizability of the results. Thirdly, our sample is small which reduced the power of the statistical tests and made it impossible to use more distinct and homogeneous groups of ownership types. Fourthly, our sample is limited to listed companies in the EU. We hope future research will utilize larger samples in order to advance the understanding of the association between ownership type and accounting policy choices worldwide.

Acknowledgement

Disclosure statement

Notes

[1]To mention a couple of examples, LIFO was abolished from IAS 2 *Inventorie*s in 2003 implying that companies after this only can choose between the FIFO and weighted average cost formula. And in 2009 the optional capitalization of borrowing costs relating to the acquisition or construction of a long-term asset in IAS 23 *Borrowing Costs* was abolished. Currently, companies have to capitalize qualifying borrowing costs.

[2]We use the ado file for two-way clustering in Stata written by Guan and Petersen. The file is available at: http://www.kellogg.northwestern.edu/faculty/petersen/htm/papers/se/se_programming.htm (retrieved January 2015).

[3]Recent research (e.g., Laeven & Levine, 2008) stresses the role of multiple large shareholders. Based on this literature we predict that we attempted to include an indicator variable taking the value one if there was a second large owner controlling 10% or more of the shares. However, we found no significant association between the existence of a second large owner and the choice between the cost and fair value models. These analyses were based on 254 observations for fair value model users and 43 observations for cost model users.

[4]Corporate investors and governmental bodies are likely to have different incentives and we attempted to analyze corporate investors and governmental bodies separately in regression 2. Probably as a consequence of the small number of observations, the coefficients of corporate investors as well as governmental bodies were then insignificant. However, the coefficient estimates suggest that both categories are less likely to use the fair value model than financial owners but the coefficient of corporate investors was smaller indicating that in particular corporate investors contribute to the negative association reported in Table 3.

[5]The ownership type variables are mostly insignificant when we include country controls in the regressions. The decision not to include country variables in the reported regressions is based on the assumption that ownership type is exogenous and that the inclusion of country indicator variables capture part of the ownership effect.

However, we cannot conclusively rule out that country factors rather than ownership type drive the reported associations.

[6]We replaced OWNERTYPE$_{other}$ with two indicator variables for corporate investors and governmental bodies. The results show that especially companies owned by a corporate investors are less traded at the stock market.

References

Ahmed, A. S., Kilic, E., & Lobo, G. J. (2006). Does recognition vs. disclosure matter? Evidence from value relevance of banks' recognized and disclosed derivative financial instruments. *The Accounting Review*, *81*, 567–588.

Astami, E. W., & Tower, G. (2006). Accounting-policy choice and firm characteristics in the Asia Pacific region: An international empirical test of costly contracting theory. *The International Journal of Accounting*, *41*(1), 1–21.

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics*, *39*(1), 83–128.

Botosan, C. (1997). Disclosure level and cost of capital. *The Accounting Review*, *72*(3), 323–349.

Bratten, B., Choudhary, P., & Schipper, K. (2013). Evidence that market participants assess recognized and disclosed items similarly when reliability is not an issue. *The Accounting Review*, *88*(4), 1179–1210.

Burgstahler, D., Hail, L., & Leuz, C. (2006). The importance of reporting incentives: Earnings management in European private and public firms. *The Accounting Review*, *81*(5), 983–1016.

Cameron, C., Gelbach, J., & Miller, D. (2006). *Robust inference with multi-way clustering* (Technical working paper 327). National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/T0327

Carlson, S. J., & Bathala, C. T. (1997). Ownership differences and firms' income smoothing behavior. *Journal of Business Finance & Accounting*, *24*(2), 179–196.

Choudhary, P. (2011). Evidence on differences between recognition and disclosure: A comparison of inputs to estimate fair values of employee stock options. *Journal of Accounting and Economics*, *51*(1–2), 77–94.

Dam, L., & Scholtens, B. (2012). Does ownership type matter for corporate social responsibility? *Corporate Governance: An International Review*, *20*(3), 233–252.

Danboldt, J., & Rees, W. (2008). An experiment in fair value accounting: UK investment vehicles. *European Accounting Review*, *17*(2), 271–303.

Davis-Friday, P., Folami, B., Liu, C-S., & Mittelstaedt, F. (1999). The value relevance of financial statement recognition vs. disclosure: Evidence from SFAS No. 106. *The Accounting Review*, *74*(4), 403–423.

Davis-Friday, P., Liu, C-S., & Mittelstaedt, F. (2004). Recognition and disclosure reliability: Evidence from SFAS No. 106. *Contemporary Accounting Research*, *21*(2), 399–430.

Dempsey, S. J., Hunt, H. G., & Schroeder, N. W. (1993). Earnings management and corporate ownership structure: An examination of extraordinary item reporting. *Journal of Business Finance & Accounting*, *20*(4), 479–500.

Dietrich, J. R., Harris, M. S., & Muller, K. A. (2001). The reliability of investment property fair value estimates. *Journal of Accounting and Economics*, *30*(2), 125–158.

European Public Real Estate Association. (2014). *Best practices recommendations*, December. Retrieved from http://www.epra.com/regulation-and-reporting/bpr/

Francis, J. (2004). What do we know about audit quality? *The British Accounting Review*, *36*(4), 345–368.

Gao, F., Dong, Y., Ni, C., & Fu, R. (2015). Determinants and economic consequences of non-financial disclosure quality. *European Accounting Review*. doi:10.1080/09638180.2015.1013049

Givoli, D., Hayn, C., & Katz, S. (2010). Does public ownership of equity improve earnings quality? *The Accounting Review*, *85*(1), 195–225.

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, *40*(1–3), 3–73.

Hirst, E., Hopkins, P., & Wahlen, J. (2004). Fair values, income measurement, and bank analysts' risk and valuation judgments. *The Accounting Review*, *79*(2), 453–472.

Hope, O. K., Thomas, W. B., & Vyas, D. (2013). Financial reporting quality of U.S. private and public firms. *The Accounting Review*, *88*(5), 1715–1742.

Horrace, W., & Oaxaca, R. (2006). Results on the bias and inconsistency of ordinary least squares for the linear probability model. *Economic Letters*, *90*, 321–327.

Israeli, D. (2015). Recognition versus disclosure: Evidence from fair value of investment property. *Review of Accounting Studies*, *20*(4), 1457–1503.

Kohler, U., & Kreuter, F. (2012). *Data analysis using Stata* (3rd ed.). College Station, TX: Stata Press.

Kvaal, E., & Nobes, C. (2012). IFRS policy changes and the continuance of national patterns of IFRS practice. *European Accounting Review*, *21*(2), 343–371.

18   *J. Mäki et al.*

Laeven, L., & Levine, S. (2008). Complex ownership structures and corporate valuations. *Review of Financial Studies*, *21*(2), 579–604.

Lamm-Tennant, J., & Rollins, T. (1994). Incentives for discretionary accounting practices: Ownership structure, earnings, size, and taxation. *Journal of Risk and Insurance*, *61*(3), 476–491.

LaPorta, R., Lopez-de-Silanes, F., & Shleifer, A. (1999). Corporate ownership around the world. *Journal of Finance*, *54*, 471–517.

LaPorta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy*, *106*(6), 1113–1155.

Liang, L., & Riedl, E. J. (2014). The effect of fair value versus historical cost reporting model on analyst forecast accuracy. *The Accounting Review*, *89*(3), 1151–1177.

Libby, R., Nelson, M., & Hunton, J. (2006). Recognition v. disclosure, auditor tolerance for misstatement, and the reliability of stock-compensation and lease information. *Journal of Accounting Research*, *44*, 533–560.

Michels, J. (2015). *Disclosure versus recognition: Inferences from subsequent events* (Working Paper), University of Pennsylvania.

Muller, K. A., & Riedl, E. J. (2002). External monitoring of property appraisal estimates and information asymmetry. *Journal of Accounting Research*, *40*(3), 865–881.

Muller, K. A., Riedl, E. J., & Sellhorn, T. (2011). Mandatory fair value accounting and information asymmetry: Evidence from the European real estate industry. *Management Science*, *57*(6), 1138–1153.

Muller, M. A., Riedl, E. J., & Sellhorn, T. (2015). Recognition versus disclosure of fair values. *The Accounting Review*, *90*(6), 2411–2447.

Niehaus, G. R. (1989). Ownership structure and inventory method choice. *The Accounting Review*, *64*(2), 269–284.

Ohlson, J. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research*, *11*(2), 661–687.

PwC. (2011). Practical guide to IFRS. Fair value measurement: implications of IFRS 13 for the real estate industry.

Quagli, A., & Avallone, F. (2010). Fair value or cost model? Drivers of choice for IAS 40 in the real estate industry. *European Accounting Review*, *19*(3), 461–493.

Schipper, K. (2007). Required disclosures in financial reports. *The Accounting Review*, *82*(2), 301–326.

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, *94*(3), 461–488.

Sunder, S. (2002). Regulatory competition for low cost-of-capital accounting rules. *Journal of Accounting and Public Policy*, *21*(2), 147–149.

Sunder, S. (2009). IFRS and accounting consensus. *Accounting Horizons*, *23*(1), 101–111.

Sunder, S. (2010). Adverse effects of uniform written reporting standards on accounting practice, education, and research. *Journal of Accounting and Public Policy*, *29*(2), 99–114.

Vergauwe, S., & Gaeremynck, A. (2014). Reliability effects of fair value related disclosures. Retrieved from SSRN: http://ssrn.com/abstract=1975669

Wang, D. (2006). Founding family ownership and earnings quality. *Journal of Accounting Research*, *44*(3), 619–656.

Yu, K. (2013). Does recognition versus disclosure affect value relevance? Evidence from pension accounting. *The Accouting Review*, *88*(3), 1095–1127.

Appendix 1. Variable definitions

FV	An indicator variable taking the value one if the company uses the fair value model and zero if it uses the cost model under IAS 40.
LARGEST	A variable measuring the portion of shares controlled by the largest owner (direct and indirect).
$LARGEST_{>50}$	An indicator variable taking the value one if the largest shareholder directly or indirectly controls over 50% of the shares.
$LARGEST_{10-50}$	An indicator variable taking the value one if the largest shareholder directly or indirectly controls between 10% and 50% of the shares.
$LARGEST_{<10}$	An indicator variable taking the value one if the largest shareholder directly or indirectly controls less than 10% of the shares.
$OWNERTYPE_{financial}$	The largest owner is a financial company (for example, a fund, an insurance company and a treasure holding company) or a bank.
$OWNERTYPE_{private}$	The largest owner is an individual person or a family.

$OWNERTYPE_{other}$	The largest owner is a corporate investor, foundation, municipality or other type of governmental authority. One observation for which the company was self-owned according to Orbis is also included in this category.
$ORIGIN_{German}$	An indicator variable taking the value one if the company is from a German origin country (Germany or Austria).
$ORIGIN_{English\ and\ Scandinavian}$	An indicator variable taking the value one if the company is from an English origin country (the UK or Ireland) or from a Scandinavian origin country (Denmark, Finland or Sweden).
$ORIGIN_{French}$	An indicator variable taking the value one if the company is from a French origin country (Belgium, France, the Netherlands, Greece, Italy and Spain).
LNREVENUES	The natural logarithm of the revenues.
ΔLNREVENUES	The natural logarithm of the revenues year t less the natural logarithm of revenues in year $t-1$.
SOLVENCY	The solvency of the company calculated as shareholders equity to total assets.
BIG4	An indicator variable taking the value one if the company is audited by PwC, KPMG, Ernst&Young or Deloitte.
EPRA	An indicator variable taking the value one if the company is a member of EPRA (European Public Real Estate Association).
LNTURN	The logarithm of the average number of shares traded in relation to the total number of shares. The average is measured as the sum of the monthly averages of the number of shares traded over the annual period divided by 12. The denominator in the ratio is the number of shares in the end of the annual period.

Analyst Coverage, Market Liquidity and Disclosure Quality: A Study of Fair-value Disclosures by European Real Estate Companies Under IAS 40 and IFRS 13[☆]

Stefan Sundgren[a,*], Juha Mäki[b], Antonio Somoza-López[c]

[a] *Umeå School of Business, Economics and Statistics, Umeå, Sweden*
[b] *University of Vaasa, Vaasa, Finland*
[c] *Barcelona University, Barcelona, Spain*

ARTICLE INFO

ABSTRACT

Disclosures in notes have been criticized by practitioners for being unwieldy and contributing little to the quality of the financial information. This study presents evidence on the association between disclosure quality, analyst following and liquidity in the real estate sector. More specifically, we study the disclosure of the methods and significant assumptions applied in determining fair values of investment properties under IAS 40 and IFRS 13. We find that disclosure quality is significantly higher under IFRS 13. Furthermore, we show that the quality is associated with analyst following and bid-ask spreads. However, the improved disclosures following the adoption of IFRS 13 are not associated with any significant positive economic consequences. This result indicates that the revised disclosure requirements in IFRS 13 did not solve any market imperfections.

1. Introduction

This study has two purposes: the first one is to investigate whether the quality of fair value disclosures for companies in the real estate sector improved with the adoption of IFRS 13. The second one is to examine the economic consequences of disclosure quality through an examination of its association with analyst following and market liquidity.

International Accounting Standard (IAS) 40 regulates the accounting for investment properties; the key feature being that fair values of investment properties have to be reported on the balance sheet or disclosed in the notes. The fair value measurement is either based on market approaches or income approaches (discounted cash flows). Measurements of investment properties are basically Level 2 or 3 measurements in the fair value hierarchy (PwC, 2011). However, in this study we focus on companies reporting fair values on their balance sheets using an income approach (i.e. Level 3).

Level 3 fair values have been criticized for being vulnerable to manipulation and less value-relevant than Level 1 and 2 (e.g., Aboody, Barth, & Kaznik, 2006; Bernston, 2006; Hitz, 2007; Song, Thomas, & Yi, 2010). Reliability concerns increase information asymmetry and result in adverse selection problems. In the absence of credible and verifiable information, investment property companies with different quality properties may be valued similarly by investors because they do not have the necessary information to discriminate. One solution to this problem is that companies disclose their valuation assumptions so that they can be verified by

third parties (Landsman, 2007).

Guidance on fair value measurement and disclosure has been included in IFRS 13 since the beginning of 2013. The former requirements in IAS 40 were much less detailed than the current ones in IFRS 13. In essence, IAS 40 only included a sentence requiring the disclosure of "the methods and significant assumptions applied in determining the fair value of investment property…" (IAS 40:75d), whereas IFRS 13 includes more detailed application guidance. There is a discussion among academics and practitioners about the pros and cons of detailed rules in accounting standards (e.g., European Financial Reporting Advisory Group, 2012; Nelson, 2003;New Zealand Institute of Chartered Accountants and the Institute of Chartered Accountants of Scotland, 2011; Nobes, 2005; Schipper, 2003; Sunder, 2010). Proponents of detailed guidance claim that it increases comparability, verifiability and reduces opportunities for earnings management (Schipper, 2003). However, more detailed disclosure requirements inevitably mean that financial reports will be longer and more complex. The European Financial Reporting Advisory Group (2012, p. 6) points out that: "There is a strong consensus in the financial community that disclosures in the notes to the financial statements have become unwieldy; the increasing length of the notes has done little to improve the quality of information, and may have even decreased it because of information overload."[1] Furthermore, a joint working group of the Institute of Chartered Accountants of Scotland and the New Zealand Institute of Chartered Accountants claim that it is time to discard the excess baggage and reduce the disclosures in financial statements to only those which are important (New Zealand Institute of Chartered Accountants and the Institute of Chartered Accountants of Scotland, 2011).

Voluntary disclosure is an alternative to disclosure regulation and the economics based literature suggests that regulation can be defended if it solves market imperfections (e.g., Beyer, Cohen, Lys, & Walther, 2010; Healy & Palepu, 2001). Disclosures in a regulated setting are also influenced by voluntary choices. Disclosure requirements differ in their detail and a standard with less precise guidance leaves more room for judgment by managers. Thus, actual disclosures are a product of a company's compliance with mandatory requirements and its voluntary disclosure choices within the limits of the requirements. IFRS 13 leaves less room for judgment by managers, implying that the mandatory disclosure component is more significant under IFRS 13 than under IAS 40.

A first purpose of the study is to examine whether companies disclose more under IFRS 13 than under IAS 40. Next, we examine whether disclosure quality is associated with analyst following and market liquidity. The examination of market liquidity follows the suggestion that a greater disclosure of relevant items reduces information asymmetry and thereby increases liquidity (Verrechia, 2001). The impact of fair value disclosures on analyst following and market liquidity is far from obvious. On the one hand, higher quality fair value disclosures may reduce information asymmetry problems and thereby increase analysts' incentives to follow a company and investors' willingness to invest. On the other hand, there is a concern that readers will be blinded by so much data in financial reports that the main messages will be lost (New Zealand Institute of Chartered Accountants and the Institute of Chartered Accountants of Scotland, 2011). Finally, we study whether regulation has a role by examining whether companies providing greater disclosure under IFRS 13 than under IAS 40 experience any positive economic consequences in the form of increased analyst following or market liquidity. Overall, this study contributes to the literature by providing new empirical evidence on how companies disclose under the less detailed IAS 40 and the more detailed IFRS 13.

Our study extends the literature on the economic consequences of disclosure quality by examining the impact of disclosures in the notes of the financial statements on analyst following and market liquidity. Prior studies of the association between disclosure quality and liquidity have focused on disclosure quality according to analysts' perceptions of disclosure quality (e.g., Healy, Hutton, & Palepu, 1999; Welker, 1995) and IAS/IFRS adoption (e.g., Christensen, Hail, & Leutz, 2013; Daske, Hail, Leuz, & Verdi, 2008; Muller, Riedl, & Sellhorn, 2011). Muller et al. (2011) study the impact of fair value disclosures on bid-ask spreads in the real estate sector. Their study is closely related to our research, although an important difference is that they study the impact of fair value disclosures using a pre/post IAS/IFRS research design, whereas we study the impact of disclosure quality for firms following IAS/IFRS.

However, although the research reviewed above indicates that the overall disclosure quality improves market liquidity, it does not provide any guidance as to which types of disclosures mandated by IAS/IFRS standards are associated with market liquidity. The only published study we are aware of in which the economic consequences of specific disclosures are studied is that of Paugam and Ramond (2015), who examined the association between impairment testing disclosures and the cost of capital. Another study that is related to ours is that conducted by Vergauwe and Gaeremynck (2014), who study the reliability effects of fair value disclosures on a sample of real estate companies.

Overall, our research contributes to the literature on fair value accounting (e.g., Barth, 2007) and to research on factors associated with disclosure quality under IFRS (e.g., Glaum, Schmidt, Street, & Vogel, 2013; Kvaal & Nobes, 2010, 2012) by examining arguably important fair value disclosures that have received very little attention in the literature. Furthermore, our study is related to research on investment properties, which among other things has focused on the choice between the cost and fair value models (Quagli & Avallone, 2010), the impact of audit quality and the use of external valuers on information asymmetry (Muller & Riedl, 2002), the reliability of investment property fair values (Dietrich, Harris, & Muller, 2001) and the value relevance of recognised versus disclosed fair values (Muller, Riedl, & Sellhorn, 2015). Our study adds to this literature by providing evidence on factors associated with disclosure quality, as well as the economic consequences of fair value disclosures.

The empirical analyses are based on a small but homogeneous sample of listed real estate companies in the EU. The sample consists of 289 observations for 57 companies and covers the period 2009 to 2014. For inclusion in the sample, each company has to apply the fair value model under IAS 40, use an income approach (discounted cash flows) as its valuation technique and have

---

[1] IASB is currently also working on a new approach to draft disclosure requirements. See IASB Agenda ref. 11A, published in September 2015 (available at: http://www.ifrs.org/Meetings/MeetingDocs/IASB/2015/September/AP11A-Disclosure-Initiative.pdf).

investment properties that make up the major part of its assets. This selection process results in a sample for which the fair value measurement of the properties is based on unobservable inputs (Level 3 inputs). Furthermore, the criteria assure that the fair value measurement is a highly significant accounting policy in the companies.

Following prior studies (e.g., Botosan, 1997; Clarkson, Van Bueren, & Walker, 2006; Shalev, 2009), we use a self-developed disclosure quality index. Our index focuses on the disclosure of significant assumptions and uncertainties in present-value calculations. The items in our index are the discount rate, estimated vacancy, estimated cash flows and a sensitivity analysis. Compared to many other disclosures in the notes to the financial statements, these disclosures have the potential of being relevant for investors. However, it is debatable whether the disclosures actually increase verifiability and reduce opportunities for earnings management and, thereby, reduce information asymmetry. Companies only disclose summary information of assumptions and it is possible that disclosures are too concise to enable an examination of the precision of reported fair values. Thus, it is ultimately an empirical issue as to whether high quality disclosures have positive economic consequences.

To summarize, companies provide significantly greater disclosures under IFRS 13 than under IAS 40. Thus, the results show that the stricter disclosure requirements under IFRS 13 have led to companies disclosing more information. Furthermore, we find a significant positive association between disclosure quality and analyst following, indicating that demand factors affect disclosure quality. We employ the bid-ask spread, zero-returns, the price-impact and the Fong, Holden, and Trzcinka (2014) measure of total trading costs as our liquidity proxies. The results suggest that disclosure quality is positively associated with the bid-ask spread, but we find little support using the other liquidity proxies. Finally, we study the economic consequences of improved disclosures under IFRS 13. More specifically, if the more extensive disclosure requirements under IFRS 13 made firms provide new and relevant information to investors and financial intermediaries, we would expect greater disclosures under IFRS 13 to have positive effects on analyst coverage and market liquidity. However, we find no support for these predictions.

The structure of this paper is as follows: Section 2 includes an overview of the rules regulating the accounting of investment property under IAS/IFRS. Section 3 presents prior related literature and sets out the hypotheses. Section 4 presents the data and the research design, Section 5 includes the main results of the study and some supplementary analyses and Section 6 details the conclusions of the study.

2. Accounting for investment properties under IAS 40 and IFRS 13

EU regulations require publicly traded companies to follow IAS/IFRS in their consolidated financial statements starting from 2005. IAS 40 regulates the recognition, measurement and disclosure of investment properties. IAS 40.30 allows companies, after the initial recognition, to choose either the fair value model or the cost model as their accounting policy. If the fair value model is chosen, it is applied to all the company's investment properties (IAS 40.33) and the company reports the fair value of these on its balance sheet. Gains or losses from changes in fair values are recognised as profit or loss for the period in which they arise (IAS 40.35). If the cost method is applied, companies report cost, minus the accumulated depreciation on the balance sheet. However, companies choosing the cost model have to report fair values of investment properties in the notes to their financial statements (IAS 40.79e).

This study investigates a sample from the period 2009 to 2014. It should be noted that until the beginning of 2013, guidance on fair value measurement was under IAS 40.45–46. Fair value is defined in IAS 40.36 as "the price at which the property could be exchanged between knowledgeable, willing parties in an arm's length transaction". The fair value is expected to reflect market conditions at the end of the reporting period. According to IAS 40.45, the best evidence of fair value is given by current prices in an active market for similar property in the same location and condition. However, if such prices are not available, other ways of determining fair value could be: (i) prices of property of a different nature or in a different location, (ii) recent prices of similar properties in less active markets, or (iii) discounted cash flow projections based on reliable estimates of future cash flows (IAS 40.46). The cash flows should be supported by the terms of existing leases and other contracts and, where possible, by external evidence such as current market rents for similar properties in the same location and condition. The discount rates used in the present value calculations should reflect current market assessments of the uncertainty in the timing and amount of cash flows (IAS 40.46c).

The fair value guidance in IFRS 13 applies to annual periods beginning on or after 1 January 2013. In IFRS 13.9 fair value is defined as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date". IFRS 13 identifies the following three valuation techniques: market approaches, income approaches and cost approaches. A cost approach was not permitted under IAS 40, and IFRS 13 does not explicitly exclude the use of the cost approach for investment properties. However, the practical implications of this change are argued by some to be of limited significance, as market or income approaches are most likely to be in line with IFRS 13 requirements for investment properties (PwC, 2011, p. 5). IFRS 13 also classifies fair value measurements into three levels, based on the observability of the input variables used in the measurements. Investment property measurements are likely to lie in Levels 2 or 3; a fair value measurement is a Level 3 measurement if it is based on unobservable inputs, or if significant adjustments of observable inputs have been made. For example, if the price received for sold properties is used as the basis for the fair value measurement, but significant adjustments are made because the location and/or condition of the valued and sold property differ, it is considered as a Level 3 measurement.

The main similarities and differences between the disclosure requirements in IAS 40 and IFRS 13 relating to fair value measurements will now be examined. The method used to determine fair values should be disclosed under both standards. IAS 40.75d

stipulates that an entity should disclose "the method … applied in determining the fair value of investment property, including a statement whether the determination of fair value was supported by market evidence or was more heavily based on other factors (which the entity shall disclose) because of the nature of the property and the lack of comparable market data". The current corresponding requirement is in IFRS 13.93d, which requires the valuation technique(s) used in the fair value measurement to be disclosed.

Both IAS 40 and IFRS 13 require companies to disclose information about the assumptions applied in determining the fair value of investment properties. However, IFRS 13 leaves less room for subjective judgment. IAS 40 merely stipulates that a company has to disclose the "…significant assumptions applied in determining the fair value of investment property…" without any further guidance about which assumptions could be significant and what information to provide about the assumptions. IFRS 13.93d requires that an entity should disclose a description of the inputs used in the fair value measurements at Levels 2 or 3 in the fair value hierarchy.

Furthermore, IFRS 13.93d stipulates that, for fair value measurements categorised within Level 3 in the fair value hierarchy, an entity should "…provide quantitative information about the significant unobservable inputs used in the fair value measurement". This rule is likely to apply to investment properties in many situations. Investment properties are not traded on a regular basis, which may mean that significant adjustments to observable prices have to be made in order to determine the fair values of properties. Furthermore, many companies use income-based valuation techniques (present value techniques) based on unobservable input variables, and these significant inputs have to be disclosed. Illustrative examples of IFRS 13 mention the disclosure of the price per square metre, long-term net operating margin and the capitalization rate as examples of quantitative information about significant unobservable inputs for investment properties (see IFRS 13.IE63). The quantitative disclosures above are not required if the cost model is used (IFRS 13.97).

A further difference between the standards is that IFRS 13 instructs companies to disclose a sensitivity analysis if changes in unobservable assumptions have a significant effect on the fair value measurements. More specifically, IFRS 13.93h tells companies to disclose a "…narrative description of the sensitivity of the fair value measurement to changes in unobservable inputs if a change in those inputs to a different amount might result in a significantly higher or lower fair value measurement". The disclosure of sensitivity information is not required under IAS 40 and the disclosure of quantitative information is voluntary under IFRS 13.

It can be concluded from the comparison that the IFRS 13 disclosure requirements are more precise and leave less room for subjective judgment by management. However, IFRS 13 does not remove all judgment. For example, it requires the disclosure of a description of the sensitivity of the fair value measurement to changes in unobservable inputs *only* if the changes in the inputs are expected to have a significant impact on fair values. This wording gives management considerable discretion in defining 'significant'.

3. Review of related literature and hypotheses

3.1. Background

One of the roles of disclosures is to reduce the information risk associated with investments. The literature defines information risk as an additional element of risk that arises because investors are uncertain about the parameters of expected return of investments (Artiach & Clarkson, 2011; Botosan, 2006). Given the benefits of disclosure, one would expect firms to voluntarily disclose all relevant information to investors. However, proprietary costs and other disclosure costs may impede full disclosure (for a review, see Beyer et al., 2010).

The literature discusses disclosures made voluntarily and disclosures mandated by accounting standards (Beyer et al., 2010). However, this taxonomy is frequently ambiguous, because accounting standards allow managerial discretion in the application of standards. Thus, disclosures in the financial statements are a product of a company's compliance with the mandatory requirements and its voluntary choices. We concluded above that IFRS 13 leaves less room for judgment by managers, implying that the mandatory disclosure component is more significant under IFRS 13 than IAS 40.

3.2. Impact of IFRS 13 on disclosure quality

Companies have to apply IFRS 13 for annual periods beginning on or after 1 January 2013. The EU endorsed the standard only a few days before its effective date, implying that early adoption was not an option. Disclosures under IFRS 13 are expected to increase if the standard makes companies disclose information that is not thought to be useful for users of financial statements or if disclosure costs constrain disclosure before the adoption of IFRS 13.

The literature suggests that a disclosure cost arises if proprietary information that can harm the competitive position of a company is disclosed, although the analytical and empirical literature is inconclusive as to whether disclosure costs actually deter firms from full disclosure (e.g., Arya & Mittendorf, 2007; Botosan & Stanford, 2005; Darrough & Stoughton, 1990; Wagenhofer, 1990). In our setting, detailed information about vacancy rates and other assumptions used in present value calculation could potentially provide competitors with valuable information, for example, when deciding to enter a market. However, knowledge about vacancy rates and other market terms can also be acquired in other ways. Thus, the impact of proprietary costs on disclosure decisions in the real estate industry has to be small or non-existent.

Studies suggest that agency conflicts between managers and shareholders can drive firms to invest in unprofitable projects (Botosan & Stanford, 2005; Hope, Kang, Thomas, & Yoo, 2008; Shalev, 2009). Investments in negative net present value projects will eventually materialise in lower earnings. However, managers can delay the realisation through earnings management. In real estate companies, one way of managing earnings is to change the assumptions in fair value calculations. For example, a company can cut the discount rate in present value calculations or modify expected cash flows if the incentive is to increase earnings. Thus, agency problems could make companies disclose less information than that which is required by investors and other users of financial statements.

In sum, assuming that disclosure costs mean that the level of disclosure is less than optimal under IAS 40, or that IFRS 13 obliges firms to disclose more information than is required by the users of financial statements, the following hypothesis is proposed:

Hypothesis 1. Companies provide more extensive disclosures under IFRS 13 than under IAS 40.

3.3. Disclosure quality and analyst following

Analysts are among the primary users of financial information and can be seen as a representative group to whom financial reports should be addressed (Schipper, 1991). Detailed and verifiable information about the significant assumptions applied in fair value measurements are potentially important input variables in analysts' earnings forecasts.

Prior studies also suggest that the level of analyst following is a factor affecting the demand for disclosure, but the empirical results are inconclusive (e.g., Ayers, Schwab, & Utke, 2015; Botosan & Harris, 2000; Gao, Dong, Ni, & Fu, 2016; Healy et al., 1999; Lang & Lundholm, 1996). A possible reason for these inconclusive findings is the multifaceted role of analysts. It has been suggested that analysts have an information intermediation role as well as an information provision role (Lang & Lundholm, 1996). If analysts are primarily information intermediaries, then an increase in firm-provided information means that analysts have more information to process and sell. A positive association between analyst following and disclosures can therefore be expected. On the other hand, if analysts are mainly information providers, the information provided by firms will compete with analyst reports, which means that an increase in firm-provided information would substitute for analyst following. On balance, research suggests that there is a positive association between analyst forecast accuracy and various kinds of disclosure, which in turn suggests that disclosure complements rather than replaces analyst activities (Dhaliwal, Radhakrishnan, Tsang, & Yang, 2012; Hope, 2003; Lang & Lundholm, 1996). In view of this, the following hypothesis is proposed:

Hypothesis 2. Analyst following is positively associated with disclosure quality.

3.4. Disclosure quality and market liquidity

Theory suggests that a commitment to greater disclosure reduces information asymmetry, which in turn lowers the cost of capital (Diamond & Verrechia, 1991; Verrechia, 2001). Following Christensen et al. (2013), we focus on liquidity effects because these measures are less anticipatory in nature and can be empirically measured over short intervals. Furthermore, the literature only provides limited guidance on the appropriate choice of cost of capital proxy (Artiach & Clarkson, 2011).

A number of studies measure the quality of companies' disclosure policies with analysts' ratings of disclosure quality. Generally, this research shows that analyst ratings are positively associated with market liquidity (e.g., Healy et al., 1999; Heflin, Shaw, & Wild, 2005; Welker, 1995). The impact of IAS/IFRS adoption on market liquidity has also been investigated in a number of studies. Based on the notion that IAS/IFRS improves comparability, transparency and the quality of financial reporting, the studies predict and find a positive association between IAS/IFRS adoption and market liquidity (Christensen et al., 2013; Daske et al., 2008; Leuz & Verrechia, 2000). Furthermore, Muller et al. (2011) find that the mandatory disclosure of fair values of investment properties under IAS 40 has a positive effect on the bid-ask spreads. However, alternative liquidity measures (e.g., zero-trading days and share turnover) provided directionally consistent yet insignificant results.

Although the research reviewed above indicates that the overall disclosure quality improves market liquidity, it does not provide any guidance as to which types of disclosure mandated by IAS/IFRS standards are associated with market liquidity. The impact of the disclosure of key assumptions applied in fair value measurements of investment properties is far from obvious. Level 3 fair values have been criticized as being vulnerable to manipulation. Reliability concerns increase information asymmetry, but one potentially mitigating factor is that companies disclose their valuation assumptions so that they can be verified by investors and other users of financial statements (Landsman, 2007). However, disclosures in the notes inevitably include summary information, which could make it difficult for users of financial statements to determine whether a company has been pessimistic, optimistic or neutral in its assumptions. It is possible that companies should provide much more detailed information about the assumptions in DCF calculations than they currently do in order to facilitate an evaluation of the fairness of the fair values. Thus, it is ultimately an empirical issue as to whether fair value disclosures are relevant for investors. Assuming that disclosures are of some relevance for investors, the hypothesis is that:

Hypothesis 3. There is a positive association between market liquidity and disclosure quality.

3.5. IFRS 13 adoption, analyst following and market liquidity

We suggest above that companies may disclose more information under IFRS 13 than under IAS 40 because agency costs stemming from conflicts of interest between the firm and managers reduce the incentive to disclose (cf. Botosan & Stanford, 2005; Hope et al., 2008; Shalev, 2009). If this is the case, we would expect the increased disclosures mandated by IFRS 13 to have a positive effect on analyst following and market liquidity. However, if IFRS 13 obliges firms to disclose more information than is optimal for investors, we would expect no or a negative association between IFRS 13 adoption and analyst following/market liquidity. The discussion is summarized in the following hypothesis.

Hypothesis 4. Greater disclosures under IFRS 13 are associated with improved market liquidity and analyst following.

4. Data and methodology

4.1. Data and sample characteristics

Our analyses are based on a sample of 289 observations for 57 publicly traded real estate companies within the EU from 2009 to 2014. We started with all publicly traded companies in the Orbis database reporting real estate (NACE code 68) as their main activity in the European Union, which gave us a primary sample of 223 companies. Data on disclosures was hand-collected by the authors of the study from the notes to the consolidated financial statements. The language knowledge of the authors made it possible to include companies with financial statements in English, Spanish, Italian, French, German, Danish, Dutch, Swedish or Finnish. Observations were excluded if the financial statements of the companies could not be found on the websites, or if the reports were prepared in a language that we did not understand. Furthermore, for some of the companies, investment property only constitutes a small proportion of their assets (for inclusion in the sample we require that investment property should make up more than half the total assets). These omissions left us with 492 observations.

Next, we excluded 92 observations for companies using the cost model under IAS 40 in order to only have companies in the sample that recognised the fair value of investment properties on their balance sheets. Furthermore, we excluded 55 observations for companies not using the income approach (discounted cash flows) in their fair value measurement of the properties, leaving 345 observations.[2] Finally, we excluded 41 observations with missing market value of equity and 15 observations for which any of the other key variables were missing, leaving an unbalanced panel of 289 observations for 57 companies. Financial statement data and ownership data was taken from the Orbis database. Information about the number of analysts and stock market data was taken from Datastream and I/B/E/S. The identity of the auditors and information about whether the fair value of investment properties was based on a valuation by an independent valuer were hand-collected from the notes to the financial statements.

The mean (median) investment properties to total assets are 89.0% (92.0%), showing that the key operation of the companies in the sample is the ownership of investment properties. These figures also suggest that the valuation of investment properties is a central accounting policy for the companies in the sample. Of the fair value measurements, 91.4% (264/289) are based on a valuation by an independent valuer. The mean (median) assets are €2330 (1065) million, and the mean (median) revenues are €182 (90) million. Table 1 presents the number of observations per country. It can be seen from the table that the companies in the sample are from 10 different countries, with two-thirds of the observations being from Sweden, France, Germany and the UK.

4.2. Methodology

We estimate variants of the following ordered logistic regression in our tests of Hypothesis 1:

$$\text{DISCLOSURE} = \beta_0 + \beta_1 \text{IFRS13} + \beta_2 \text{LNMV} + \beta_3 \text{ROE} + \beta_4 \text{pROE} + \beta_5 \text{LEVER} + \beta_6 \text{pLEVER} + \beta_7 \text{ISSUE} + \beta_8 \text{BIG4}$$
$$+ \beta_9 \text{OWN}_{10-50} + \beta_{10} \text{OWN}_{50-100} + \beta_{11-19} \text{COUNTRY}_i + \varepsilon \tag{1}$$

The exact calculations of all variables in the model are presented in Appendix 1. The test variable in the regression is the indicator variable IFRS13, which takes the value 1 for companies whose financial year started on or after 1 January 2013.

We measure the dependent variable with a disclosure index. Following prior studies (e.g., Botosan, 1997; Clarkson et al., 2006; Shalev, 2009), the index is self-developed and aims to capture the disclosure of the key assumptions applied in the DCF calculations as well as the sensitivity of the fair value to changes of unobservable input variables.

Generally, the use of present value techniques requires the estimate of expected future cash flows and an appropriate risk-adjusted discount rate (e.g., Penman, 2010, p. 119; IFRS 13: B13). The first components of the disclosure index is discount rate, the two following components focus on assumptions underlying expected cash flows and the final component focuses on uncertainties linked to the estimates. The components are presented and explained below.

---

[2] Companies using the income approach (discounted cash flows in practice) were identified as follows: first, we reviewed relevant sections in financial statements in order to find information about the method used. Although companies were required to disclose the valuation method used, the information could not be found for some of the observations (see IAS 40:75d and IFRS 13). Thus, in a second step, we assumed that a company was using the income method if at least one of the items in the disclosure indices was disclosed in the notes. Fifty-five observations in our final sample were identified in the second step.

Table 1
Number of observations by country.

Country	Number of observations (companies)
Austria	18 (3)
Belgium	30 (5)
Germany	29 (7)
Denmark	17 (4)
Finland	18 (3)
France	61 (12)
UK	40 (9)
Greece	11 (2)
Italy	4 (1)
Netherlands	3 (1)
Sweden	58 (10)
Total	289 (57)

The discount rate. The discount is one of the key inputs in present value calculations and is also included in a list of illustrative disclosures in the real estate sector under IFRS 13 (see Ernst & Young, 2013, pp. 19–24). We code the variable COSTCAP as 1 if the company discloses the discount and/or yield rates.

Assumptions about expected rental income and operating expenses. We code the variable OPINCEXP as 1 if any quantitative information about the expected rental income and/or operating expenses used in present value calculations is disclosed. The variable is coded 1, for example, if a company discloses the maximum expected rents per square metre. Ernst & Young (2013, pp. 19–24) lists the contractual cash rental income and the rent growth per year as examples related to this item.

The vacancy rate. The expected rental income depends on both the expected rent level if properties are leased out *and* the expected vacancy rate. The variable VACANCY is coded as 1 if the expected vacancy rate, or an interval of vacancy levels is disclosed. Ernst & Young (2013, pp. 19–24) lists the long-term vacancy rate as one item that should be disclosed by real estate entities.

Sensitivity. Fair values based on present value calculations are influenced by the assumptions used in the calculations and, therefore, a sensitivity analysis to assess how changes in assumptions about rent revenues, property costs, rental vacancy levels and yield/discount rates affect fair values and net income may be relevant for investors. Although IFRS 13 only requires narrative sensitivity information, Ernst & Young (2013, p. 34) points out that quantitative information on sensitivities may be useful for the users of financial statements. The variable SENSITIVITY takes the value 1, if any kind of quantitative sensitivity analysis of how fair values of investment properties or net income is influenced by changes in key input variables is disclosed in the notes to the financial statements.

Our main disclosure measure (DISCLOSURE) is calculated as the sum of all the measures detailed above.[3] However, we also present results for its components in the empirical analysis section. Appendix 2 presents extracts from notes for a number of firms in the sample for the years 2012 and 2013. This appendix illustrates the type of disclosure made related to the components.

The following control variables are included in the regression. We would expect larger companies to have the incentive to provide higher quality disclosures due to their public exposure (e.g., Lang & Lundholm, 1993). We include the logarithm of the market value of the equity as the measure (LNMV). Furthermore, prior studies suggest that the capital structure affects disclosure quality (Ayers et al., 2015; Clarkson et al., 2006; Gao et al., 2016). We include LEVER, measured as long-term liabilities to total assets. Following prior disclosure studies, we also control for performance (Clarkson et al., 2006; Gao et al., 2016; Robinson, Xue, & Yu, 2011). We use ROE as the measure, calculated as the net income before tax to shareholders' equity. Companies might apply disclosure policies that are stable over time and, therefore, financial ratios in previous years might correlate with disclosure practices. In order to control for this possibility, we include return on equity and leverage calculated as the average over the three previous years as control variables (pROA and pLEVER).

Previous studies also suggest that companies issuing debt or equity have the incentive to provide better disclosures (Gelb, 2000; Glaum et al., 2013; Lang & Lundholm, 1993). Following Gelb (2000) and Glaum et al. (2013), we use a variable capturing either an equity or debt issue. ISSUE takes the value 1 if either common stock or debentures and convertibles (measured in local currency) increased > 10% compared to the previous year. The purpose of the 10% rule is to eliminate insignificant changes in the variables, e.g., those arising from the issuance of shares to employees.[4] Prior studies suggest that large international audit firms conduct higher quality audits than smaller ones (Francis, 2004; Knechel, Krishnan, Pevzner, Shefchik, & Velury, 2013). We thus include a 'Big 4' indicator variable as a control (BIG 4).

The inclusion of the ownership variables is based on the notion that the relative importance of financial reports as a medium for communication is smaller if a company has concentrated ownership (Givoly, Hayn, & Katz, 2010) and the characteristics of the

---

[3] Each component in the index is equally weighted. The importance of the items could differ and we explore this issue by studying how the components of the index are related to analyst following and market liquidity. There is also research indicating that there are small differences between weighted and unweighted indices. Robbins and Austin (1986) compare an unweighted index with an index in which all items are weighted with analysts' perceived importance of the items and find small differences between the indices. Indeed, they study a different setting so their results are at best indicative.

[4] The results are qualitatively similar when we used 5% and 2.5% as the cut-off points.

ownership structure has also previously been controlled for in the disclosure literature (e.g., Ayers et al., 2015; Gelb, 2000; Glaum et al., 2013). We focus on ownership concentration and include indicator variables taking the value 1 if the largest owner control is between 10% and 50% of the shares (OWN$_{10-50}$) or > 50% of the shares (OWN$_{50-100}$). Finally, we include country indicator variables in the ordered logistic regressions, with DISCLOSURE as the dependent variable and origin indicator variables in the binary logistic regressions with the components of the index as the dependent variable.

A significant number of the companies in the sample are not followed by analysts. We use a two-part model to test Hypothesis 2 (Cameron & Trivedi, 2010, pp. 553–556).[5] In the first step we estimate a probit model expressing the likelihood that the company is followed by at least one analyst and in the second step, we estimate an OLS regression with the logarithm of the number of analysts as the dependent variable:

$$
\begin{aligned}
\text{FOLLOWING} = &\beta_0 + \beta_1 \text{DISCLOSURE} + \beta_2 \text{LNMV} + \beta_3 \text{LNSTDRET(lag)} + \\
& \beta_4 \text{LNPRICE(lag)} + \beta_5 \text{ROE} + \beta_6 \text{pROE} + \beta_7 \text{BIG4} + \beta_8 \text{OWN}_{10-50} + \\
& \beta_9 \text{OWN}_{50-100} + \beta_{10-13} \text{ORIGIN}_i + \beta_{14-18} \text{YEAR}_i + \varepsilon \\
\text{LnANALYSTS} = &\beta_0 + \beta_1 \text{DISCLOSURE} + \beta_2 \text{LNMV} + \beta_3 \text{LNSTDRET(lag)} + \\
& \beta_4 \text{LNPRICE(lag)} + \beta_5 \text{ROE} + \beta_6 \text{pROE} + \beta_7 \text{BIG4} + \beta_8 \text{OWN}_{10-50} + \\
& \beta_9 \text{OWN}_{50-100} + \beta_{10-20} \text{COUNTRY}_i + \beta_{21-25} \text{YEAR}_i + \varepsilon
\end{aligned}
\tag{2}
$$

More exactly, the dependent variable in the first model is an indicator variable taking the value one if at least one analyst prepares a one year IFRS earnings per share forecast. LNANALYSTS is the logarithm of the number of analysts preparing a one-year forecast. The number is measured as the monthly average of the second quarter after the balance sheet date. For example, if the balance sheet date is 31st December 20X1, LNANALYSTS is calculated as the average of the number of analysts in April to June in 20X2. Hypothesis 2 predicts a positive coefficient of DISCLOSURE.

In our tests of Hypothesis 4, we replace DISCLOSURE with the indicator variables IFRS13 and DisclIFRS13. The latter variable takes the value 1 if the company has a higher value on DISCLOSURE in the years after the IFRS13 adoption than in the year immediately prior to it. Thus, DisclIFRS13 takes the value one if the IFRS 13 adoption made the company disclose more information than it did voluntarily under IAS 40. Thus, Hypothesis 4 predicts a positive coefficient on DisclIFRS13. The year indicator variables are omitted from the regressions above in our tests of Hypothesis 4.

Below, we detail the control variables included in the regressions. Bhushan (1989) suggests that the value of analyst coverage is higher if the return variability is high. We use the logarithm of the standard deviation of the stock return in the previous year as the measure (LNSTDRET). Bhushan also suggests that the ownership structure is likely to affect the demand and supply for analyst services. We thus include OWN$_{10-50}$ and OWN$_{50-100}$ to control for this possibility. We include LNMV as a control for size (Ali, Chen, & Radakrishnan, 2007; Lang & Lundholm, 1996), LEVER as a control for possible effects of the capital structure (Gao et al., 2016), ROE as a control for performance (Ali et al., 2007; Gao et al., 2016) and BIG4 as a control for audit quality (Knechel et al., 2013). Following Ali et al. (2007) we also include an average of prior years' ROE (pROE) and the share price as control variables (LNPRICE). Finally, we include year indicator variables as well as country indicator variables (in regression with LNANALYSTS as the dependent variable) or legal origin indicator variables (in regression with FOLLOWING as the dependent variable).

The following OLS regressions are estimated in our tests of Hypothesis 3:

$$
\begin{aligned}
\text{Market liquidity} = &\beta_0 + \beta_1 \text{DISCLOSURE} + \beta_2 \text{LNMV} + \beta_3 \text{LNSTDRET} + \beta_4 \text{LNPRICE} + \beta_5 \text{LNTURN} + \beta_6 \text{BIG4} + \beta_7 \text{OWN}_{10-50} \\
& + \beta_8 \text{OWN}_{50-100} + \beta_{9-20} \text{COUNTRY}_i + \beta_{21-25} \text{YEAR}_i + \beta_{26-75} \text{COUNTRY}_i * \text{YEAR}_i + \varepsilon
\end{aligned}
\tag{3}
$$

DISCLOSURE is used as the measure of disclosure quality in our tests of Hypothesis 3. As explained in conjunction with the analyst forecast regressions above, IFRS13 and DisclIFRS13 are used to test Hypothesis 4.

Following prior studies (e.g., Christensen et al., 2013; Daske et al., 2008), we use the following four proxies for market liquidity. ZERORETURN is the number of trading days with zero return out of all trading days measured over the second quarter following the balance sheet date for a given firm. For example, if the balance sheet date is 31st December 20X1, ZERORETURN is calculated April to June in 20X2. The second measure is the price impact, calculated as the median of the daily absolute stock return divided by the trading volume (measured in local currency). We omit zero-return observations from the calculations and use the log of the ratio for the second quarter (LNPRICEIMPACT). Our third measure is the bid-ask spread. This is calculated as the log of the median daily quoted spread divided by the midpoint measured over the second quarter (LNBIDASK). Our fourth measure is total trading costs. However, unlike Daske et al. (2008) and Christensen et al. (2013) we use the FHT-ratio, which is a simplified version of the total trading cost measure proposed by Lesmond, Ogden, and Trzcinka (1999). The FHT-ratio is discussed by Fong et al. (2014) and Johann and Theissen (2013 p. 246).[6] As above, the logarithm of the ratio is used and is measured over the second quarter following the balance sheet date (LNFHT).

---

[5] A Heckman selection model is an alternative to the two-part model. However, results in Manning, Duan, and Rogers (1987) suggest the two-part model is no worse and often better than selection models when there are no exclusion restrictions. In our case, there are no apparent reasons why different variables could influence the likelihood of analyst following and the number of analysts following the firm.

[6] The measure is based on the transaction cost ratio proposed by Lesmond et al. (1999). However Fong et al. (2014) first assumed that the transaction costs of buying and selling are identical and secondly that they replaced the market model assumption by the assumption that true returns follow a normal distribution. Based on these assumptions they derive the transaction cost estimator: $FHT = 2\sigma \varnothing^{-1}(1 + \frac{Zeroreturn}{2})$, where σ is the daily standard deviation of returns (days with zero returns omitted), $\varnothing^{-1}$ is the inverse of the normal density function and Zeroreturn is the proportion of zero return days (as defined above).

Table 2
Descriptive statistics.

Panel A: The disclosure index and its components

	DISCLOSURE	COSTCAP	VACANCY	OPINCEXP	SENSITIVITY
Mean	1.599	0.664	0.232	0.121	0.581
Median	2.000	1.000	0.000	0.000	1.000
SD	1.178	0.473	0.423	0.327	0.494
Min	0	0	0	0	0
Max	4	1	1	1	1
Obs	289	289	289	289	289

Panel B: Analyst forecast and market liquidity

	FOLLOWING	LNANALYSTS	LNBIDASK	ZERORETURN	LNPRICEIMPACT	LNFHT
Mean	0.705	1.618	−0.211	0.205	−5.408	−0.373
Median	1.000	1.846	−0.214	0.141	−5.833	−0.588
SD	0.457	0.960	1.272	0.198	3.026	1.262
Min	0.000	−1.099	−2.928	0.016	−10.568	−2.887
Max	1.000	3.045	3.401	0.953	3.292	4.068
N	258	182	289	289	260	289

Panel C: Test and control variables

	DisclIFRS13	IFRS13	LNMV	LNSTDRET	LNPRICE	LNTURN	ROE	pROE	LEVER	pLEVER	ISSUE	BIG4	OWN$_{10-50}$	OWN$_{50-100}$
Mean	0.159	0.294	5.751	−4.118	2.096	−7.840	0.030	0.022	0.404	0.407	0.052	0.817	0.561	0.284
Median	0.000	0.000	5.919	−4.191	2.006	−7.237	0.073	0.073	0.436	0.439	0.000	1.000	1.000	0.000
SD	0.366	0.456	1.650	0.487	1.439	1.784	0.231	0.143	0.168	0.163	0.222	0.388	0.497	0.452
Min	0.000	0.000	1.086	−5.395	−1.774	−13.744	−1.358	−0.519	0.000	0.000	0.000	0.000	0.000	0.000
Max	1.000	1.000	9.520	−2.055	4.766	−4.973	0.377	0.256	0.838	0.689	1.000	1.000	1.000	1.000
Obs	289	289	289	289	289	289	289	282	286	284	289	289	289	289

Notes: Variable definitions are in Appendix 1.

We include variables in the regressions to control for the size of the company (LNMV), the standard deviation of the returns (LNSTDRET), the price of the share (LNPRICE) and share-turnover (LNTURN) (e.g., Daske et al., 2008; Muller et al., 2011). We control for the possible effect of audit quality by the inclusion of BIG4 and ownership structure by the inclusion of OWN$_{10-50}$ and OWN$_{50-100}$. Finally, we include year indicator variables, country indicator variables and interactions between year and country in order to control for possible year and country effects on market liquidity in the tests of Hypothesis 3 (year and interactions between country and year are omitted from the regressions in the tests of Hypothesis 4). ROE and pROE have some extreme values and are winsorized 1% in each tail.

5. Empirical results

5.1. Determinants of disclosure quality

Table 2 (Panel A) reports summary characteristics for the disclosure index and its components. It can be seen from the panel that the minimum, mean and maximum values of DISCLOSURE are 0, 1.6 and 4 respectively. The distribution of the index is the following: it takes the value 0 for 65 (22.5%), 1 for 67 (23.2%), 2 for 95 (32.9%), 3 for 43 (14.9%) and 4 for 19 (6.6%) of the observations (not reported in the tables).

Table 2, Panel A, shows that the most frequently disclosed item is the discount rate (COSTCAP), which is disclosed by 66.4% of the companies in the sample. It was disclosed by 57.8% before the adoption of IFRS 13 and 87.1% after the adoption (not reported in the tables). A two-sample test of proportions shows that the increase is statistically significant (p-value < 0.001). Furthermore, 23.2% disclose the expected vacancy rate. The proportions before and after IFRS 13 are 16.7% and 40.0% respectively (p-value < 0.001). However, only 12.1% of the companies disclose any quantitative information related to expected rental income and/or the operating expenses used in their present value calculations (e.g., average rent per square-metre used in present value calculations). The proportions before and after IFRS 13 are 8.3% and 21.2% respectively (p-value = 0.002).[7] Furthermore, 58.1%

---

[7] Indeed, although this type of quantitative information was disclosed, the disclosures were, according to observations made by the authors when the data was collected, often too concise to make an evaluation of the fairness of the assumptions possible. We think this can also be seen from the illustrative disclosures for the five firms presented in Appendix 2.

Table 3
Correlation matrix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
DISCLOSURE (1)	1										
FOLLOWING (2)	0.2393*	1									
LNANALYSTS (3)	0.0985	.	1								
LNBIDASK (4)	-0.1174*	-0.6490*	-0.6691*	1							
ZERORETURN (5)	-0.0049	-0.5918*	-0.4330*	0.6457*	1						
LNPRICEIMPACT (6)	-0.2196*	-0.7303*	-0.7286*	0.8879*	0.7142*	1					
LNFHT (7)	0.0342	-0.6320*	-0.3143*	0.7297*	0.8952*	0.7474*	1				
DisclIFRS13 (8)	0.2612*	0.0546	0.0881	-0.1956*	-0.1378*	-0.1831*	-0.1866*	1			
IFRS13 (9)	0.3237*	0.0766	-0.0092	-0.2256*	-0.1022	-0.2328*	-0.1536*	0.6740*	1		
LNMV (10)	0.1035	0.7446*	0.5765*	-0.8416*	-0.6048*	-0.8497*	-0.7001*	0.2150*	0.2080*	1	
LNSTDRET (11)	-0.0547	-0.3826*	0.1742*	0.5116*	0.2531*	0.4368*	0.5703*	-0.1553*	-0.2426*	-0.4832*	1
LNPRICE (12)	-0.0557	0.3542*	-0.3217*	-0.2725*	-0.2374*	-0.1793*	-0.3776*	0.1055	0.0801	0.4243*	-0.4009*
LNTURN (13)	0.046	0.3805*	0.4681*	-0.6519*	-0.4842*	-0.7288*	-0.3946*	0.0628	0.0666	0.4013*	-0.1024
ROE (14)	-0.001	0.3210*	0.2108*	-0.3701*	-0.1990*	-0.3821*	-0.3683*	0.0301	0.0563	0.4372*	-0.5278*
pROE (15)	0.2359*	0.2840*	-0.1245	-0.2304*	-0.1221*	-0.2421*	-0.1779*	0.0898	0.1852*	0.2885*	-0.2580*
LEVER (16)	0.1067	0.0894	-0.0092	-0.0622	-0.1459*	-0.1249*	-0.1002	-0.0934	-0.0317	-0.0569	-0.0078
pLEVER (17)	0.1328*	0.1428*	-0.0009	-0.0902	-0.2304*	-0.1768*	-0.1735*	-0.0645	-0.0032	-0.0231	-0.0246
ISSUE (18)	-0.013	0.062	0.1534*	-0.0692	-0.0514	-0.042	-0.0405	0.0688	0.0544	0.101	0.0629
BIG4 (19)	0.1500*	0.1735*	0.1774*	-0.4268*	-0.2355*	-0.3651*	-0.2099*	0.0107	0.0704	0.3878*	-0.2066*
OWN_{10-50} (20)	0.0832	0.0395	0.1778*	-0.0854	-0.0333	-0.0097	0.0575	-0.0531	-0.0252	-0.0044	0.1773*
OWN_{50-100} (21)	-0.0332	-0.1226*	-0.2941*	0.2134*	0.1609*	0.1487*	0.1257*	0.1038	0.0486	-0.0747	-0.0492

	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
LNPRICE (12)	1									
LNTURN (13)	-0.1231*	1								
ROE (14)	0.2900*	0.0822	1							
pROE (15)	0.3646*	-0.017	0.3988*	1						
LEVER (16)	-0.0581	0.1270*	-0.0935	-0.1301*	1					
pLEVER (17)	-0.1218*	0.1711*	-0.0362	-0.1511*	0.7986*	1				
ISSUE (18)	-0.0017	-0.0355	0.0269	0.0291	0.0392	-0.0048	1			
BIG4 (19)	0.2137*	0.3095*	0.1367*	0.0712	-0.0722	-0.0601	-0.0907	1		
OWN_{10-50} (20)	-0.0406	0.2005*	-0.0949	-0.0084	0.2042*	0.2336*	-0.0443	-0.0233	1	
OWN_{50-100} (21)	0.0501	-0.2884*	0.0336	-0.0578	-0.2461*	-0.2650*	0.0603	-0.0389	-0.7108*	1

Notes: Variables are explained in Appendix 1.
* Significant at $p < 0.05$.

Table 4
Determinants of disclosure quality.

Dependent variable	Reg. 1	Reg. 2	Reg. 3	Reg. 4	Reg. 5
	DISCLOSURE	COSTCAP	VACANCY	OPINCEXP	SENSITIVITY
IFRS13	1.496***	1.663***	1.479***	1.312***	0.894***
	(5.21)	(3.60)	(4.49)	(2.91)	(2.99)
LNMV	0.0965	0.0098	−0.198	0.660**	−0.0648
	(0.50)	(0.05)	(0.98)	(2.52)	(0.36)
ROE	−0.73	−1.431	1.519	−0.411	−1.048
	(1.28)	(1.09)	(1.64)	(0.35)	(1.34)
pROE	1.547	4.151**	0.994	−4.495*	1.191
	(1.34)	(1.98)	(0.50)	(1.73)	(0.75)
LEVER	−0.0608	1.119	−2.311	−1.131	−0.268
	(0.05)	(0.63)	(1.59)	(0.66)	(0.16)
pLEVER	1.79	1.306	1.418	0.243	0.724
	(0.93)	(0.60)	(0.69)	(0.10)	(0.32)
ISSUE	0.456	1.114*	0.35	0.0986	0.113
	(0.90)	(1.75)	(0.65)	(0.08)	(0.18)
BIG4	0.383	−0.0248	0.911	−1.770*	0.93
	(0.56)	(0.04)	(1.31)	(1.93)	(1.35)
OWN_{10-50}	0.515	−0.498	0.807	0.97	0.68
	(1.08)	(0.77)	(1.29)	(1.10)	(1.21)
OWN_{50-100}	0.248	−0.219	0.494	0.28	0.286
	(0.42)	(0.29)	(0.60)	(0.31)	(0.41)
COUNTRY	NR	–	–	–	–
ORIGIN	–	NR	NR	NR	NR
CONSTANT		1.26	−0.717	−4.440***	0.116
		(0.80)	(0.47)	(2.76)	(0.07)
F-value for Wald test of country variables	34.63***	–	–	–	–
F-value for Wald test of origin variables	–	9.19**	16.24***	14.44***	15.63***
Obs.	281	281	281	281	281
Pseudo R-square	0.170	0.273	0.243	0.29	0.187

Notes: the table reports ordered logistic regression results in regression (1) and binary logistic regressions results in regressions (2) to (5). T-values based on robust standard errors clustered by company are reported in parentheses. Variable definitions are presented in Appendix 1.

* Two-tailed statistical significance at the 0.10 level.
** Two-tailed statistical significance at the 0.05 level.
*** Two-tailed statistical significance at the 0.01 level.

disclose a quantitative sensitivity analysis (SENSITIVITY), which typically shows how fair values change with a change in key unobservable input variables in the fair value measurement. The proportions before and after IFRS 13 are 52.9% and 70.6% (p-value = 0.006). Table 2 (Panel C) presents descriptive statistics on the explanatory variables in the regressions. Table 3 reports the correlations between the variables. It can be seen that the correlation between DISCLOSURE and FOLLOWING is positive and significant (p-value < 0.05). The association between LNANALYSTS and DISCLOSURE is insignificant.

Table 4 reports ordered logistic regression results with DISCLOSURE as the dependent variable as well as binary logistic regressions with the components of the disclosure index as dependent variables. The standard errors in the regressions are clustered by company (Cameron & Trivedi, 2010, p. 527–529; Rogers, 1993).

Hypothesis 1 predicts a positive association between IFRS13 and DISCLOSURE. It can be seen that IFRS13 has a positive coefficient significant at the 0.01 level in the regressions with DISCLOSURE, as well as in the regressions with the components of the index (i.e., COSTCAP, VACANCY, OPINCEXP and SENSITIVITY) as the dependent variables. Thus, the results strongly support Hypothesis 1, which predicts that companies disclose more under IFRS 13 than IAS 40.

We attempted to use interactions between IFRS 13 and the key explanatory variables to further analyse the drivers of the difference in disclosure under IAS 40 and IFRS 13 (untabulated). We first added LEVER ∗ IFRS13 to regression 1 in Table 4 and the interaction had a negative sign significant at the 0.05 level. Furthermore, the interaction LNMV ∗ IFRS13 had a positive coefficient significant at the 0.10 level. A possible reason why larger and more solvent firms improved disclosure quality more than smaller and less solvent firms is that their communication with investors is more important. Therefore, they had greater incentives to improve disclosure quality as they adopted IFRS 13. All other interactions were insignificant.

A further observation that can be made from regression 1 in Table 4 is that there seems to be considerable cross-country variation in disclosure quality (country coefficients not reported in the table). A Wald test shows that the null hypothesis (that the joint significance of the country variables) can be rejected at the 0.001 level. More specifically, the countries with the highest coefficient estimates in the left-hand regression are Sweden, Germany and Finland. The countries with the lowest coefficient estimates are Italy, Britain and France. Prior studies suggest that cross-country differences may be driven by institutional or cultural factors (e.g., Glaum et al., 2013; Hope, 2003). However, the result is also consistent with herding behaviour, that is, companies mimic the disclosures of other companies in the industry and country-wide industry practices emerge. Finally, Arya and Mittendorf (2007) suggest that companies within an industry will co-ordinate their disclosure policies. This finding is based on a theoretical model in which

proprietary costs deter companies from disclosure, but that better disclosures will attract more analyst following. Their model suggests that companies in any given country will only disclose if other companies in the industry do likewise. It is beyond the scope of this study to evaluate these alternative explanations.

A final observation that can be made is that financial ratios are generally not significantly associated with disclosure quality. A possible reason for this is that companies maintain the same disclosure policies over time but that financial ratios vary. A result showing that disclosure policies are fairly stable is that the Spearman rank correlation between DISCLOSURE in year t and year t − 1 is 0.81 (not reported).

5.2. Disclosure quality and analyst following

It can be seen from Table 2 (Panel B) that 70.5% of the firm-years (182/258) are followed by analysts. The table also reports that the logarithm of the number of analysts following the 182 companies is 1.62, suggesting that on average 5.1 analysts prepare one year EPS forecasts. The proportion of the firm-years followed by analysts is 68.3% and 76.0% before and after IFRS 13 (not reported in tables). Furthermore, a two-sample test of the proportions shows that the difference is insignificant (p-value = 0.218). The average log of the number of analysts (LNANALYSTS) is 1.62 before and 1.61 after the adoption of IFRS 13. Table 3 displays the correlations between the variables. Here it can be seen that the correlation between FOLLOWING and DISCLOSURE is 0.24 (p-value = 0.001) and that the correlation between LNANALYSTS and DISCLOSURE is 0.10 (p-value = 0.186). Thus, the univariate results provide some support for Hypothesis 2.

Table 5 relates disclosure quality to analyst following. Probit regressions with FOLLOWING as the dependent variable are reported in the upper part of the table and in the lower part of the table, we estimate OLS regressions with LNANALYSTS as the dependent variable. The total number of observations is 250, of which 181 are uncensored.[8]

It can be seen from regression 1 that DISCLOSURE is significantly associated with FOLLOWING (p-value < 0.001). However, DISCLOSURE is insignificant when LNANALYSTS is the dependent variable (reported in the lower part of the table). Thus, companies with higher disclosure quality are more likely to be followed by analysts. However, the number of analysts following the company is not associated with disclosure quality.[9]

We attempted to replace the disclosure index with its components (i.e., COSTCAP, VACANCY, OPINCEXP and SENSITIVITY) and those results show that VACANCY and SENSITIVITY are significantly associated with analyst following in the probit regressions (p-values < 0.01) (not reported in the tables). Thus, the results provide partial support for Hypothesis 2, which predicts that analyst following is positively associated with disclosure quality.

In the motivation for Hypothesis 4, we argue that if companies disclosed less information than users of financial statements required under IAS 40, and IFRS 13 mandated them to disclose more, then we would expect positive economic consequences with the adoption of IFRS 13. We expect to see this effect for companies disclosing more under IFRS 13 than IAS 40. The sample includes 85 firm-years under IFRS 13 and for those the disclosure quality is higher in years under IFRS 13 than in the final year under IAS 40 for 54.1% (46/85) of the observations. DisclIFRS13 takes the value 1 for those observations. Regressions 2 and 4 (in Table 5) include tests of Hypothesis 4. The hypothesis predicts positive coefficients on DisclIFRS13, but they are insignificant. Thus, the results do not provide significant support for the hypothesis. Thus, consistent with the discussion in Section 3, one interpretation of this result is that IFRS 13 made companies to disclose more information than that what analysts actually demand. Indeed, the sample size is small and it could be possible that the power of the statistical tests is too small to find significant associations. However, the coefficient estimates suggests that the effects are unlikely to be economically significant. The coefficient of DisclIFRS13 is negative in regression 2 and it is only 0.0202 in regression 4.[10]

We conducted also the following additional tests. In order to provide a better control for time invariant uncontrolled variables, we also attempted to test Hypothesis 4 using a random effect logistic regression with FOLLOWING as the dependent variable, DisclIFRS13 as the test variable and the same control variables as in Table 5 with the exception of ORIGIN (Cameron & Trivedi, 2010, pp. 625–627). DisclIFRS13 is also insignificant in that regression. We attempted to estimate a fixed-effects model (Cameron & Trivedi, 2010, pp. 235–258) with LNANALYSTS as the dependent variable. DisclIFRS13 is also insignificant in this regression, in which we control for firm-specific effects on analyst following (not reported in the tables). Finally, to explore the possibility that some critical components of the disclosure index are associated with more analyst coverage, we replaced DisclIFRS13 in regression 2 with indicator variables taking the value one if a company disclosed the item under IFRS 13 but not under IAS 40. However, we find no support for the prediction that specific components of the disclosure index are associated with improved analyst coverage.

Some final observations that can be made from Table 5 are that larger companies are followed by more analysts and that there is a negative association between analyst following and performance (measured with ROE). The positive association between analyst following and size corresponds with prior studies (e.g., Ali et al., 2007), while the prior evidence on the association between

---

[8] Data on analyst following was retrieved from Datastream but was not available for 31 firm-years, most probably because the companies were not followed by analysts. We attempted to run the models in Table 5 under the assumption that those firms are not followed by analysts. The results are qualitatively similar to those reported in Table 5.

[9] We also attempted to use an extended disclosure index including the disclosure the change in the discount rate and the inflation rate in addition to the items in the main disclosure index. The results are qualitatively similar.

[10] This coefficient estimate suggests that companies with better disclosures under IFRS 13 are followed by only 2.0% more analysts. Since this indicator variable has values of zero or one and the analyst forecasts is in logs, the effect on the dependent variable can be calculated as $e^b - 1$ where b is the coefficient estimate of DisclIFRS13.

Table 5
Disclosure quality and analyst following.

| | Dependent variable = FOLLOWING | | | |
| | Reg. 1 | | Reg. 2 | |
	Coefficient	T-value	Coefficient	T-value
DISCLOSURE	0.972***	(4.33)		
DisclIFRS13	–	–	−0.578	(0.93)
IFRS13	–	–	−0.313	(0.59)
LNMV	2.165***	(3.86)	1.810***	(5.64)
LNSTDRET(lag)	0.142	(0.26)	0.137	(0.45)
LNPRICE(lag)	−0.12	(0.47)	−0.157	(0.81)
ROE	−2.201*	(1.82)	−1.863*	(1.90)
pROE	2.774	(1.08)	1.603	(1.23)
BIG4	−2.015***	(2.92)	−1.686**	(2.57)
OWN$_{10–50}$	−0.104	(0.20)	0.354	(0.57)
OWN$_{50–100}$	−0.318	(0.49)	0.241	(0.37)
ORIGIN	NR		NR	
YEAR	NR		–	
CONSTANT	−9.522***	(3.54)	−6.773***	(3.35)
Pseudo R-squared	0.7592		0.6818	
Obs.	250		250	

| | Dependent variable = LNANALYSTS | | | |
| | Reg. 3 | | Reg. 4 | |
	Coefficient	T-value	Coefficient	T-value
DISCLOSURE	0.0475	(0.79)	–	–
DisclIFRS13	–	–	0.0202	(0.15)
IFRS13	–	–	−0.387***	(3.52)
LNMV	0.407***	(4.67)	0.421***	(5.07)
LNSTDRET(lag)	0.0924	(0.62)	0.148	(1.43)
LNPRICE(lag)	0.474***	(3.02)	0.430***	(3.19)
ROE	−0.802**	(2.20)	−0.684*	(1.98)
pROE	−0.0680	(0.13)	−0.161	(0.35)
BIG4	0.135	(0.78)	0.146	(0.88)
OWN$_{10–50}$	−0.0418	(0.34)	0.00142	(0.01)
OWN$_{50–100}$	−0.449**	(2.71)	−0.393**	(2.45)
COUNTRY	NR		NR	
YEAR	NR		NR	
CONSTANT	−1.259	(1.56)	−0.996	(1.54)
R-squared	0.7824		0.7791	
Obs.	181		181	

Notes: the table reports results for probit regressions in the upper part of the table and OLS regressions in the lower part of the table. T-values based on robust standard errors clustered by company are reported in parentheses. Variable definitions are in Appendix 1.

* Two-tailed statistical significance at the 0.10 level.
** Two-tailed statistical significance at the 0.05 level.
*** Two-tailed statistical significance at the 0.01 level.

profitability and analyst following is mixed. A final observation that can be made from Table 5 is that IFRS 13 has a negative coefficient in regression 4. This result indicates that fewer analysts follow the firms in the sample after IFRS 13. However, this result may be driven by macroeconomic factors or other factors not controlled in the regression.

5.3. Disclosure quality and market liquidity

We use ZERORETURN, LNPRICEIMPACT, LNBIDASK and LNFHT as market liquidity proxies in our tests of Hypothesis 3. Lower values on the market liquidity ratios suggest better liquidity. Therefore, Hypothesis 3 predicts a negative association between disclosure quality and the market liquidity proxies.

Descriptive statistics on the market liquidity ratios and the test and control variables in the regressions are reported in Table 2. Pearson correlations provide a first indication of the associations between disclosure quality and market liquidity. Lower values of the

market liquidity proxies suggest better liquidity. Table 3 shows that the correlation between DISCLOSURE and LNPRICEIMPACT is −0.22 (p-value < 0.01) and that the correlation between DISCLOSURE and LNBIDASK is −0.12 (p-value = 0.05). Thus, these correlations suggest a positive association between market liquidity and disclosure quality. However, the correlations between DISCLOSURE and ZERORETURN, and DISCLOSURE and LNFHT are insignificant.

Table 6 (Panel A) includes Ordinary-least-square (OLS) regressions relating disclosure quality to market liquidity. Lower values of the market liquidity proxies suggest better liquidity. Thus, Hypothesis 3 predicts negative coefficients on DISCLOSURE. The following observations can be made from the table. DISCLOSURE has the predicted negative sign (p-value 0.096) when LNBIDASK is the dependent variable in the regression. Furthermore, DISCLOSURE has a negative but insignificant coefficient (p-value 0.145) in the regression with LNPRICEIMPACT as the dependent variable and DISCLOSURE is also insignificant in the regressions with ZERORETURNS and LNFHT as the dependent variables.

We ran two variants of the regressions in Table 6 (Panel A) in order to further explore the association between disclosure quality and market liquidity (not reported in the tables). First, we replaced DISCLOSURE with the four indicator variables representing each of the levels of the disclosure index. This analysis was done in order to explore possible non-linear associations between disclosure quality and market liquidity. In these regressions, $DISCLD_1$ takes the value one for companies disclosing one of the items in the index, $DISCLD_2$ takes the value one for companies disclosing two of the items in the index, $DISCLD_3$ takes the value one for companies disclosing three of the items in the index and $DISCLD_4$ takes the value one for companies disclosing all four items in the disclosure index. Companies not disclosing any items at all are in the comparison group.

In the regression with LNBIDASK as the dependent variable $DISCLD_4$ has a negative coefficient significant at the 0.10 level (p-value = 0.094), thus suggesting that companies disclosing all the four items in the index have lower bid-ask spreads than companies not disclosing any items at all. The coefficient of $DISCLD_4$ is also lower than the coefficient of $DISCLD_1$ and a Wald-test shows that the difference is significant at the 0.05 level (p-value = 0.038). In the regressions with LNPRICEIMPACT as the dependent variable, $DISCLD_4$ has a negative coefficient significant at the 0.10 level (p-value = 0.082). A further result showing that better disclosures are associated with a lower price impact is that the coefficient of $DISCLD_4$ is significantly smaller than the coefficient of $DISCLD_1$. A Wald-test shows that the difference between the coefficient estimates is significant at the 0.05 level (p-value = 0.018). No significant associations in the regressions with ZERORETURN or LNFHT as the liquidity measures are found.

Secondly, we replaced the disclosure index with its components COSTCAP, VACANCY, OPINCEXP and SENSITIVITY (not reported in the tables). These results show that the disclosure of SENSITIVITY is negatively associated with the bid-ask spread (p-value = 0.063) and almost significantly associated with LNFHT (p-value = 0.104). All the other associations are insignificant. The results thus provide limited support for Hypothesis 3, which predicts a positive association between disclosure quality and market liquidity.

Hypothesis 4 predicts that increased disclosure after IFRS13 adoption is associated with improved market liquidity. We use DisclIFRS13 as the empirical measure in the tests of this hypothesis. OLS regression results are reported in Table 6 (Panel B). Hypothesis 4 predicts negative coefficients on DisclIFRS13 and it can be seen from the table that the coefficient estimates are positive but insignificant in all regressions. Thus, as described more in detail in the hypothesis development section, one interpretation of this result is that IFRS made companies to disclose more information than what investors actually demand.[11]

In a further test of Hypothesis 4, we attempted to estimate fixed effect regressions with robust standard errors (Cameron & Trivedi, 2010, pp. 257–258). The dependent and independent variables in these regressions are the same as in Table 6 (Panel B), with the exception that country is omitted because it is time-invariant (regressions not reported in the tables). The coefficients of DisclIFRS13 are insignificant in all the fixed effect regressions.

Another observation that can be made from the fixed effect regressions and from the OLS regressions reported in Table 6 is that IFRS13 has a negative sign significant at the 0.05 level in the regression with LNPRICEIMPACT as the dependent variable. IFRS13 has a negative and significant coefficient in the fixed effect regression with LNBIDASK as the dependent variable as well. However, it would be premature to conclude that the arguably improved guidance on fair value measurements under IFRS 13 has improved market liquidity. This association may also be driven by macroeconomic changes. Thus, the results with market liquidity as the dependent variable do not support Hypothesis 4.

5.4. Did companies adhere to IFRS 13 disclosure requirement before the standard's effective date?

A possible reason for the insignificant effects of increased disclosures on analyst following and market liquidity is that companies started to follow the disclosure requirements in IFRS 13 prior to the standard's effective date. As a consequence, only part of the total effect of IFRS 13 would be able to be observed around the effective date of the standard. This possibility is explored by identifying when disclosure requirements that are essentially similar to those in IFRS 13 were first published. After that, we provide evidence about when companies changed their disclosures. Finally, the analyses are repeated after excluding the years that companies could have been aware of the forthcoming disclosure requirements under IFRS 13.

IFRS 13 has a fairly long history. The first steps to develop the standard were taken in 2005 when IASB added the project to its agenda and in 2006 when a discussion paper was developed. IASB published the Exposure Draft (ED) of Fair Value Measurement (ED

---

[11] We also explored the possibility that some critical components of the disclosure index are associated with market liquidity. We replaced DisclIFRS13 Panel B in Table 6 with indicator variables taking the value one if a company disclosed the item under IFRS 13 but not under IAS 40. We found no support for the prediction that specific components of the disclosure index would be associated with improved liquidity.

Table 6
Disclosure quality, IFRS 13 adoption and market liquidity.

Dependent variable	Reg. 1	Reg. 2	Reg. 3	Reg. 4
	ZERORETURN	LNPRICEIMPACT	LNBIDASK	LNFHT
Panel A: Disclosure quality and market liquidity				
DISCLOSURE	0.0134	− 0.0845	− 0.0735*	0.056
	(1.47)	(1.48)	(1.69)	(1.42)
LNMV	− 0.0613***	− 1.076***	− 0.414***	− 0.366***
	(3.79)	(20.00)	(7.19)	(6.38)
LNSTDRET	− 0.00953	0.676***	0.471***	0.816***
	(0.25)	(4.78)	(4.52)	(5.18)
LNTURN	− 0.0608***	− 0.975***	− 0.331***	− 0.328***
	(5.61)	(20.46)	(8.44)	(7.70)
LNPRICE	0.0147	− 0.112	− 0.112	0.0222
	(0.61)	(1.34)	(1.23)	(0.23)
BIG4	− 0.0865*	0.037	− 0.149	− 0.268
	(1.94)	(0.28)	(0.83)	(1.53)
OWN_{10-50}	0.00483	0.196	0.0337	0.184**
	(0.24)	(1.53)	(0.32)	(2.14)
OWN_{50-100}	0.039	0.125	0.18	0.361***
	(1.26)	(0.66)	(1.09)	(2.77)
COUNTRY	NR	NR	NR	NR
YEAR	NR	NR	NR	NR
COUNTRY ∗ YEAR	NR	NR	NR	NR
CONSTANT	0.158	− 2.406***	2.304***	3.244***
	(1.01)	(4.28)	(4.39)	(5.06)
Obs.	289	260	289	289
R-square	0.768	0.977	0.907	0.858
Panel B: Improved disclosures under IFRS 13 and market liquidity				
DisclIFRS13	0.0347	0.147	0.0716	0.165
	(1.45)	(1.62)	(0.65)	(1.23)
IFRS13	− 0.00413	− 0.215**	− 0.117	0.0398
	(0.27)	(2.40)	(1.47)	(0.50)
LNMV	− 0.0619***	− 1.074***	− 0.424***	− 0.372***
	(4.23)	(19.36)	(8.24)	(7.57)
LNSTDRET	− 0.0215	0.710***	0.481***	0.748***
	(0.70)	(5.78)	(5.16)	(5.95)
LNTURN	− 0.0605***	− 0.926***	− 0.314***	− 0.308***
	(5.72)	(16.45)	(8.97)	(7.20)
LNPRICE	0.0103	− 0.0833	− 0.0877	0.00381
	(0.47)	(0.99)	(1.05)	(0.04)
BIG4	− 0.0757*	− 0.0448	− 0.202	− 0.221
	(1.93)	(0.35)	(1.21)	(1.43)
OWN_{10-50}	0.000669	0.109	− 0.0165	0.134
	(0.04)	(0.84)	(0.18)	(1.46)
OWN_{50-100}	0.0363	0.101	0.13	0.341***
	(1.38)	(0.53)	(0.90)	(3.03)
COUNTRY	NR	NR	NR	NR
CONSTANT	0.115	− 2.045***	2.382***	3.010***
	− (0.87)	− (3.57)	− (5.18)	− (5.69)
N	289	260	289	289
R-square	0.73	0.969	0.88	0.829

Notes: The table reports OLS results. T-values based on robust standard errors clustered by company are reported in parentheses. Variable definitions are presented in
Appendix 1.
  * Two-tailed statistical significance at the 0.10 level.
  ** Two-tailed statistical significance at the 0.05 level.
  *** Two-tailed statistical significance at the 0.01 level.

2009/5) in September 2009. However, the disclosure requirements in the ED were less detailed than those in the final standard and therefore gave poor signals about the final disclosure requirements.[12] In June 2010, IASB issued ED 2010/7 "Measurement Uncertainty Analysis Disclosure for Fair Value Measurement: Limited Re-exposure of Proposed Disclosure". This ED includes requirements to conduct a sensitivity analysis (ED 2010/7 para. 2a). Unlike IFRS 13, ED 2009/5 and ED 2010/7 did not require firms to provide quantitative information about the significant unobservable inputs. In conclusion, the disclosure requirements in the EDs

---

[12] In essence, the ED required companies to disclose "the methods and inputs used the fair value measurement and the information used to develop those inputs" (see ED/2009/5, para. 57d). This requirement was similar to that in IAS 40.

differed quite a bit from the final ones, thus suggesting companies had little information about the required disclosures before the publication of the final standard in May 2011.

In order to study whether the revised disclosure requirements motivated companies to disclose more prior to the effective date, we examined the temporal evolution of the disclosure index (DISCLOSURE). Its average evolves as follows between 2009 and 2014: 1.1 in 2009, 1.4 in 2010, 1.4 in 2011, 1.4 in 2012, 1.9 in 2013 and 2.5 in 2014.[13] Thus, the jump in disclosure quality took place in 2013 when IFRS 13 became mandatory. Furthermore, disclosure quality seems to have improved in 2014. A possible reason for this is that during the first year under IFRS 13 companies learned what kind of disclosures competitors and other similar companies made and therefore improved their own disclosures in 2014.

To gain further insights into the effects of the IFRS 13 transition period on the results, the regressions were re-run after an exclusion of years 2011 and 2012. The key issue of interest here is whether improved disclosures are associated with increased analyst coverage and market liquidity. We measure improved disclosures with an indicator variable taking the value one if the disclosure index of the company is smaller in 2010 than in 2013 or 2014 (DisclIFRS13rev). The sample includes 103 observations before IFRS 13 was adopted and 81 observations under IFRS 13. Of these 81 observations, 43 are for companies disclosing more under IFRS 13. We first attempted to regress FOLLOWING on DisclIFRS13rev and the same control variables as in regression 2 in the upper part of Table 5. The coefficient and p-value of DisclIFRS13rev are -0.29 and 0.62 respectively. The coefficient of DisclIFRS13rev is insignificant in a regression with LNANALYSTS as the dependent variable as well. We next regressed the market liquidity measures ZERORETURN, LNPRICEIMPACT, LNBIDASK and LNFHT on DisclIFRS13rev and the control variables in Panel B of Table 5. DisclIFRS13rev is insignificant in all the regressions. Thus, the results are qualitatively similar to those reported in Tables 4 and 5, when we exclude the years in which companies could have voluntarily started to adhere to the disclosure requirements in IFRS 13.

6. Conclusions

Prior literature suggests that fair values are relevant for users of financial statements, but that the reliability of fair values may be questionable if unobservable inputs have been used. Arguably, the disclosure of the significant assumptions applied could reduce information asymmetry problems between the firm and users of financial information. Based on this assertion, it can be argued that extensive disclosure requirements supported by detailed implementation guidance are beneficial in that they improve comparability, increase verifiability and reduce opportunities for earnings management (Schipper, 2003). However, the current disclosure requirements under the IAS/IFRS standards have also been criticized for being excessive and for having lost relevance (New Zealand Institute of Chartered Accountants and the Institute of Chartered Accountants of Scotland, 2011; European Financial Reporting Advisory Group, 2012). The adoption of IFRS 13 in 2013 meant that fair value disclosure requirements became more complex. Thus, this change is consistent with the view expressed by proponents of detailed requirements, but is not consistent with views expressed by the critics of the same. This study contributes to this debate by providing evidence on the determinants and economic consequences of disclosure quality.

The empirical analyses in this study are based on a small but homogeneous sample of companies in the real estate sector that report fair values of their investment properties on their balance sheets. The companies in the sample use DCF as the valuation technique to measure the fair values. We focus on disclosure quality related to key input variables in the DCF calculations and the results show that the provision of high quality disclosures are valued favourably by analysts and investors. More specifically, we find a strong association between disclosure quality and the likelihood that a company is followed by analysts. Furthermore, our results also indicate that bid-ask spreads are lower for companies providing higher quality disclosures.

Additionally, we find that companies disclose significantly more information about the key assumptions applied in the fair value measurement under IFRS 13 than IAS 40. A central but challenging question is whether companies are now compelled to disclose more than they think users demand under IFRS 13, or whether costs of disclosure impeded the disclosure under IAS 40. In order to provide some evidence related to this issue, we study whether improved disclosures under IFRS 13 have a positive impact on analyst following and market liquidity. We failed to find any support for these predictions.

What are the implications for companies and standard setters? First, the impact of disclosure quality on analyst following and bid-ask spreads indicates that high quality disclosures are valued positively by investors. Thus, it seems to lie in the interest of companies to provide extensive disclosures. The implications for standard setters are less straightforward and ultimately depend on the assumed role of disclosure regulation. The overall objective of financial reporting is to provide information that is useful for investors and other stakeholders (e.g., IASB Conceptual Framework, OB2). One view is that all information that could possibly make a difference to users should be disclosed. However, the disadvantage of this approach is that financial reports will become unnecessarily long and costly to prepare. Thus, another approach is to only regulate if it passes the test of making a difference to users (cf. New Zealand Institute of Chartered Accountants and the Institute of Chartered Accountants of Scotland, 2011, p. 3). Passing this test may be interpreted as solving a market failure or having empirically documented positive effects. We fail to find support for the existence of positive economic consequences of the change in the disclosure requirements: the short and simple requirements under IAS 40 seem to work as well as the more detailed ones under IFRS 13.

Our study has some limitations. Firstly, our economic consequences analysis is limited to analyst coverage and market liquidity measures. A study of other economic consequences may have yielded other results. Secondly, our sample is small and focused on one

---

[13] These numbers are marginally influenced by the use of an unbalanced panel. The corresponding numbers when we only include the 34 companies for which information is available for the entire 2009–2014 period are: 1.2 in 2009, 1.5 in 2010 and 2011, 1.4 in 2012, 2.0 in 2013 and 2.5 in 2014.

industry only. We therefore encourage further research in other industries and/or with other samples. Thirdly, we use a self-constructed disclosure index. Although the index focuses on key assumptions underlying present value calculations and all companies in the sample use present value calculations as the basis for the fair value measurements, we cannot rule out that other items could influence analyst following and market liquidity. Fourthly, each item is equally weighted in the disclosure index. We did analyses of the items of the index but we cannot conclusively rule out that an index that would be weighted, for example, based on its perceived importance by analysts, would give different results. Finally, we have only studied disclosures in the notes to the financial statements included in annual reports. Companies can disclose information to shareholders in a number of other ways, including the front part of the annual report or at the company's website. We cannot rule out the possibility of companies with scant information in financial statements using other channels for the communication of fair value measurement practices to investors and other stakeholders. This is a topic for further study.

Appendix 1. Variable definitions

COSTCAP	An indicator variable taking the value of 1 if the discount rate used in present value calculations of fair values of investment properties is reported (measured in year t).
VACANCY	An indicator variable taking the value of 1 if the expected vacancy rate in present value calculations of investment property fair values is reported (measured in year t).
OPINCEXP	An indicator variable taking the value one if quantitative information about how expected revenues and operating costs have been assessed in present value calculations of fair values has been reported (measured in year t).
SENSITIVITY	An indicator variable taking the value of 1 if a quantitative analysis of how sensitive fair values are to changes in assumptions is disclosed in the notes to the financial statements (measured in year t).
DISCLOSURE	Sum of: COSTCAP, VACANCY, OPINCEXP and SENSITIVITY.
FOLLOWING	An indicator variable taking the value one if at least one analyst prepares a one-year-ahead earnings-per-share forecast (measured in year t + 1).
LNANALYSTS	Logarithm of number of analysts preparing a one-year-ahead earnings-per-share forecast. The number is measured as the monthly average during the second quarter (measured in year t + 1).
ZERORETURN	Proportion of trading days with zero daily stock returns. The number of trading days is measured in the second quarter year t + 1.
LNPRICEIMPACT	The price impact is calculated as the median of daily absolute value of stock returns divided by daily trading volume. The median is measured over the second quarter year t + 1. The logarithm of the median ratio is used.
LNBIDASK	The bid-ask spread is calculated as the ask price less the bid price divided by the average of the bid and ask. The median bid-ask spread is measured over the second quarter year t + 1. The logarithm of the bid-ask spread is used.
LNFHT	$FHT = 2\sigma\varnothing^{-1}(1 + \frac{Zeroreturn}{2})$, where σ is the daily standard deviation of returns (days with zero returns omitted), $\varnothing^{-1}$ is the inverse of the normal density function and ZERORETURN is the proportion of zero return days (as defined above). The standard deviation and ZERORETURN is measured over the second quarter year t + 1. The logarithm of the ratio is used.
IFRS13	An indicator variable taking the value of 1 if the annual period is beginning on or after 1 January 2013 (measured in year t).
DisclIFRS13	An indicator variable taking the value 1 if the company has a higher value on DISCLOSURE in years under IFRS 13 than in the year before the adoption of IFRS 13 (measured in year t).
LNMV	Logarithm of the market value of equity (measured in year t)
ROE	Return on equity, calculated as net income before taxes to shareholders' equity (measured in year t).
pROE	Three year average of ROE (in years t − 1 to t − 3).
LEVER	Long-term debt to total assets (measured in year t).
pLEVER	Three year average of LEVER (in years t − 1 to t − 3).
ISSUE	An indicator variable taking the value of 1 if either common stock, or debentures and convertibles (measured in local currencies) have increased by > 10% compared to the previous year (measured in year t).
BIG4	An indicator variable taking the value of 1 if the company is audited by PwC, KPMG, Ernst & Young or Deloitte (measured in year t).
OWN_{50-100}	An indicator variable taking the value of 1 if the three largest shareholders directly or indirectly control between 50% and 100% of the shares (measured in year t).
OWN_{10-50}	An indicator variable taking the value of 1 if the three largest shareholders directly or indirectly control between 10% and 50% of the shares (measured in year t).
LNSTDRET	The logarithm of the standard deviation of stock return. The stock return is measured on a daily basis in the second quarter (in year t + 1).
LNPRICE	The logarithm of the stock price in euros, measured over the second quarter (in year t + 1).

LNTURN	The logarithm of the average number of shares traded in relation to the total number of shares measured in the second quarter (in year t + 1).
COUNTRY	Indicator variables for each of the countries in the sample (see Table 1).
ORIGIN	Indicator variables for English origin, French origin, German origin and Scandinavian origin countries (the classification of the countries follow LaPorta, Lopez-de-Silanes, Shleifer, & Vishny, 1998).
YEAR	Indicator variables for year.

Appendix 2. Valuation technique and input variable disclosures

This appendix summarizes disclosure of valuation techniques and unobservable inputs for 5 companies in 2012 and 2013. All companies had the calendar year as their fiscal year. Thus, IFRS 13 had to be applied in 2013 but not in 2012.

INTU

INTU is a British company traded at London Stock Exchange and JSE (Johannesburg). The company disclosed the following information about the valuation techniques used in 2013: "The fair value of the Group's investment and development property was determined by independent external valuers at that date… The valuations are in accordance with the Royal Institution of Chartered Surveyors ('RICS') Valuation – Professional Standards 2012 and were arrived at by reference to market transactions for similar properties… Fair values for investment properties are calculated using the present value income approach." The 2012 Annual Report did not explicitly refer to the income approach but included in all other respects similar information. The table below includes extracts from a table in the 2013 Annual Report displaying assumptions used in the valuation and key unobservable inputs. The Annual Report in 2012 did not include similar information.

	Market value £m	Net initial yield (EPRA)	Nominal equivalent yield	Annual property income £m
intu Trafford Centre	1900.99	4.2%	5.1%	86.0
intu Lakeside	1124.5	4.8%	5.5%	58.6

The company reported the following information in its 2013 Annual Report (related to Level 3 assets): "…Valuations at this level are more subjective and therefore more closely managed, including sensitivity analysis of inputs to valuation models. Such testing has not indicated that any material difference would arise due to a change in input variables." We did not find any quantitative sensitivity analyses in the 2012 or 2013 Annual Reports.

Sources: pages 125 and 139 in Annual Report 2013 and page 111 in the Annual Report 2012 (available at: https://www.intugroup.co.uk/en/investors/reports-results-and-policies/).

Beni Stabili

Beni Stabili is an Italian company listed on the Italian Stock Exchange and the Euronext market in Paris. The company uses the following methods for its fair value measurement: (i) a comparative or market method (based on a comparison between the asset in question and other assets recently exchanged or currently on offer on the same market or competing markets), (ii) the income method (based on current value of potential future income from a property), (iii) the discounted cash flow approach (based on discounting future net rental revenues (over a period that varies according to the existing lease terms) and (iv) the conversion method. Similar valuation technique information were disclosed in 2012 and 2013.

Below is an extract from a table in the Annual Report 2013 displaying the unobservable inputs used for properties valued using an income method. Beni Stabili did not disclose a similar table in the 2012 Annual Report.

(€/1000)	Fair value (Level 3) as at 31 December 2013	Valuation technique	Unobservable inputs	Range (weighted average)
Accounting category				
Investment properties	2,483,205	Income method	Annual rent by sq.m.	€33–€1800 (€137)
			Discount rate	5.20%–8.10% (6.93%)
			Capitalization rate by terminal value	4.8%–7.55% (6.76%)

In 2013 Beni Stabili disclosed a narrative description of the sensitivity to changes in unobservable inputs. The following cites illustrates the contents of that description: "With reference to the sensitivity of fair value measurements to the changes in the main unobservable inputs, note that there would be fair value reductions in the following cases: decreases in current rents and/or in the estimate of annual rents by sq.m.; an increase in discount rates and/or in capitalisation rates…" A quantitative sensitivity analysis was not disclosed.

Sources: pages 75, 93–97 in the Annual Report 2013 and pages 73–74, 99–100 in the Annual Report 2012 (available at: http://www.benistabili.it/en/investor-relations/documentation/index.html).

Wihlborg

Wihlborg is a Swedish company listed at NASDAQ Stockholm. The following valuation method information was disclosed in 2013: "Fair value is determined by a combination of a comparable sales method, based on recorded local purchases, and a yield-based method. The yield-based method is based on a current value calculation of future actual cash flows, which is continually adjusted to the market, normally over 5 years, and the current value of the estimated residual value at the end of the calculation period. The valuation method for investment properties is classified as at level 3 in the fair value hierarchy, since non-observable input data used in the valuation materially affects the estimated value. The values of the properties are determined individually to correspond to the fair value of the property concerned." Similar valuation techniques were used in 2012. The following information was disclosed in 2013 (The 2012 Annual Report included similar information):

Summary	
Date of valuation	31/12/2013
Fair value	SEK 22,584 million
Calculation period	Normally 5 years for Swedish properties and 10 years for Danish properties. However, for certain properties, different calculation periods are justified on the basis of the length of the lease.
Estimated direct return requirement, residual value	Between 5.0% and 8.5%.
Cost of capital	Between 5% and 9%.
Long-term vacancy rate	Normally between 5% and 12%.
Operating and maintenance costs	In assessing the value, maintenance costs are calculated on a standardized basis taking type of property, valuation year and location into account.
Inflation assumption	CPI is estimated to rise by 2% per year except in 2014 when CPI is estimated to rise by no > 1.25%.

The following cite illustrates the kind of description of the sensitivity to changes in unobservable inputs that was disclosed in 2013 (similar information was disclosed in 2012): "The property values are affected by the assumed market parameters that are used. By varying a number of parameters, a measure of the sensitivity of the valuation is obtained. For example, lowering the yield requirement by 0.25 percent results in a increase of 2.7 percent in the yield value for the built properties in Sweden…" A table with a quantitative sensitivity analysis was also presented.

Sources: pages 78–79 and 113–114 in the Annual Report 2013 and pages 77–79 and 112–113 in the Annual Report 2012 (in Swedish) (available at: https://www.wihlborgs.se/en/investor-relations/reports/).

Gecina

Gecina is a French company listed at Euronext – Paris. The following three valuation methods were used in 2013 (the 2012 Annual Report includes similar information): the (i) direct comparison method, (ii) capitalization of net income method (iii) Discounted cash flow method (DCF) ("the value of the asset is equal to the discounted cash flow expected by the investor, including its assumed sale following a 10 year holding period…"). The table below illustrates the disclosure of information on key unobservable inputs in 2013 (the notes to the financial statements did not include similar information in 2012).

Offices	Yield rate	Discount rate (DCF method)	Rental market value (in €/sq.m.)
Paris	3.80%–7.75%	4.10%–8.50%	€/sq.m. 270–750
Paris region	5.00%–12.00%	5.75%–13.75%	€/sq.m. 100–570
OFFICES	3.80%–12.00%	4.10%–13.75%	€/sq.m. 100–750

The notes to the financial statements included the following type of quantitative information on the sensitivity to changes in the capitalization rate in 2013:

Sector	Change in capitalization rate	Valuation of assets (in M€)	Variation of assets (in %)	Impact on consolidated income (in M€)
All sectors	0.50%	9970	(7.5)	(810)
Offices	0.50%	6405	(7.3)	(502)

The company disclosed quantitative sensitivity analysis information also in 2012. The following cite illustrates the type of information disclosed: "… a downturn on the real estate market, resulting in an increase of 50 basis points (0.5%) in capitalization rates, could bring about a decrease of around 7.6% of the appraised value of the whole of Gecina's property holdings …representing roughly €843 million based on the block valuation of appraised assets as of December 31, 2012".

Sources: pages 80 and 101 in the "Reference Document" 2013 and pages 64–66 and 83 in the "Reference Document" 2012 (available at: http://www.gecina.fr/en/investors/regulatory-disclosures.html?tid=40&tpl=tpl1).

Deutsche Wohnen

Deutsche Wohnen is listed at the Frankfurt Stock Exchange (Xetra). It discloses that valuation models are used to calculate fair values of investment properties and that, among other things, the following information is used in the valuation of individual properties: (i) market rent at the reporting date, (ii) rent per sq.m. based on market rent and in-place rent, (iii) costs (maintenance, administration etc.) (iv) cash flows from annual proceeds and payments over a 10 year period and the terminal value at year 10. The following table illustrates the disclosure of unobservable inputs in the notes to the financial statements 2013:

31 December 2013	Core+			Core	Non-core
	Berlin	Other	Total	Total	Total
Carrying amount (EUR m)	6226.3	1138.8	7398.1	1413.7	125.3
Carrying amount (EUR/sq.m.)	969	1188	997	784	576
Share of carrying amount (%)	70.1	12.7	82.8	15.8	1.4
In-place rent (EUR/sq.m.)	5.53	6.52	5.65	5.20	4.82
Rent increases p.a. (%)	2.0	1.7	1.9	1.1	0.7
Vacancy rate (%)	1.9	2.7	2.0	3.6	4.9
Multiplier	14.4	15.3	14.6	12.9	11.1
Discount factor (%)	6.6	6.6	6.6	6.8	7.7
Capitalization factor (%)	5.5	5.5	5.5	5.8	6.5

Deutsche Wohnen disclosed the discount rate (between 6.10% and 8.35%, weighted average 6.8%) and capitalization rates in the notes 2012.

A table with the following type if quantitative sensitivity information was disclosed in 2013. The table shows the fair value adjustments resulting from (i) rent increase 20% lower than projected, (ii) increase in the discount rate of 0.1% and (iii) increase in the capitalization rate of 0.1%.

31 December 2013	Core+			Core	Non-core
	Berlin	Other	Total	Total	Total
Rent increases	−3.61	−3.62	−3.62	−2.39	−1.46
Discount factor	−0.75	−0.72	−0.74	−0.72	−0.73
Capitalization rate	−1.07	−1.09	−1.07	−0.94	−0.73

The company disclosed the following quantitative sensitivity information in 2012: "A capitalization and discount rate shift of 0.10% causes a value adjustment of EUR 77 million…". Thus, the company disclosed quantitative information in 2012 and 2013 but the disclosures were more extensive in 2013.

Sources: pages 77 and 84–86 in the Annual Report 2013 and pages 71–72 and 78–79 in the Annual Report 2012 (available at: http://ir.deutsche-wohnen.com/websites/deuwo/English/4000/reports.html).

References

Aboody, D., Barth, M., & Kaznik, R. (2006). Do firms understate stock option-based compensation expense disclosed under SFAS 123? *Review of Accounting Studies, 11*, 429–461.

Ali, A., Chen, T.-Y., & Radakrishnan, S. (2007). Corporate disclosures by family firms. *Journal of Accounting and Economics, 44*, 238–286.

Artiach, T., & Clarkson, P. (2011). Disclosure, conservatism and the cost of equity capital: A review of the foundation literature. *Accounting and Finance, 51*, 2–49.

Arya, N., & Mittendorf, B. (2007). The interaction among disclosure, competition between firms, and analyst following. *Journal of Accounting and Economics, 43*, 321–339.

Ayers, B., Schwab, C., & Utke, S. (2015). Noncompliance with mandatory disclosure requirements: The magnitude and determinants of undisclosed permanently reinvested earnings. *The Accounting Review, 90*, 59–93.

Barth, M. (2007). Research, standard setting and global financial reporting. *Foundations and Trends in Accounting, 1*, 71–165.

Bernston, G. J. (2006). Fair value accounting: A cautionary tale from Enron. *Journal of Accounting and Public Policy, 25*, 465–484.

Beyer, A., Cohen, D., Lys, T., & Walther, B. (2010). The financial reporting environment: A review of the recent literature. *Journal of Accounting and Economics, 50*, 296–343.

Bhushan, R. (1989). Firm characteristics and analyst following. *Journal of Accounting and Economics, 11*, 255–274.

Botosan, C. (1997). Disclosure level and cost of capital. *The Accounting Review, 72*, 323–349.

Botosan, C. (2006). Disclosure and the cost of capital: What do we know? (Special Issue: International Accounting Policy Forum). *Accounting and Business Research,* 31–40.

Botosan, C., & Harris, M. (2000). Motivations for a change in disclosure frequency and its consequences: An examination of voluntary quarterly segment disclosures. *Journal of Accounting Research, 38*, 329–353.

Botosan, C., & Stanford, M. (2005). Managers' motives to withhold segment disclosures and the effect of SFAS no. 131 on analysts' information environment. *The Accounting Review, 80*, 751–771.

Cameron, C., & Trivedi, P. (2010). *Microeconometrics using Stata.* College Station: Stata Press.

Christensen, H., Hail, L., & Leutz, C. (2013). Mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics, 56*, 147–177.

Clarkson, P., Van Bueren, A.-L., & Walker, L. (2006). Chief executive officer remuneration disclosure quality: Corporate responses to an evolving disclosure environment. *Accounting and Finance, 46*, 771–796.

Darrough, M., & Stoughton, N. (1990). Financial disclosure policy in an entry game. *Journal of Accounting and Economics, 12*, 219–243.

Daske, H., Hail, L., Leuz, C., & Verdi, R. (2008). Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research, 46*, 1085–1142.

Dhaliwal, D., Radhakrishnan, S., Tsang, A., & Yang, Y. (2012). Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review, 87*, 723–759.

Diamond, D., & Verrecchia, R. (1991). Disclosure, liquidity, and the cost of capital. *Journal of Finance, 46*, 1325–1359.

Dietrich, J. R., Harris, M. S., & Muller, K. A. (2001). The reliability of investment property fair value estimates. *Journal of Accounting and Economics, 30*, 125–158.

Ernst, & Young (2013). *Applying IFRS in real estate: IFRS 13 fair value measurement.*

European Financial Reporting Advisory Group (EFRAG) (2012). *Towards a disclosure framework for the notes.* (Discussion paper).

Fong, K., Holden, C., & Trzcinka, C. (2014). What are the best liquidity proxies for global research? Retrieved from SSRNhttp://ssrn.com/abstract=1558447 (Unpublished manuscript).

Francis, J. (2004). What do we know about audit quality? *The British Accounting Review, 36*, 345–368.

Gao, F., Dong, Y., Ni, C., & Fu, R. (2016). Determinants and economic consequences of non-financial disclosure quality. *The European Accounting Review, 25*, 287–317.

Gelb, D. (2000). Managerial ownership and accounting disclosures: An empirical study. *Review of Quantitative Finance and Accounting, 15*, 169–185.

Givoly, D., Hayn, C., & Katz, S. (2010). Does public ownership of equity improve earnings quality? *The Accounting Review, 85*, 195–225.

Glaum, M., Schmidt, P., Street, D., & Vogel, S. (2013). Compliance with IFRS 3- and IAS 36-required disclosures across 17 European countries: Company- and country-level determinants. *Accounting and Business Research, 43*, 163–204.

Healy, P., Hutton, A., & Palepu, K. (1999). Stock performance and intermediation changes surrounding sustained increases in disclosure. *Contemporary Accounting Research, 16*, 485–520.

Healy, P., & Palepu, K. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics, 31*, 405–440.

Heflin, F., Shaw, K., & Wild, J. (2005). Disclosure policy and market liquidity: Impact of depth quotes and order sizes. *Contemporary Accounting Research, 22*, 829–865.

Hitz, J.-M. (2007). The decision usefulness of fair value accounting – A theoretical perspective. *The European Accounting Review, 16*, 323–362.

Hope, O.-K. (2003). Firm-level disclosures and the relative roles of culture and legal origin. *Journal of International Financial Management & Accounting, 14*, 218–248.

Hope, O.-K., Kang, T., Thomas, W., & Yoo, Y.-K. (2008). Culture and auditor choice: A test of the secrecy hypothesis. *Journal of Accounting and Public Policy, 27*, 357–373.

Johann, T., & Theissen, E. (2013). Liquidity measures. In A. Bell, C. Brooks, & M. Prokopczuk (Eds.). *Handbook of research methods and applications in empirical finance* (pp. 238–255). Northampton: Edward Elgar Publishing.

Knechel, W. R., Krishnan, G. V., Pevzner, M., Shefchik, L. B., & Velury, U. K. (2013). Audit quality: Insights from the academic literature. *Auditing: A Journal of Practice & Theory American Accounting Association, 32*, 385–421.

Kvaal, E., & Nobes, C. (2010). International differences in IFRS policy choice. *Accounting and Business Research, 40*, 173–187.

Kvaal, E., & Nobes, C. (2012). IFRS policy changes and the continuance of national patterns of IFRS practice. *The European Accounting Review, 21*, 343–371.

Landsman, W. (2007). Is fair value accounting information relevant and reliable? Evidence from capital market research (Special Issue: International Accounting Policy Forum). *Accounting and Business Research,* 19–30.

Lang, M., & Lundholm, R. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research, 31*, 246–271.

Lang, M., & Lundholm, R. (1996). Corporate disclosure policy and analyst behavior. *The Accounting Review, 71*, 467–492.

LaPorta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy, 106*, 1113–1155.

Lesmond, D., Ogden, J., & Trzcinka, C. (1999). A new estimate of transaction costs. *The Review of Financial Studies, 12*, 1113–1141.

Leuz, C., & Verrecchia, R. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research, 38*, 91–124 (supplement).

Manning, W. G., Duan, N., & Rogers, W. H. (1987). Monte Carlo evidence on the choice between sample selection and two-part models. *Journal of Econometrics, 35*, 59–82.

Muller, K., & Riedl, E. (2002). External monitoring of property appraisal estimates and information asymmetry. *Journal of Accounting Research, 40*, 865–881.

Muller, K., Riedl, E., & Sellhorn, T. (2011). Mandatory fair value accounting and information asymmetry: Evidence from the European real estate industry. *Management Science, 57*, 1138–1153.

Muller, M. A., Riedl, E. J., & Sellhorn, T. (2015). Recognition versus disclosure of fair values. *The Accounting Review, 90*, 2411–2447.

Nelson, M. (2003). Behavioral evidence on the effects of principles- and rules-based standards. *Accounting Horizons, 17*, 91–104.

New Zealand Institute of Chartered Accountants, & the Institute of Chartered Accountants of Scotland (2011). *Losing the excess baggage reducing disclosures in financial statements to what's important.* (ISBN 978-1-904574-82-8).

Nobes, C. (2005). Rules-based standards and the lack of principles in accounting. *Accounting Horizons, 19*, 25–34.

Paugam, L., & Ramond, O. (2015). Effect of impairment-testing disclosures on the cost of equity capital. *Journal of Business, Finance and Accounting, 42*, 583–618.

Penman, S. (2010). *Financial statement analysis and security valuation.* McGraw Hill.

PwC (2011). *Practical guide to IFRS. Fair value measurement: Implications of IFRS 13 for the real estate industry.*

Quagli, A., & Avallone, F. (2010). Fair value or cost model? Drivers of choice for IAS 40 in the real estate industry. *The European Accounting Review, 19*, 461–493.

Robbins, W. A., & Austin, K. R. (1986). Disclosure quality in governmental financial reports: An assessment of the appropriateness of a compound measure. *Journal of Accounting Research, 24*, 412–421.

Robinson, J., Xue, Y., & Yu, Y. (2011). Determinants of disclosure noncompliance and the effect of the SEC review: Evidence from the 2006 Mandated Compensation Disclosure Regulations. *The Accounting Review, 86*, 1415–1444.

Rogers, W. (1993). Regression standard errors in clustered samples. *Stata Technical Bulletin, 13*, 19–23.

Schipper, K. (1991). Commentary on analysts' forecasts. *Accounting Horizons, 5*, 105–121.

Schipper, K. (2003). Principles based accounting standards. *Accounting Horizons, 17*, 61–72.

Shalev, R. (2009). The information content of business combination disclosure level. *The Accounting Review, 84*, 239–270.

Song, C., Thomas, W., & Yi, H. (2010). Value relevance of FAS no. 157 fair value hierarchy information and the impact of corporate governance mechanisms. *The Accounting Review, 85*, 1375–1410.

Sunder, S. (2010). Adverse effects of uniform written reporting standards on accounting practice, education, and research. *Journal of Accounting and Public Policy, 29*, 99–114.

Vergauwe, S., & Gaeremynck, A. (2014). Reliability effects of fair value related disclosures. Retrieved from http://ssrn.com/abstract=1975669.

Verrechia, R. (2001). Essays on disclosure. *Journal of Accounting and Economics, 32*, 97–180.

Wagenhofer, A. (1990). Voluntary disclosure with a strategic opponent. *Journal of Accounting and Economics, 12*, 341–363.

Welker, M. (1995). Disclosure policy, information asymmetry and liquidity in equity markets. *Contemporary Accounting Research, 11*, 801–827.