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Cross-Country Differences in Disclosure Quality: a Study of Fair Value Disclosures by European Real Estate Companies

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Cross-Country Differences in Disclosure Quality: a Study of Fair Value Disclosures by European Real Estate Companies

Abstract

Companies are under IAS 40 required to report fair values of investment properties on the balance sheet or to disclose them in the notes. The standard requires also that companies have to disclose the methods and significant assumptions applied in determining fair values of investment properties. However, IAS 40 does not include any illustrative examples or other guidance on how to apply the disclosure requirements. We use a sample with publicly traded companies from the real estate sector in the EU. We find that a majority of the companies use income based methods for the measurement of fair values but there are considerable cross-country variations in the level of disclosures about the assumptions used in determining fair values. More specifically, we find that Scandinavian and German origin companies disclose more than French and English origin companies. We also test whether disclosure quality is associated with enforcement quality measured with the "Rule of Law" index according to Kaufmann et al. (2010), and associated with a secrecy- versus transparency-measure based on Gray (1988). We find a positive association between disclosure and earnings quality and a negative association with secrecy.

1. Introduction

This study extends research analyzing the effects of institutional and cultural factors on properties of accounting numbers (e.g., Hope 2003; Burgstahler et al. 2006; Doupnik 2008; Braun and Rodrigues 2008) and investigates an important question that has received little attention in the literature: are there cross country differences in the quality of disclosures provided in the notes to financial statements? We focus on the disclosures of fair value measurements of investment properties under IAS 40. IAS 40 required that companies shall disclose "the methods and significant assumptions used in determining fair values of investment properties…" but the standard does not include any illustrative examples or any other guidance on how to apply the disclosure requirements.

The study of the variation in disclosure quality in a setting with imprecise disclosure requirements can be motivated by recent suggestions that disclosures in the notes to financial statements have become unwieldy (European Financial Reporting Advisory Group 2012). It is, among other things, suggested in the EFRAG paper that disclosure rules should be principle based and detailed rules should be avoided (p. 3). The IAS 40.75 disclosure requirement can be characterized as principle based and detailed rules are missing. Thus, the study of disclosures under IAS 40 facilitates the learning of effects of disclosure requirements which only include a general principle and lack detailed rules. Fair values of properties are normally Level 3 fair values according to the IFRS 13 classification. Level 3 fair values have been criticized for being vulnerable for manipulation and for being less value relevant than Level 1 and 2 fair values (e.g., Bernston 2006; Song et al. 2010). However, high quality disclosures about methods used and assumptions applied arguably reduce information asymmetry problems between the firm and its stakeholders.

We study the association between country variables and disclosure quality for a sample with publicly listed real estate companies from the European Union. Companies are under IAS 40 required to report fair values on the face of the balance sheet or to disclose them in notes. We find

that the majority of the companies in the sample use discounted cash flows (DCF), or other income based methods, either on a stand-alone basis or in conjunction with a market based approach.

Following prior studies in the disclosure literature (e.g., Botosan 1997; Clarkson et al. 2006; Shalev 2009) we use self-developed disclosure quality indices and study the assumptions underlying and uncertainties surrounding the DCF projections. The indices focus on key assumptions and disclosures, such as the discount rates and estimated vacancy, which are of potential importance for investors attempting to evaluate the reliability of fair value measurements. For the sub-sample of companies using DCF either on a stand-alone basis or in combination with a market comparable approach, we study the association between institutional factors, cultural factors and disclosure quality. We find that Scandinavian and German origin companies tend to disclose significantly more information than French origin companies. Furthermore, we find a positive association between the quality of disclosures and enforcement quality, measured with the "Rule of Law" index in the company's country of domicile. The rule of law index is taken from Kaufmann et al. (2010) and its use follows prior related studies (e.g. Daske et al. 2008; Landsman et al. 2012; Hearn 2013).

Furthermore, we find that the quality of disclosures is negatively associated with secrecy. The secrecy measure used is taken from Hope et al. (2008) and is based on Gray (1988). However, there is a strong negative correlation between legal and enforcement quality and secrecy for the companies in the sample so we are not able to conclude which of the variables is the key driver of disclosure quality. For the sub-sample of companies using a market-comparable approach, we find that extremely few companies disclose information about the input variables used in the valuation.

Our study is one of the first focusing on disclosure quality in the real estate sector. Prior institutional and cultural factor research has mainly focused on its association with earnings quality (e.g., Burgstahler et al. 2006; Doupnik 2008; Braun and Rodrigues 2008; Gray et al. 2013). There is

also a number of studies focusing on institutional and/or cultural factor and disclosure quality but in these studies disclosure ratings provided by external agencies have been used (Jaggi and Low 2000; Hope 2003).

The main contribution of our study is that it contributes to the debate showing a disadvantage with disclosure requirements which are principle based and lack detailed rules. Disclosure rules have recently been criticized for having become unmanageable and that the length of the disclosures in the notes have done little to improve the quality of information (ICAS and NZICA 2011; EFRAG 2012). In the EFRAG paper, it is suggested that disclosure rules should be principle based and detailed rules should be avoided (p. 3). Schipper (2005) claims, on the other hand, that one important pre-condition for the development of harmonized practice in Europe is that the IASB issues detailed implementation guidance for applying IFRS. The results in this study show that there are significant cross-country variations in disclosure practices with respect to the disclosure of significant assumptions applied in determining the fair values of investment properties in the real estate sector, which arguably is negative for the comparability of financial reports. The study raises the question whether detailed rules and application guidance could reduce country-wide differences.

The study proceeds as follows. Section 2 includes an overview of rules regulating the accounting for investment property under IAS/IFRS. Section 3 presents prior related literature and sets forth the research question of the study. Section 4 presents the research design and section 5 includes the main results of the study. Section 6 includes the conclusions.

2. Accounting for investment properties under IAS 40 and disclosure requirements

IAS 40 requirements

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.[1] IAS 40.30 allows companies to choose as its accounting policy after the initial recognition either the fair value model or the cost model. If the fair value model is chosen, it is applied on all of the company's investment property (IAS 40.33).[2] In case the fair value method is applied, the company reports the fair value of its investment properties at the balance sheet. Gains or losses from changes in fair values are recognized in profit or loss for the period in which they arise (IAS 40.35). In case the cost method is applied, companies report cost less accumulated depreciation on the balance sheet. However, companies choosing the cost model have to report fair values in the notes to the financial statements (IAS 40.79e).

This study investigates a sample of the year 2009 and until the beginning of 2013 guidance on fair value calculations were 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". The fair value is expected to reflect market conditions at the end of the reporting period. The best evidence of fair value is, according to IAS 40.45, given by current prices in an active market for similar property in the same location and condition. However, if prices at an active market for similar property in the same location and condition are not available, (i) prices for property of a different nature or from a different location, (ii) recent prices of similar properties on 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). The cash flows should be supported by the terms of existing leases and other contracts and (when 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). Thus, IAS 40 leaves it to the companies to decide which methods to apply in fair value calculations.

[1] IFRS 13 on fair value measurement came into effect in 2013 and this standard also regulates fair value measurement and disclosures for investment property. However, in this study we focus on the time period before the effective date of IFRS 13 so all relevant rules were included in IAS 40.

[2] An exception from this rule is when it is not possible to determine the fair value reliably. These situations are argued to be exceptional in the standard (IAS 40.53).

The disclosure requirements in IAS 40.74-79 are requiring that companies, among other things, have to disclose whether the company applies the fair value or cost model, and whether the valuation of investment property is based on a valuation by an external valuer. A disclosure requirement of key importance for our study is IAS 40.75d requiring that an entity shall disclose: "the method and significant assumptions 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". This rule applies irrespective of whether the cost model or the fair value model has been used.

Initiatives for disclosure requirement changes

Guidance on fair value measurement and disclosures has been removed from IAS 40 and is currently based on IFRS 13. The disclosure requirements in IFRS 13 require entities to disclose a description of the valuation techniques and inputs used in the fair value measurement. Furthermore, for fair value measurements categorized within Level 3 of the fair value hierarchy, entities have to provide quantitative information about the significant unobservable inputs used in the fair value measurement (IFRS 13.93d). Investment properties are in most cases likely to be categorized as Level 3 measurements. The illustrative examples to the standard include examples of which information that should be disclosed. Regarding investment properties, the examples display that the range of price per square meter should be disclosed if this price is the basis for a market comparable approach. If a discounted cash flow approach is used, the example illustrates that the discount rate and the range of expected long-term net operating income margin should be disclosed (see IFRS 13.IE63). Thus, the rules in IFRS include more exact guidance than the ones in IAS 40.

However, the disclosure requirements in IAS/IFRS standards have been criticized in recent reports by the European Financial Reporting Advisory Group, as well as the New Zealand Institute

of Chartered Accountants and the Institute of Chartered Accountants of Scotland, for resulting in notes that are far too complex to be easily understood (ICAS and NZICA 2011; EFRAG 2012). It is pointed out in the report that there is a strong consensus in the financial community that disclosures in the notes have become unwieldy; the increasing length has done nothing to improve quality and may have even decreased it because of information overload. The suggestion in the report is that disclosure requirements should be principle based and detailed rules should be avoided (EFRAG 2012: 3). The report includes an example from the report "Loosing the excess baggage" by ICAS and NZICA IFRS 2 disclosures as an example in which the current wording is compared with a suggested wording and the suggestion is, among other things, that all details about the disclosure of inputs into option pricing models such as expected volatility, option life and risk free interest rate should be removed. Indeed, it is pointed out that the suggested changes in the report are more about the style of the requirements than the substance.

However, the removal of details would essentially lead to a situation close the one under IAS 40, which stipulated that an entity should disclose: "the methods and significant assumptions…" without any further guidance about which assumptions that should be disclosed. IAS/IFRS are used by a large number of countries and, as explained in the next section, these have different legal systems and cultures. The question of interest is whether such rules result in considerable cross-country variation in the amount and level of detail of assumptions disclosed.

3. Prior literature and research question

Prior literature

There is a relatively large body of research about cross-country differences in earnings quality but considerably less research is done about cross country differences in disclosure practices. Prior studies on cross-country differences in earnings quality have focused on the impact of institutional and cultural factors.

Studies on institutional factors have mostly used classifications of countries according to LaPorta et al. (1998) and LaPorta et al. (2006) and/or used classifications based on whether a country is a code law or a common law country (e.g., Ball et al. 2000; Leutz et al. 2003; Burgstahler et al. 2006; Francis and Wang 2008). Leutz et al. (2003) study differences in earnings management across 31 countries and they find that earnings management is negatively associated with investor protection. Francis and Wang (2008) argue that earnings quality is jointly affected by the investor protection environment and the firm's choice of a Big 4 and non Big 4 audit firm. Using a sample of firms from 42 countries they find that earnings quality is higher as the country's investor protection is stronger but the result only holds for firms with Big 4 auditors. Burgstahler et al. (2006) study the association between the quality of the legal system and earnings management for a sample with European privately held and publicly traded companies. They find that a measure of legal and enforcement quality based on LaPorta et al. (1998) is negatively associated with earnings management. In some recent studies (e.g., Daske et al. 2008; Landsman et al. 2012; Hearn 2013; Beuselink et al. 2013), enforcement qualiy has been measured with the Rule of Law score taken from Kaufmann et al. (2010).

Studies on the association between culture and earnings quality have typically used classifications based on Hofstede's (1980, 2001) cultural dimensions and/or Gray's (1988) accounting value scores (see Doupnik and Tsakumis 2004 for a review of the early literature). More recently, Doupnik (2008) has examined the influence of national culture on earnings management using a sample with observations from 31 countries. An interesting finding in the study is that cultural dimensions explain a greater percentage of the variation in earnings management and income smoothing than do investor protection variables. Braun and Rodriguez (2008) examine the ability of Gray's accounting values to explain earnings management also using a sample of 31 countries. They control for legal enforcement quality in the study and find some support for an association between cultural dimensions and earnings quality. Gray et al. (2013) study the

association between earnings management and cultural dimensions using a sample from 14 European countries. They find a significant association between measures of individualism and uncertainty avoidance and proxies for earnings quality. The studies above are all about cultural dimensions and earnings quality.

Evidence on the association between legal or cultural dimensions and disclosure quality is scant and all studies we are aware of have made use of disclosure ratings provided by external agencies. Jaggi and Low (2000) find that companies from common law countries provide more financial disclosures than companies from code law countries. Furthermore, they find that very few of the cultural values were significantly associated with disclosure quality in the predicted direction. Hope (2003) also uses a disclosure rating provided by an external agency and studies the association between the relative roles of cultural values and legal origin for a sample with companies from 42 countries. He finds that both legal origin and culture is important in explaining disclosure. Our study differs from these two studies in that we are using a disclosure measure that focuses on one specific item, namely the disclosure of assumptions underlying fair value measurements. Hope et al. (2008) study cultural factors from a slightly different angle than the studies above. They claim that companies in more secretive countries are less likely to hire a Big 4 auditor. They test the prediction on a sample with a large number of companies from 37 countries and find support for the prediction.

Our study is also related to Kvaal and Nobes (2010, 2012) who study the continual of national patterns after IAS/IFRS adoption. Kvaal and Nobes (2010) study 16 different policy choices and they find that pre-IAS/IFRS policies continued to be used after IAS/IFRS adoption when these policies were allowed by IAS/IFRS. Kvaal and Nobes (2012) study the change in policies between 2005/6 and 2008/9, and they find that companies from France and Spain made significantly more changes away from pre-IAS/IFRS requirements than companies from the UK and Australia. One explanation of these results is that continental European countries had been more passive when

facing IAS/IFRS but some of them, perhaps the more internationally oriented, are catching up. A final study closely related to our study is Vergauwe and Gaeremynck (2013) who study disclosure patterns of real estate companies in Europe after IFRS adoption. They study the 2005 to 2010 period and find that firms with low initial disclosure levels improved the levels but that differences in disclosure levels did not completely disappear.

Research question

The research reviewed above suggests that earnings, as well as disclosure quality, are associated with cultural dimensions, legal origin and with measures of legal and enforcement quality. We concluded in section 2 that the IAS 40 disclosure requirements about fair value measurements of investment properties were concise and basically only stated that the methods and significant assumptions applied in determining the fair value should be disclosed. These disclosure requirements can be described as "principle based" in the sense that they only included a basic principle for what to disclose and no rules or guidance on which assumptions that are significant enough to be disclosed. Arguably, the lack of rules and precise guidance open up for variability in practices between countries.

Based on the studies above legal origin, the enforcement quality in the country and cultural values related to secrecy versus transparency are plausible candidates for explaining variations in disclosure quality. The studies above have investigated different cultural dimensions but based on Gray (1988) we think the secrecy versus transparency dimension is a promising candidate for explaining variations in disclosure quality. Gray (1988) points out that this dimension is related to the preference for confidentiality and the restriction of disclosure of information about the business only to those who are closely involved with its management. The discussion is summarized in the following research question:

RQ: Are measures of legal origin, legal and enforcement quality, and secrecy associated with the quality of disclosures about assumptions underlying fair value measurements of investment properties?

4. Sample and research design

Data and sample characteristics

Our study is based on a sample of a maximum of 112 publicly traded real estate companies from the European Union. The data is from 2009. Companies in the European Union started to follow IFRS in 2005 and in 2009 they have had some time to exploit the flexibility of IFRS and adopt accounting policies that are in the interest of the company (Kvaal and Nobes 2012). However, in 2009 the financial crisis in European countries had not yet had too severe effects on the operations in the sector. The fair value method was used by 90 companies and the cost method was used by 22 companies, and 94 (83.9 %) of the companies used an external valuer.

The sample was composed as follows. We started with all publicly traded companies in the Orbis database reporting real estate activities (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 make up more than the half of the total property plant and equipment, thus it is the primary asset. Furthermore, as we collected complementary data from the financial statements of the companies, only companies whose financial statements were available on their websites were considered for inclusion in the sample. The above criteria led to an omission of 101 companies leaving 122 companies. Finally, any of the control variables, presented below, were missing for 10 companies leaving 112 observations. The mean (median) assets of the companies are €1,405 (408) million, and the mean (median) revenues are € 135 (40) million.

Data on disclosures were hand-collected from the notes to the consolidated financial statements by the authors of the study. The language knowledge of the co-authors facilitated the inclusion of companies whose financial statements were in English, Spanish, Italian, French, German, Danish, Swedish or Finnish. Financial statements for the year 2009 were used.

In Table 1, Panel A, we present summary evidence on the methods used to determine fair values of investment properties. It can be seen that 64.4 % of the companies in the sample used discounted cash flows (DCF), or another income based method, on a stand-alone basis or in combination with a market based approach. One-third of the companies in the sample are not disclosing enough information to make out what type of method that has been used as the basis for the fair value measurement. Below are a couple of examples illustrating what type of information the companies included in the "no clear information" disclosed in the notes:

London Associated Properties Plc (LAP) Ltd: "The valuations were made at open market value" and that "The valuation is undertaken by independent valuers who hold recognized and relevant professional qualifications and have recent experience in the locations and categories of properties being valued" (see LAP Annual Report 2009 pp. 39, 44).

The Local Shopping Reit Plc: "The valuations were undertaken in accordance with the Royal Institute of Chartered Surveyors Appraisal and Valuation Standards on the basis of market value. The fair value of investment properties are based on market values being an estimated amount for which a property could be exchanged on the date of the valuation under an arm's length transaction between a willing buyer and seller after proper marketing wherein the parties had acted knowledgeably, prudently and without compulsion" (see Local Shopping Reit Plc Annual Report 2009 p. 42).

The values of the investment properties of LAP and the Local Shopping REIT were £ 243 million and £ 174 million respectively in 2009. Above is the key information provided about the methods applied and it is not possible to figure out whether the fair value measurements of these companies are based on a market comparable approach (recent prices of sold properties) or discounted cash flows. Indeed, The Local Shopping Reit PLC mentions market value but goes on presenting a definition taken from RISC, which is the general definition of fair value. RISC standards allow different ways to calculate fair values. The definition "…market values being an

estimated amount for which a property could be exchanged on the date of the valuation under an arm's length transaction between a willing buyer and seller…" is also close to the general definition of fair value in IAS 40.36. These two companies, as well as 35 other ones in the sample, do not disclose whether they use a market approach or discounted cash flows as the basis for the valuation (compare IAS 40.46). The limited disclosures arguably reduce the possibilities for investors and other users of financial statements to assess the precision of fair value measurements.

Research design

Table 1, Panel A, shows that two-thirds of the companies in the sample use an income based approach on a stand-alone basis or in combination with a market comparable approach. Thus, we focus mainly on the disclosures in the notes of the assumptions underlying present value calculations in our analyses of disclosure quality. However, we report also some results on the disclosure of input variables in the valuations when a market comparable approach has been used.

We use variants of the following ordered logistic regression to test whether there are differences in disclosure practices between countries and whether differences vary with institutional and/or cultural factors.

(1) $$DISCLOSURE_i = \beta_0 + \beta_1*ORIGIN_{German} + \beta_2*ORIGIN_{English} + \beta_3*ORIGIN_{French} + \beta_4*ENFORCEMENT + \beta_5*SECRECY + \beta_6*OWN_{25\text{-}50} + \beta_7*OWN_{0\text{-}25} + \beta_8*LNREVENUES + \beta_9*\Delta LNREVENUES + \beta_{10}*BIG4 + \beta_{11}*SOLVENCY + \varepsilon$$

Dependent variables. Two self-developed disclosure indices, $DISCLOSURE_1$ and $DISCLOSURE_2$ are used in order to capture the quality of the disclosures of the significant assumptions applied in the fair value measurement as well as uncertainties related to the measurements. Our measures have some similarities with indices previously used for the study of disclosures in business combinations (Shalev 2009) and a study of CFO remuneration disclosures (Clarkson et al. 2006). However, a

difference is that IAS 40 seems to be less detailed in its disclosure requirements than the standards examined in these studies. A further difference is that we focus on fewer items. As in the studies mentioned above, we use equally weighted items.

The use of discounted cash flows requires estimates of future rent income less operating and other expenses as well as the choice of appropriate discount rates. Our disclosure indices comprise of the following key elements:

i. *The discount rate*. The disclosure of the discount rate facilitates a comparison between companies as well as between years. IAS 40 does not explicitly require the disclosure of the discount rate but the disclosure is required in a number of other situations, for example, for impairment tests of goodwill (IAS 36.134) , pensions (IAS 19.120A) and share-based compensation (IFRS 2.47). Thus, companies are likely to be familiar with the disclosure of discount rates from other settings. We code the variable COSTCAP with 1 if the company discloses the discount rates and/or yield rates.

ii. *Assumptions about expected rent income and operating expenses*. We code the variable OPINCEXP with 1 if quantitative information about the expected rent and/or operating expenses used in present value calculations has been disclosed. An illustrative example of when the variable is coded one is when a company has disclosed the max expected rents per square-meter for properties with different locations.

iii. *The vacancy rate*. The expected rent income depends on 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.

Our first disclosure measure ($DCF\_DISCLOSE_1$) is calculated as the sum of COSTCAP, OPINCEXP and VACANCY. Our second measure is, in addition to the variables above, based on the following variables.

iv. *The inflation rate*. The expected inflation rate influences both the expected revenues and operating costs as well as the discount rate. Thus, the disclosure of the expected inflation rate is potentially useful for investors and other users of financial reports as they assess the discount rate used in present value calculations. The variable INFLATION takes the value 1 if the expected inflation rate used in DCF calculations is disclosed in the notes.

v. *The change in the discount rate*. The variable ΔCOSTCAP takes the value one if the discount rate used in the previous year is disclosed in the notes. The disclosure of the change in discount rate implies that information that can used to evaluate if a company is neutral in its assumptions compared with earlier years is readily available. Indeed, because companies tend to report similar items from year to year, the previous year's discount rate typically can be found in the previous year´s annual report. However, if the assumptions are examined under time pressure, the disclosure may yet be of some value for investors and other users.

vi. *A sensitivity analysis*. Fair values based on present value calculations are influenced by the assumptions used in the calculations, and therefore, a sensitivity analysis in which it is assessed how changes in assumptions about rent revenues, property costs, rental vacancy levels or yield/discount rates affect fair values and net income of the company are likely to be relevant for investors. The variable SENSITIVITY takes the value one if any kind of quantitative sensitivity analyses of how fair values of investment properties, or net income, is influenced by changes in key input variables are disclosed in the notes to the financial statements.

The disclosure index DCF_DISCLOSE$_2$ is calculated as the sum of COSTCAP, OPINCEXP, VACANCY, INFLATION, ΔCOSTCAP, SENSITIVITY.

Test variables. Prior studies suggest that earnings quality and disclosure quality vary with legal origin, legal and enforcement quality and cultural factors (e.g., Jaggi and Low 2000; Hope 2003; Burgstahler et al. 2006; Braun and Rodriguez 2008). Based on LaPorta et al. (1998) we classify the countries in the study based on their legal origin into countries with an English origin, French origin, German origin and Scandinavian origin (ORIGIN$_{English}$, ORIGIN$_{French}$, ORIGIN$_{German}$, ORIGIN$_{Scandinavia}$). Kvaal and Nobes (2012) suggest national pre-IFRS patterns have an impact on accounting also after adoption of IFRS. The legal origin variables may also capture such effects. We discuss this issue in some detail below. Furthermore, following Daske et al. (2008) and Landsman et al. (2012), ENFORCEMENT is measured by the Rule of Law index presented by Kaufmann et al. (2010). Higher values represent countries with stricter enforcement regimes (Daske et al. 2008). The rule of law is according to Kaufmann et al. (2010: 4) capturing "capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence."

Gray (1988) suggests that the extent of secrecy should correlate with lower levels of disclosures. Following Hope et al. (2008) we construct a measure of secrecy (SECRECY) as the uncertainty avoidance (UA) and power distance (PD) scores less the individualism (IND) score according to Hofstede. The Hofstede cultural values are taken from http://geert-hofstede.com/ (retrieved May 2013) and are similar to the ones used by Hope et al. (2008).

Control variables. One would expect that larger companies have the incentive to provide higher quality disclosures because of 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 prior studies show that cost of capital is negatively associated with disclosure quality (Botosan 1997). Based on this, one would expect that growing companies, that may need external financing in the future, have higher quality of their disclosures. We include the growth in sales as a control (ΔLNREVENUES). Furthermore, studies suggest the relative importance of financial reports as a medium for communication is smaller if a company has concentrated ownership (e.g. Givoly et al. 2010). The ownership structure is measured with the indicator variables $OWN_{25\text{-}50}$ and $OWN_{0\text{-}25}$. The former variable takes the value one if the largest owner directly or indirectly controls between 25% and 50 % of the shares in the company. The latter variable takes the value one if the largest owner controls less than 25 % of the shares in the company. The companies whose largest owner controls more than 50 % are in the reference category. Prior studies suggest that the 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. We include a Big 4 indicator variable as a control (BIG 4). Finally, we also include SOLVENCY as a control variable in the regressions. The definitions of all variables used in the study are presented in Table 2.

5. Empirical results

Users of an income based approach

In Table 3 we present evidence on the disclosure indices as well as their components by country. Panel A reports evidence for companies using discounted cash flows on a stand-alone basis or in combination with a market comparable approach. This sub-sample includes companies using the fair value model and the cost model. Panel B includes evidence for the companies using the fair value model.

Overall, it can be seen from Table 3 that there are significant differences in the averages of the disclosure scores as well as in most of the components of the disclosure indices. The top three countries with respect to the disclosure of COSTCAP are Denmark, Sweden and Germany. More than 80% of the companies in these countries disclose the cost of capital according to Panel A. The two other components of $DISCLOSURE_1$ are VACANCY and OPEINCEXP and it can be seen from the table that a lower proportion of companies disclose these kinds of information. Companies from Finland and Sweden seem to report the expected vacancy rate more frequently than companies from other countries.

Of the components in $DISCLOSURE_2$ relatively many companies disclose a sensitivity analysis. The top four countries are Denmark, Finland and Sweden in which at least 50 % of the companies present a sensitivity analysis in the notes to the financial statements. In Germany 35.7 % and in Austria 33.3 % of the companies in the sample in Panel A disclose a sensitivity analysis. The proportions are somewhat higher in Panel B in which results are reported for companies using the fair value model.

Table 4 presents descriptive statistics on the dependent variables, test variables and control variables. Panel A in Table 4 shows that $DISCLOSURE_1$ takes values between 0 and 3 and its average value is 0.77. $DISCLOSURE_2$ varies between 0 and 6 with an average equal to 1.49. Furthermore, it can be seen from the table that 33.80 % of the companies are from Scandinavian origin countries, 23.94 % from German origin countries, 40.85 % from French origin countries and the remaining 1.41 % are from the U.K. The mean (median) values of ENFORCEMENT and SECRECY are 1.65 (1.64) and 39 (33) respectively.

Table 5 includes ordered logistic regression results. Panel A of the tables report evidence for the sub-sample of 71 companies using DCF on a stand-alone basis or together with a market approach. In Panel B we report results for the sub-sample of the 57 fair value users that use DCF on

a stand-alone basis or together with a market approach. In the regressions with origin as an explanatory variable, the single English origin observation is excluded leaving 70 or 56 observations for further analyses.

The correlations between the independent variables are low with the exceptions for the cultural and legal variables (SECRECY, ENFORCEMENT and $ORIGIN_i$). The correlations between ENFORCEMENT and SECRECY are -0.823 and -0.818 respectively for the sub-samples of all companies that use DCF and the fair value users that use DCF (not reported in tables). We therefore report results with all legal origin and cultural variables as well as results with only one test variable in each regression. The dependent variable is $DISCLOSURE_1$ in the left-hand regressions and $DISCLOSURE_2$ in the right-hand regressions in the table.

ENFORCEMENT is the test variable in regressions 1a, 2a, 1e, and 2e in Table 5 and the variable has positive coefficients significant at the 0.05 level in three regressions and at the 0.10 level in the final one. These results show that companies disclose more information about the assumptions underlying present value calculations of fair values in countries with a higher enforcement quality. Furthermore, it can be seen from Table 5 that the legal origin variables are significantly associated with the disclosure levels. The null hypotheses that the legal original variables are equal to zero can be rejected at least at the 0.05 level in all regressions in which the variables are included in Table 5. Companies with a Scandinavian origin are in the reference category in the regressions. Thus, the negative and significant coefficient of $ORIGIN_{France}$ implies that French origin companies disclose less information than Scandinavian origin countries.

A further observation that can be made from Table 5 is that SECRECY has negative coefficients significant at the 0.01 level in regressions 1b, 2b, 1f and 2f. This result is consistent with the notion that companies in “more secretive” countries disclose less information (Gray 1988; Hope et al. 2008). However, as can be seen from regressions 1d, 2d, 1h and 2h SECRECY, as well

as LEGAL, are either insignificant or have switched sign when all test variables are included in the regressions. The likely reason for this is the high correlation between ENFORCEMENT and SECRECY, implying that it is difficult to separate the effects of the legal environment and cultural factors. A high negative correlation is consistent with results in prior studies. For example, Hope et al. (2008) found that the correlation between legal and enforcement quality taken from LaPorta et al (1998) and secrecy is -0.74 in their study of more than 90,000 firm years from 37 countries. Our results were qualitatively similar when we replaced ENFORCEMENT with legal and enforcement quality based on LaPorta et al. (1998).

In conclusion, the results show that there are strong associations between disclosure and the legal variables as well as the cultural variable secrecy but we are not able to conclude whether the tendency to disclose more information in some countries than other ones is driven by legal or cultural factors. These results correspond with Hope (2003), who finds that both legal origin and culture are important in explaining disclosures. Indeed, besides culture and legal factors, a third factor that possibly could have an impact on disclosures is the tradition in the country. Research suggests that pre-IAS/IFRS accounting method choices and disclosure practices have an impact on choices and practices after IAS/IFRS adoption (Kvaal and Nobes 2010, 2012). Although also this is a plausible explanation to the results it should be noticed that fair value disclosures were new in most of the countries studied. The only country we are aware of that used a fair value model for investment properties before IAS/IFRS adoption is the UK. However, it is possible that practices related to disclosures in other accounting areas could have had an impact on fair value disclosures.

We conducted a number of additional analyses in order to study the robustness of the main results of the study. First, we attempted to exclude LNREVENUES, ΔLNREVENUES and OWN_i, which were insignificant in all regressions. These results were qualitatively similar to the ones reported in Table 5. Second, we attempted to include also the companies that did not disclose any clear information about whether they used DCF or a market comparable approach. It can be seen

from Table 1 that these make up 33.3 % of all companies in the sample. The inclusion of these companies increases the sample to 107 and 87 in Panels A and B respectively. The inclusion of these companies can be motivated on the ground that some of these companies might have used DCF for fair value measurements although this was not pointed out in the notes. However, the inclusion of the companies also increase the risk that we expect companies using a market comparable approach to disclose information related to assumptions in cash flow calculations. The following main changes in the results take place. SECRECY is insignificant in the regressions with it as the single test variable (significant in four regressions in Table 5), and ENFORCEMENT is significant at the 0.05 level in two and significant at the 0.10 level in one of the regressions. Thus, these results indicate a positive correlation between disclosure quality and ENFORCEMENT but no significant correlation with SECRECY.

Next we attempted to run the regressions on the sub-sample with companies only using DCF. This reduces the sample to only 36 companies in Panel A and we ran regressions comparable with regressions 1a, 1b, 2a and 2b but without LNREVENUES, ΔLNREVENUES and OWN_i. ENFORCEMENT received positive coefficient significant at the 0.01 levels and SECRECY negative coefficients significant at the 0.01 levels in these regressions. In conclusion, the results are qualitatively similar when some changes in the models and sample compositions are made.

Finally, we ran binary logistic regressions with each of the components of the disclosure measure as the dependent variable. For brevity, we only present the results for regressions with LEGAL and SECRECY as test variables. There was no variation in the outcome of the dependent variable for OWN_i in some of the regressions so in order to avoid a loss of observations, we ran the regressions without LNREVENUES, ΔLNREVENUES, FV and OWN_i. In Panel A, ENFORCEMENT had a positive coefficient significant at the 0.01 level in the regressions with VACANCY, SENSITIVITY and INFLATION. ENFORCEMENT had positive signs significant at the 0.05 level in the remaining regressions. SECRECY had negative coefficients at the 0.01 level in

all regressions with COSTCAP, SENSITIVITY and ΔCOSTCAP as the dependent variable. SECRECY had a negative coefficient significant at the 0.05 level in the regression with OPINCEXP as the dependent variable and a coefficient significant at the 0.010 level in the regression with INFLATION as the dependent variable.

In Panel B, ENFORCEMENT had a positive coefficient significant at least at the 0.05 level in regressions with VACANCY, SENSITIVITY and ΔCOSTCAP as the dependent variable. SECRECY had negative coefficients significant at least at the 0.05 level in regressions with COSTCAP, SENSITIVITY and ΔCOSTCAP as the dependent variable. Thus, most of the components are significant also at an stand-alone basis.

Users of a market comparable approach

It can be seen from Table 1 that 3.6 % of the companies in the sample used a market comparable approach at a stand-alone basis and that 32.1 % used a market comparable approach in combination with DCF.

However, investment properties are not traded at active markets so prices have to be adjusted to reflect differences in nature, location and condition between sold and owned properties (see IAS 40.46a-b). These adjustments arguably mean that some type of valuation technique has to be used: it is, for example, possible to calculate values of properties using (possibly adjusted) prices per square meter for sold properties as the basis for the valuation, but other approaches are possible. According to IFRS 13 terminology, the price per square meter is the input variable in the valuation and IFRS 13 stipulates that quantitative information on unobservable input variables should be disclosed (IFRS 13.93d).

An issue of interest is whether companies disclose the input variable in the valuation, namely how market prices have been used as the basis for the calculation of the value of the company's properties: have they used prices per square meter for sold properties as the starting point or has

another valuation technique been used? We studied if the companies disclose any information about these issues and find very little information in the notes.

Of the 39 companies in the sample that are using a market comparable approach together on a stand-alone basis or together with DCF, only two companies disclose satisfactory information about how fair values of the company's investment properties were calculated based on market prices. Below is the key information disclosed by the two companies:

"The general valuation principle responds to a multicriteria approach. The replacement cost is calculated by an expert on the basis of values according two methodologies: the discounted cash flow and the income approach. The results are compared with the initial return rate and the m2 market values of real and equivalent transactions". (source Fonciere Atland Annual Report 2009, p. 88) [own translation]

The following example is taken from CegeREAL Document de reference 2009, p. 34. [own translation]

***"Traditional method by comparison*:**
This classical method consists of comparing the assets valuation with other similar ones in nature and location that were the object of recent transactions…
According to the applied method it is considered the following common elements:
-location and geographical surroundings,
-transportation and other means of accessibility,
-architecture characteristics and building techniques (nature, structure, façade, coverage, services),
-age of the building and maintenance,
-nature, quality, number of parkings and maintenance,
-location rents,
-location values,
-period of time to finish the contract,
-expenses to pay by the tenant,
-tenant quality,
-time to commercialize, location and demand,
-importance of vacant shops,
-developments and works that have been done,
-competence,
-local market development of the asset."

Thus, Fonciere Atland points explicitly out, that prices per square meter have been used as the input variable in the valuation. CegeREAL, on the other hand, provides a qualitative description of the factors taken into account when adjustments are made. Indeed, although the list is thorough, it is difficult for a user of financial statements to get an understanding of the importance of each factor as well as the proximity of market prices and estimated values of the company's properties. The companies did not disclose the range of price per square meter used or any other similar quantitative information.

Observe that the two companies mentioned above provide very good information compared to the other ones using a market based approach. It can be concluded that the companies in the sample disclose very little information in the notes to the financial statements about the methods used and assumptions applied when current or recent prices for properties have been used as the basis for the valuation.

7. Conclusions

Many IAS and IFRS standards require substantial disclosures in the notes to the financial statements. The aim of extensive disclosures is to increase transparency but the disclosure requirements have also been criticized. For example, the European Financial Reporting Advisory Group argues in a recent discussion paper that there is a strong consensus in the financial community that disclosures in the notes have done little to improve the quality of information, and may have even decreased it because of information overload (EFRAG 2012). The report points out, among other things, that regulators opt for safety by using a checklist requirement approach. This means that the relevance of notes to the financial statements has become deteriorated. Furthermore, they argue in the report and that disclosure requirements should be principle based and detailed rules should be avoided (EFRAG 2012 pp. 3 and 6).

IAS 40 disclosure requirements are a notable exception from the rule that IAS/IFRS disclosure requirements are heavy. With respect to fair value disclosures, the standard only required companies to disclose the "methods and significant assumptions applied in determining the fair value of investment property". Different from many other standards, IAS 40 did not include any checklist with assumptions to disclose. Thus, the IAS 40 disclosure rules facilitates a study of some of the effects of disclosure requirements that are principle based and lack detailed requirements, which parallels some of the suggestions put forward in the EFRAG (2012) and ICAS and NZICA (2011) reports.

Using a sample with 112 publicly listed European Real Estate companies we find that 63.4 % of the companies use discounted cash flows (DCF) projections either at a stand-alone basis or in combinations with a market comparable approach. We construct disclosure indices aimed to capture the extent of the disclosures of key assumptions and uncertainties in the projections and find that there is significant cross-country variation in disclosures. The results indicate that disclosure quality is positively associated with an enforcement quality measure taken from Kaufmann et al. (2010), and negatively associated with a country level secrecy measure used by Hope et al. (2008) and based on Gray (1988). However, enforcement quality is strongly negatively correlated with secrecy so we not able to disentangle the effects of the variables.

These results indicate that disclosure rules, which lack detailed disclosure requirements opens up for different interpretations of which assumptions that are significant in different companies and countries. IASB is in IAS 40, and even more closely in IFRS 13, using a general definition of fair value that is based on the FASB definition of fair value. However, the general definition is not backed up with as detailed rules as in the U.S. Schipper (2005) points out that one important pre-condition for the development of harmonized practice is that the IASB issues detailed implementation guidance for applying IFRS. While we are not able to conclude from our data that detailed implementation guidance result in harmonized practice, our results strongly indicate that

the lack of detailed guidance results in considerable variation across countries. Without detailed rules and well functioning enforcement mechanisms, harmonization might be a desideratum.

We also conclude that slightly more than one-third of the companies in the sample use a market comparable approach on a stand-alone basis or in conjunction with DCF. However, markets for investment properties are not likely to be active, which means that current or recent prices can not typically be directly used but some adjustments for nature, location and condition have to be made. We found that companies disclose very little information about the techniques used to estimate the value of their properties from observed prices. A final noteworthy finding in the study is that one-third of the companies in our sample disclosed so scant information in the notes so that it was not possible to figure out whether an income approach, a market comparable approach or combination of these were used.

In sum, the results in the study show that it is in many cases hard to get a good picture of the methods used and significant assumptions applied in determining the fair value of investment properties. Indeed, one can ask whether these disclosures would be relevant for investors and other users of financial statements. This issue is beyond the scope of our study but arguably, detailed disclosures enable users to evaluate whether assumptions are likely to be neutral as well as the expected accuracy of the fair values.

Our study has one important limitation: as we studied the Annual Reports of the companies in the sample we only focused on the notes to financial statements. Companies can disclose information to shareholders in a number of other ways including the front part of the Annual Report, at the company's web-site or at "road-shows" where managers meet investors. We cannot rule out that, companies with ownership structures or from countries with scant information in financial statements to a large extent use other channels for the communication of fair value measurement practices to investors and other stakeholders. Thus, we leave this as a topic for further

study. A further question for future research is to examine the effects of IFRS 13 on disclosure practices.

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Table 1: Summary characteristics by country

Panel A: Accounting model and method used in determining the fair value of investment property

	AT	BE	DE	DK	ES	FI	FR	GB	GR	IE	IT	NL	SE	All
% using the fair value model	100.0 %	83.3 %	75.0 %	100.0 %	0.0 %	75.0 %	61.5%	95.7 %	100.0 %	100.0 %	50.0 %	100.0 %	100.0 %	79.5 %
Market comparable approach	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	4.4 %	33.3 %	0.0 %	50.0 %	0.0 %	0.0 %	3.6 %
Discounted cash flows	33.3 %	16.7 %	50.0 %	100.0 %	25.0 %	50.0 %	15.4 %	0.0 %	33.3 %	0.0 %	0.0 %	0.0 %	71.4 %	31.3 %
Combination of above	66.7 %	50.0 %	37.5 %	0.0 %	0.0 %	50.0 %	65.4 %	0.0 %	33.3 %	100.0 %	25.0 %	0.0 %	21.4 %	32.1 %
No clear information	0.0 %	33.3 %	12.5 %	0.0 %	75.0 %	0.0 %	19.2 %	95.7 %	0.0 %	0.0 %	25.0 %	100.0 %	7.1 %	33.0 %
N	3	6	16	7	4	4	26	23	3	1	4	1	14	112
Pearson Chi-square = 133.87***														

Panel B: Cultural and institutional variables by country

	AT	BE	DE	DK	ES	FI	FR	GB	GR	IE	IT	NL	SE	Mean
Legal origin	Ge	Fr	Ge	Sc	Fr	Sc	Fr	Eng	Fr	Eng	Fr	Fr	Sc	
ENFORCEMENT	1.79	1.36	1.64	1.92	1.13	1.97	1.43	1.73	0.62	1.74	0.35	1.80	1.96	1.58
SECRECY	26	84	33	-33	92	29	83	-19	137	-7	49	11	-11	36.46

Notes: The first row in the Panel A presents the proportion of companies that are using the fair value model under IAS 40. The remaining companies are using the cost model. A company was assigned one if it uses recent prices for similar properties as the basis for its fair value measurement. Discounted cash flows (DCF) takes the value one if the company uses DCF, or another income based method, for its fair value measurement. Combination of above takes the value one if a company uses recent prices for properties and DCF. No clear information takes the value one if it was not possible to find out from the information disclosed in the notes to the financial statements whether DCF or recent prices had been used in the fair value measurement. Ge=German origin, Fr=French origin, Eng=English origin. Legal is legal and enforcement quality according to LaPorta et al. (1998). The figures are taken from Burgstahler et al. (2006), Table 3. Secrecy is calculated as the sum of uncertainty avoidance and power distance scores less the individualism scores. The values are taken from http://geert-hofstede.com/ (retrieved May 2013), and corresponds with the ones used by Hope et al. (2008). Mean is the average scores for the countries included in the study.

Table 2. Variable definitions

COSTCAP	An indicator variable taking the value one if the discount rate used in DCF calculations for fair value measurements of IP is reported.
VACANCY	An indicator variable taking the value one if the expected vacancy rate in DCF calculations for fair value measurements of IP is reported.
OPINCEXP	An indicator variable taking the value one if information about how expected revenues and operating costs have been assessed in DCF calculations for fair value measurements.
SENSITIVITY	An indicator variable taking the value one if an analysis of how sensitive fair values are to changes in assumptions is disclosed in the notes to the financial statements
ΔCOSTCAP	An indicator variable taking the value one if the change in cost of capital assumptions in DCF calculations is reported.
INFLATION	An indicator variable taking the value one if information about inflation assumptions in DCF calculations has been reported.
MCINPUT	An indicator variable taking the value one if the input variable in the valuation is disclosed when a company is using a market comparable approach.
$DCF\_DISCLOSE_1$	Sum of: COSTCAP, VACANCY and OPEXP.
$DCF\_DISCLOSE_2$	Sum of: COSTCAP, VACANCY, OPEXP, SENSITIVITY, ΔCOSTCAP and INFLATION.
SECRECY	The sum of uncertainty avoidance (UA) and power distance (PD) scores less the individualism (IND) scores. The scores are from http://geert-hofstede.com/ (retrieved May 2013).
ENFORCEMENT	Enforcement is measured by the rule of law index for the year 2009. The index is taken from www.govindicators.org. The methodology used in the study is presented by Kaufamann et al. (2009).
$ORIGIN_{Scandinavia}$	An indicator variable taking the value one if the company is from a Scandinavian origin country (Denmark, Finland or Sweden).
$ORIGIN_{German}$	An indicator variable taking the value one if the company is from a German origin country (Germany or Austria).
$ORIGIN_{English}$	An indicator variable taking the value one if the company is from an English origin country (UK or Ireland).
$ORIGIN_{French}$	An indicator variable taking the value one if the company is from a French origin country (Belgium, France, the Netherlands, Greece, Italy, Spain).
OWN_{50-100}	An indicator variable taking the value one if the largest shareholder directly or indirectly controls between 50% and 100% of the shares.
OWN_{25-50}	An indicator variable taking the value one if the largest shareholder directly or indirectly controls between 25% and 50% of the shares.
OWN_{0-25}	An indicator variable taking the value one if the largest shareholder directly or indirectly controls between 0% and 25% of the shares.
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.
FV	An indicator variable taking the value one if the company is using fair value model and zero if it is using the cost model under IAS 40.

Table 3: Summary evidence on disclosures of assumptions disclosed by companies using DCF on a stand-alone basis or together with a market approach

Panel A: Companies using the fair value model or cost model.

	AT	BE	DE	DK	ES	FI	FR	GB	GR	IE	IT	NL	SE	Chi-square
COSTCAP	66.7 %	25.0 %	78.6 %	100.0 %	0.0 %	75.0 %	23.8 %	-	50.0 %	0.0 %	0.0%	-	92.3%	30.62***
VACANCY	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	50.0 %	0.0 %	-	0.0 %	0.0 %	0.0 %	-	38.5 %	25.12***
OPINCEXP	33.3 %	0.0 %	7.1 %	28.6 %	0.0 %	25.0 %	0.0 %	-	0.0 %	0.0%	0.0 %	-	7.7 %	10.29
SENSITIVITY	33.3 %	25.0 %	35.7 %	85.7 %	0.0 %	50.0 %	4.8 %	-	0.0 %	0.0%	0.0 %	-	53.9 %	22.27**
ΔCOSTCAP	33.3 %	0.0 %	42.9 %	57.1 %	0.0 %	50.0 %	4.8 %	-	0.0 %	0.0%	0.0 %	-	30.8 %	15.35
INFLATION	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	25.0 %	0.0 %	-	0.0 %	0.0%	0.0 %	-	69.2 %	41.92***
$DISCLOSURE_1$	1.00	0.25	0.86	1.29	0	1.50	0.24	-	0.50	0	0	-	1.38	4.60***
$DISCLOSURE_2$	1.67	0.50	1.64	2.71	0	2.75	0.33	-	0.50	0	0	-	2.92	6.25***
N	3	4	14	7	1	4	21	0	2	1	1	0	13	71

Panel B: Companies using the fair value model

	AT	BE	DE	DK	ES	FI	FR	GB	GR	IE	IT	NL	SE	Test
COSTCAP	66.7 %	25.0 %	80.0 %	100.0 %	-	66.7 %	23.1 %	-	50.0 %	0.0 %	0.0%	-	92.3%	25.13***
VACANCY	0.0 %	0.0 %	0.0 %	0.0 %	-	66.7 %	0.0 %	-	0.0 %	0.0 %	0.0 %	-	38.5 %	22.25***
OPINCEXP	33.3 %	0.0 %	10.0 %	28.6 %	-	33.3 %	0.0 %	-	0.0 %	0.0%	0.0 %	-	7.7 %	8.32
SENSITIVITY	33.3 %	25.0 %	50.0 %	85.7 %	-	66.7 %	7.7 %	-	0.0 %	0.0%	0.0 %	-	53.9 %	17.14**
ΔCOSTCAP	33.3 %	0.0 %	50.0 %	57.1 %	-	66.7 %	7.7 %	-	0.0 %	0.0%	0.0 %	-	30.8 %	12.85
INFLATION	0.0 %	0.0 %	0.0 %	0.0 %	-	33.3 %	0.0 %	-	0.0 %	0.0%	0.0 %	-	69.2 %	33.25***
$DISCLOSURE_1$	1.00	0.25	0.90	1.29	-	1.67	0.23	-	0.50	0	0	-	1.38	3.77***
$DISCLOSURE_2$	1.67	0.50	1.90	2.71	-	3.33	0.38	-	0.50	0	0	-	2.92	5.25***
N	3	4	10	7	0	3	13	0	2	1	1	0	13	57

Notes: *, **, *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. Significance levels for categorical variables are for Pearson Chi-square tests. The significance levels for $DISCLOSURE_i$ are based on one-way Anova, and test the null hypothesis that the disclosure average score is the same for all countries. Variables are explained in Table 2.

Table 4: Descriptive statistics of explanatory variables for companies using DCF on a stand-alone basis or together with a market approach

Panel A: Companies using the fair value model or cost model (N=71)

	Mean	Std. Dev.	Median	Min	Max
$DISCLOSURE_1$	0.77	0.76	1.00	0.00	3.00
$DISCLOSURE_2$	1.49	1.51	1.00	0.00	6.00
$ORIGIN_{Scandinavian}$	33.80 %	47.64 %	0 %	0 %	100 %
$ORIGIN_{German}$	23.94 %	42.98 %	0 %	0 %	100 %
$ORIGIN_{English}$	1.41 %	11.87 %	0 %	0 %	100 %
$ORIGIN_{French}$	40.85 %	49.50 %	0 %	0 %	100 %
ENFORCEMENT	1.62	0.33	1.64	0.35	1.97
SECRECY	39.00	45.23	33.00	-33.00	137.00
$OWN_{50\text{-}100}$	33.80 %	47.64 %	0 %	0 %	100 %
$OWN_{25–50}$	35.21 %	48.10 %	0 %	0 %	100 %
$OWN_{0–25}$	30.99 %	46.57 %	0 %	0 %	100 %
LNREVENUES	10.78	1.79	10.86	3.71	14.23
ΔLNREVENUES	0.21	0.58	0.09	-0.60	3.44
BIG4	66.20 %	47.64 %	100 %	0 %	100 %
SOLVENCY	34.73 %	21.03 %	30.19 %	-16.20 %	96.55 %
FV	80.28 %	40.07 %	100 %	0 %	100 %

Panel B: Companies using the fair value model (N=57)

	Mean	Std.Dev.	Median	Min	Max
$DISCLOSURE_1$	0.86	0.79	1.00	0.00	3.00
$DISCLOSURE_2$	1.74	1.56	2.00	0.00	6.00
$ORIGIN_{Scandinavian}$	40.35 %	49.50 %	0 %	0 %	100 %
$ORIGIN_{German}$	22.80 %	42.33 %	0 %	0 %	100 %
$ORIGIN_{English}$	1.75 %	13.25 %	0 %	0 %	100 %
$ORIGIN_{French}$	35.09 %	48.15 %	0 %	0 %	100 %
ENFORCEMENT	1.65	0.35	1.64	0.35	1.97
SECRECY	32.50	46.72	33.00	-33.00	137.00
$OWN_{50\text{-}100}$	42.11 %	49.81 %	0 %	0 %	100 %
$OWN_{25–50}$	33.33 %	47.56 %	0 %	0 %	100 %
$OWN_{0–25}$	24.56 %	43.43 %	0 %	0 %	100 %
LNREVENUES	10.75	1.69	10.86	3.71	13.71
ΔLNREVENUES	0.26	0.63	0.10	-0.60	3.44
BIG4	63.16 %	48.67 %	0 %	0 %	100 %
SOLVENCY	34.77 %	19.22 %	31.58 %	-16.20 %	92.81 %

Table 5: Ordered logistic regression results

Panel A: Companies using the fair value model or cost model

	Dependent variable = $DCF\_DISCLOSE_1$								Dependent variable = $DCF\_DISCLOSE_2$							
	Reg. 1a		**Reg. 1b**		**Reg. 1c**		**Reg. 1d**		**Reg. 2a**		**Reg. 2b**		**Reg. 2c**		**Reg. 2d**	
	Coeff	**T-value**	**Coeff**	**T-value**	**Coeff**	**T-value**	**Coeff**	**T-value**	**Coeff**	**T-value**	**Coeff**	**T-value**	**Coeff**	**T-value**	**Coeff**	**T-value**
ENFORCEMENT	5.35	2.22**	-	-	-	-	-0.32	0.43	5.29	2.71***	-	-	-	-	-0.58	0.69
SECRECY	-	-	-0.03	3.90***	-	-	0.04	2.44**	-	-	-0.03	5.10***	-	-	0.01	0.93
$ORIGIN_{German}$	-	-	-	-	-1.52	2.94***	-3.35	2.96***	-	-	-	-	-1.39	3.01***	-2.27	2.29**
$ORIGIN_{French}$	-	-	-	-	-4.08	7.59***	-7.87	4.23***	-	-	-	-	-4.02	12.42***	-5.84	3.89***
$OWN_{25–50}$	-0.42	0.54	-0.05	0.07	-0.25	0.34	-0.76	1.09	-0.12	0.14	0.33	0.38	0.15	0.17	-0.06	0.06
$OWN_{0–25}$	-0.26	0.43	0.07	0.13	-0.52	0.80	-0.75	1.21	0.17	0.30	0.52	0.88	0.06	0.09	-0.02	0.03
FV	0.74	1.73*	0.50	1.16	0.98	1.38	1.19	1.61	1.21	2.46**	0.97	1.83*	1.57	1.81*	1.67	1.90*
LNREVENUES	-0.01	0.04	-0.01	0.06	-0.04	0.17	-0.04	0.18	-0.03	0.22	-0.03	0.17	-0.06	0.29	-0.05	0.28
ΔLNREVENUES	-0.39	0.90	-0.38	0.97	-0.53	1.03	-0.59	1.14	-0.41	0.90	-0.49	1.26	-0.57	1.17	-0.59	1.16
BIG4	0.59	2.34**	0.76	2.38**	1.06	2.95***	1.17	3.74***	0.75	2.16**	0.98	2.47**	1.23	2.71***	1.30	2.95***
SOLVENCY	-0.02	1.28	-0.01	0.57	-0.02	1.16	-0.03	1.65	-0.02	2.12**	-0.01	0.99	-0.02	1.81*	-0.03	1.94**
Pseudo R2	0.22		0.21		0.30		0.32		0.20		0.20		0.27		0.27	
N	71		71		70		70		71		71		70		70	

Table continues

Panel B: Companies using the fair value model

	Dependent variable = $DCF\_DISCLOSE_1$								Dependent variable = $DCF\_DISCLOSE_2$							
	Reg. 1e		Reg. 1f		Reg. 1g		Reg. 1h		Reg. 2e		Reg. 2f		Reg. 2g		Reg. 2h	
	Coeff	T-value	Coeff	T-value	Coeff	T-value	Coeff	T-value	Coeff	T-value	Coeff	T-value	Coeff	T-value	Coeff	T-value
ENFORCEMENT	4.26	1.70*	-	-	-	-	-0.68	0.99	4.46	2.20**	-	-	-	-	-0.87	1.35
SECRECY	-	-	-0.02	3.27***	-	-	0.04	2.29**	-	-	-0.03	5.15***	-	-	0.01	0.82
$ORIGIN_{German}$	-	-	-	-	-1.19	2.38**	-3.19	2.38**	-	-	-	-	-1.09	3.64***	-2.00	2.07**
$ORIGIN_{French}$	-	-	-	-	-3.79	6.06***	-8.00	3.68***	-	-	-	-	-3.96	9.90***	-5.90	3.83***
$OWN_{25–50}$	0.25	0.27	0.54	0.62	0.52	0.60	-0.02	0.03	0.64	0.61	1.00	0.94	1.05	0.96	0.82	0.65
$OWN_{0–25}$	0.20	0.29	0.46	0.68	-0.12	0.15	-0.40	0.53	0.61	0.91	0.90	1.22	0.50	0.58	0.39	0.41
LNREVENUES	-0.03	0.19	-0.01	0.04	-0.10	0.48	-0.10	0.55	-0.11	0.65	-0.08	0.48	-0.19	1.07	-0.18	1.05
ΔLNREVENUES	-0.23	0.41	-0.27	0.54	-0.56	0.96	-0.67	1.21	-0.32	0.57	-0.45	0.94	-0.68	1.27	-0.75	1.34
BIG4	0.45	1.58	0.61	1.80*	0.91	2.82***	1.10	3.61***	0.60	1.61	0.82	1.96**	1.14	2.54**	1.27	2.95***
SOLVENCY	-0.04	3.05***	-0.04	2.61***	-0.04	2.06**	-0.05	2.34**	-0.03	2.66***	-0.03	1.92*	-0.03	1.75*	-0.03	1.72*
Pseudo R2	0.22		0.21		0.31		0.33		0.18		0.19		0.26		0.26	
N	57		57		56		56		57		57		56		56	

Notes: *, **, *** denote two-tailed statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. Robust standard errors clustered by country are used. The variables are defined in Table 2.

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