Recognition versus Disclosure of Fair Values

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ABSTRACT: This paper examines the relative earnings informativeness of recognized versus disclosed fair values. While prior literature documents valuation differences across recognized versus disclosed financial information, it is silent on attributing such differences across two theoretical causes: lower reliability of the disclosed information, and/or its incomplete processing by investors. To address this issue, we use the unique setting of European real estate firms reporting under International Financial Reporting Standards, which require that the fair values of investment properties either be recognized on the balance sheet ("recognition firms") or disclosed in the footnotes ("disclosure firms"). Using this latter disclosure, we obtain comparable earnings constructs that include unrealized fair value changes for both sets of firms. We find that fair value-based earnings is less informative for disclosure firms, consistent with greater noise in disclosed versus recognized fair values. Further evidence supports lower reliability of disclosed fair values—reflected in improved earnings informativeness for those disclosure firms using external appraisers to derive fair value estimates—but fails to support incomplete processing of disclosed information by investors. Overall, these findings are consistent with lower reliability of disclosed fair values explaining its lower earnings informativeness relative to recognized fair values.

Keywords: fair value; recognition; disclosure; earnings informativeness; IFRS; investment property

Data Availability: data are available from public sources identified in the manuscript.

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I. INTRODUCTION

This paper examines the effect of recognition versus disclosure of fair values on earnings informativeness. While prior research documents valuation differences across recognized versus disclosed financial statement items, it fails to distinguish between two potential explanations: appropriate discounting of disclosed information due its lower reliability, and/or investor fixation on recognized information and thus incomplete processing of disclosed items (Bernard and Schipper 1994). Accordingly, we build on this literature by examining whether earnings based on disclosed fair values is less informative relative to that based on recognized fair values, and whether any such differences are attributable to lower *ex ante* reliability and/or incomplete processing by investors of disclosed fair values.

We choose as our setting investment property (i.e., real estate) firms domiciled in the European Union (EU) and reporting under International Financial Reporting Standards (IFRS) over the period 2005 through 2009. This setting reflects several unique advantages. First, it provides a group of firms having a homogenous primary operating asset for which fair value information is highly relevant: investment property, representing over 70% of the sample firms' total assets. Second, it provides a key source of variation across the recognition versus disclosure of fair values for these assets. Specifically, IFRS require firms to either recognize investment property fair values on the balance sheet with changes recognized in net income (we designate these as "recognition firms"), or disclose these fair values in the footnotes, with the balance sheet and income statement reflecting an amortized-cost basis (we designate these as "disclosure firms"). Third, this single-industry setting minimizes cross-industry variation that can affect earnings informativeness; further, this industry minimizes potential alternative effects likely present in other industries having

substantial fair value reporting (e.g., regulation in the banking industry). Finally, this setting provides an economically significant sample of almost 200 publicly-traded firms with an aggregate market value of over €150 billion.

We develop and test three expectations. First, to examine whether recognition versus disclosure affects earnings informativeness, we build on prior research that characterizes earnings informativeness as the ability of financial statement elements to capture or summarize information (Francis and Schipper 1999). Accordingly, we model earnings as a signal; noise in this signal can reduce the price reaction to it (Holthausen and Verrecchia 1988). Earnings in the real estate industry is characterized by three main components: rental income; realized gains/losses due to property disposals; and unrealized gains/losses on value changes of retained property. Because these firms typically hold property portfolios for long time periods, this latter component often represents the most significant change in firm value. The earnings of recognition firms reflects all three components, as all changes in fair values flow through net income for these firms. In contrast, the earnings of disclosure firms excludes unrealized gains and losses. To allow direct comparisons of earnings across the recognition and disclosure firm groupings, we use the mandatory fair value disclosures to restate earnings of disclosure firms to include these unrealized gains and losses. Following the literature on recognition versus disclosure (Bernard and Schipper 1994), we expect disclosed financial data will be underweighted by investors relative to recognized data. That is, we expect the fair value-based earnings of disclosure firms to have lower informativeness relative to that of recognition firms.

Next, we examine two potential explanations for observed differences across recognition versus disclosure: 'differential reliability' (i.e., that markets are efficient, and appropriately view disclosed information as having lower reliability); or 'incomplete processing' (i.e., that markets are inefficient). Under differential reliability, disclosed

information is viewed as containing greater noise (i.e., more measurement error), owing to greater scrutiny of recognized data by both internal (e.g., management) and external (e.g., auditor) forces. Thus, we examine the role of reliability in observed differences in earnings informativeness across recognition versus disclosure. Our industry setting is unique through its use of a critical monitor—the external appraiser—which provides a strong measure of *ex ante* reliability (e.g., Dietrich et al. 2001). Accordingly, we expect that disclosure firms can improve earnings informativeness through greater *ex ante* reliability of their fair value measures, evidenced via use of an external appraiser. Related, we examine whether incomplete processing accounts for any differences in earnings informativeness across the recognition and disclosure firm groupings. Under this theory, more sophisticated (less sophisticated) investors are better able (less able) to value reporting signals. To proxy for sophisticated investors, we use the percentage of closely held shares, which should reflect owners having greater access to underlying economic value changes. Accordingly, we expect that earnings informativeness of disclosure firms to be increasing for those firms having a higher percentage of such investors.

Empirical results reveal that earnings informativeness is lower for disclosure firms relative to recognition firms, consistent with equity market participants viewing the earnings of disclosure firms as containing greater noise. We further find support for the differential reliability explanation, as earnings informativeness for disclosure firms increases for those disclosure firms employing external appraisers. This is consistent with equity market participants viewing earnings of disclosure firms using external appraisers as having higher reliability. We fail to find support for the incomplete processing explanation, as we fail to find evidence that earnings informativeness is higher for disclosure firms with higher levels of closely held shares. These results are consistent across a wide range of sensitivity analyses including: controlling for self-selection of firms into the recognition versus disclosure

groupings; using a balance sheet (versus returns) specification; and incorporating earnings changes as explanatory variables into the specification. Overall, we conclude that earnings informativeness is lower when based on disclosed versus recognized fair values, and this appears attributable primarily to the lower *ex ante* reliability of disclosed fair values.

This paper makes two primary contributions. First, we document that the informativeness of earnings is lower for firms disclosing versus recognizing fair values for non-financial assets. This suggests that earnings signals derived from disclosed financial information are noisier relative to those derived from recognized financial information. As such, we extend previous findings of valuation differences across recognized versus disclosed reporting items (e.g., Davis-Friday et al. 1999; Ahmed et al. 2006) to the fair value setting. Second, we address the reason for this finding by documenting that greater *ex ante* reliability of disclosed information—reflected in the use of an external monitor—increases earnings informativeness. This latter finding is consistent with market agents in an efficient market perceiving disclosed information as having lower reliability. Both findings contribute to previous studies on recognition versus disclosure (Bernard and Schipper 1994), as well as to the literature on fair value reporting by documenting that disclosure and recognition are not substitutes. However, the informativeness of financial constructs—such as earnings—derived from disclosed fair value data can be enhanced through commitments to greater *ex ante* reliability, such as use of an external appraiser.

Section II provides background on the institutional setting of the European investment property industry and related financial reporting. Section III reviews the prior literature and hypothesis development. Section IV describes the research design. Section V presents the primary empirical results, and Section VI the sensitivity results. Section VII concludes.

II. INSTITUTIONAL SETTING

To examine how recognition versus disclosure of fair values affects earnings informativeness, we choose the European investment property industry as our setting. This business model involves acquiring real estate properties, either through purchase, lease, or development, and then managing and selling them to generate profits through rentals and/or capital appreciation.[1] Accordingly, the economic earnings for our sample firms consists of three primary components: realized rental income; realized disposal gains/losses on sold properties; and unrealized gains/losses on retained properties. By reflecting different elements of value change, we expect each component to be relevant to investors.

This setting provides simultaneous observation of recognized and disclosed fair values for our sample firms' most significant asset class: investment property, which averages over 70% of total assets. Following the EU's mandated adoption of IFRS for public firms' consolidated accounts in 2005, the investment property industry applies International Accounting Standard 40 (IAS 40), *Investment Property* (IASB, 2003). IAS 40 allows firms a choice for presenting their investment property assets under either the 'fair value model' or the 'cost model.' Under the fair value model, firms recognize investment properties on the balance sheet at fair value, with fair value changes recognized in net income. Under the cost model, firms recognize investment properties on the balance sheet at amortized cost subject to impairment, with mandatory footnote disclosure of fair values. Accordingly, IAS 40 mandates that *all* firms present fair values for their primary operating asset (investment property), using either recognition (i.e., under the fair value model) or disclosure (i.e., under the cost model). Throughout this paper, we refer to firms choosing the fair value model as "recognition firms," and to firms choosing the cost model as "disclosure firms."

[1] Thus, investment property differs from real estate assets used for production or administrative purposes.

The income statement depiction of this business model thus differs across these two firm groupings. Specifically, the reported earnings of recognition firms reflect all three earnings components described above, while the reported earnings of disclosure firms omits unrealized investment property fair value gains on retained property.[2] The latter is likely a key component of firm performance as our sample firms typically have long investment horizons, making unrealized changes in property fair values a relevant component of economic earnings for investors. We use the mandated disclosure of fair values by disclosure firms to derive "fair value-based" earnings constructs for these firms.[3] This allows comparisons of the informativeness of recognition firms' reported earnings with that of disclosure firms' restated, equivalent "fair value-based" earnings.

Our setting also allows us to investigate whether any differences in earnings informativeness are explained by variation in the reliability of fair value measurement ('differential reliability'), or by the extent to which disclosed fair value information is processed by investors ('incomplete processing'). Regarding variation in reliability, IAS 40 recommends, but does not require, use of an external appraiser to derive fair value estimates under either model. Accordingly, we exploit variation in our sample firms' deriving of fair value estimates through either external appraisers or internal valuations. To the extent that external appraisers act as alternative monitors, the (perceived) *ex ante* reliability of investment property fair values should be higher for fair values calculated by external appraisers, relative to fair values estimated by internal staff. Regarding the processing of recognized versus disclosed fair value information by investors, our setting is characterized by sample firms having a diverse ownership base. To the extent that more sophisticated

[2] The reported earnings of disclosure firms will include unrealized investment property fair value *losses* on retained property where existing asset impairment rules under IFRS trigger asset write-offs to the extent that investment property fair values fall below amortized cost-based carrying amounts.

[3] Appendix A explains our calculation of restated fair value-based earnings for disclosure firms.

investors process disclosed information more fully than less sophisticated investors, the degree of information processing should vary with a measure of investor sophistication.

In summary, the European real estate industry setting provides the following unique advantages that allow us to contribute to the recognition versus disclosure literature. First, this industry is characterized by a single primary operating asset: investment property, for which fair value information is highly relevant. Second, while fair value accounting is increasingly prevalent within financial reporting, few settings allow simultaneous observation of recognized and disclosed fair values for a single, material asset class. The investment property industry provides this latter variation, as well as observed variation in other pertinent attributes (including in *ex ante* reliability of these fair value estimates, as well as in investor sophistication) that we exploit in our analyses. Third, this single-industry setting minimizes variation in institutional factors that can affect inferences about earnings informativeness. Related, most other settings exhibiting fair value reporting are also subject to substantial regulations (such as banks and insurance firms), which complicate both implementation (e.g., as regulations can differ across countries) and inferences (e.g., as attribution to financial reporting requirements can be confounded by alternative regulatory requirements). Finally, the investment property industry is well-developed, with close to 200 publicly-traded firms domiciled in Europe. This provides both a sufficient sample size, as well as an economically significant group of firms with a combined market capitalization of over €150 billion.

III. PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

Prior Literature

This paper builds on two streams of literature. First, we add to the literature analyzing whether recognition versus disclosure of financial reporting information has differential

valuation implications (Bernard and Schipper 1994).[4] Prior papers provide evidence that disclosed items have some association with market measures, particularly equity prices (e.g., Landsman 1986; Harris and Ohlson 1987; Barth 1991). However, while experimental research suggests that recognition versus disclosure influences financial statements users' perceptions (e.g., Harper et al. 1987; Bloomfield and Libby 1996; Viger et al. 2008), empirical papers are inconclusive on whether disclosed information is processed *completely* (e.g., Landsman and Ohlson 1990; Amir 1993; Hall 1993; Barth 1994), and whether recognition and disclosure are *equivalent* in terms of their capital-market implications (Aboody 1996; Davis-Friday et al. 1999; Espahbodi et al. 2002; Ahmed et al. 2006). The latter issue has been addressed by exploiting cross-sectional variation (i.e., management having discretion to recognize or disclose an item, such as the oil and gas industry in Aboody 1996), as well as intertemporal variation (i.e., mandatory accounting changes moving reported items from required disclosure to required recognition, such as reporting for post-retirement benefits in Davis-Friday et al. 1999). One challenge facing the latter studies is that concurrent changes in the information properties can provide an alternative explanation for differential valuation across recognition and disclosure.

Importantly, prior papers do not address the potential explanations for observed differences across recognized versus disclosed amounts: 'differential relevance/reliability' and 'incomplete processing' (Bernard and Schipper 1994).[5] Differential relevance/reliability suggests that disclosed amounts are appropriately viewed by agents in an efficient market as having lower relevance and/or reliability. In contrast, incomplete processing suggests that

[4] There is little evidence on whether recognition versus disclosure affects contracting in financial reporting.

[5] One exception is Choudhary (2011), which examines fair values of employee stock options. The paper provides evidence consistent with firms reporting under a recognition regime having different incentives than firms reporting under a disclosure regime, which translates into differential degrees of 'quality' for recognized versus disclosed information. However, Choudhary (2011) does not address the valuation implications of the information characteristics stemming from these differences in reporting incentives.

capital-market participants do not fully incorporate information residing in disclosed amounts; this casts doubt on market efficiency.

The second stream of literature we build upon examines the relation of fair values and equity prices. Several earlier studies provide evidence that disclosed fair values of financial instruments (e.g., Eccher et al. 1996) and some non-financial asset classes (e.g., Easton et al., 1993) are value relevant: that is, reflected in stock prices. Other studies document that mandatory disclosure of fair values reduces information asymmetry (e.g., Muller et al. 2011), and that information asymmetry and information risk are lower when fair value disclosures are more reliable (Muller and Riedl 2002; Riedl and Serafeim 2011).

This paper combines these two literatures by examining how the recognition versus disclosure of fair values for non-financial assets affects the informativeness of earnings. Accordingly, we contribute to the literature on recognition versus disclosure by identifying a setting in which recognition and disclosure are concurrently allowable alternatives for an asset class that is highly material to sample firms' business model, allowing stronger tests (Bernard and Schipper 1994). Furthermore, because our setting provides observable variation on measures of *ex ante* (perceived) fair value reliability as well as investor sophistication, our tests speak directly to the 'differential relevance/reliability' and 'incomplete processing' explanations for observed valuation differences across recognition and disclosure. This paper also contributes to the fair value literature by providing evidence on the interactive effects of financial statement 'geography' (i.e., recognition versus disclosure) and fair value reliability on the informativeness of earnings.

Hypothesis Development

Our analysis focuses on earnings informativeness, defined as the ability of earnings to capture or summarize information reflected in equity prices (Francis and Schipper 1999). Its

empirical implementation is motivated by models such as Holthausen and Verrecchia (1988) and Kothari (2001): noise in a signal reduces the price reaction to the signal (Hanlon et al. 2008). Noise (η_t) is defined as the difference between reported earnings (E_t) and economic earnings (e_t): $E_t = e_t + \eta_t$. We model noise to have mean zero and variance σ_η. Therefore, in regressions of returns on earnings, earnings that is less noisy is more informative, implying a higher coefficient on earnings.[6] Following Hanlon et al. (2008) for the basic regression of returns on earnings, we substitute stock returns (R_t) as a proxy for economic earnings, and reported earnings (E_t) for $e_t + \eta_t$. Hence, the coefficient on earnings is $\frac{\sigma_e^2}{\sigma_e^2 + \sigma_\eta^2}$, assuming e_t and η_t are uncorrelated.[7]

Our first hypothesis predicts *whether* recognition versus disclosure of fair values affects earnings informativeness in our investment property setting. Recall from above three relevant characteristics of this setting. First, our sample firms' business model generates three primary components of *economic* earnings: realized rental income; realized disposal gains/losses on sold properties; and unrealized gains/losses on retained properties. Second, consistent with IAS 40, we classify firms either as "recognition firms" (wherein investment property fair values are recognized on the balance sheet, and changes in fair value recognized in net income) or "disclosure firms" (wherein investment property is recognized at amortized cost on the balance sheet, with mandatory footnote disclosure of these fair values). Third, the reported earnings of recognition firms reflects all three economic earnings components, whereas that of disclosure firms omits unrealized investment property fair value gains on retained property. Accordingly, we use the mandated disclosures of fair values to restate the

[6] The R^2 from this regression captures the explained variation in the returns-earnings relation, and is an alternative measure of informativeness. However, consistent with prior literature, we do not focus on this measure (e.g., Francis et al. 2005, footnote 1).

[7] We refrain from referring to this coefficient as the "earnings *response* coefficient" (ERC) because our tests are based on long-window associations, rather than short-window reactions. For simplicity, we further assume no bias in fair value-based earnings (such as unconditional conservatism).

reported earnings of disclosure firms to reflect these unrealized fair value changes, and thus derive comparable earnings constructs across the recognition firms and disclosure firms (see Appendix A for details).

If stock returns fully capture firms' economic earnings, and if earnings reflects equivalent degrees of measurement error (noise), then we expect identical earnings informativeness for recognition firms and disclosure firms. Conversely, if the extent to which stock returns capture economic earnings, and/or the degree of measurement error in earnings, is lower for disclosure firms' earnings, we expect lower earnings informativeness for these firms. These considerations lead to the following hypothesis:

H_1: The informativeness of fair value-based earnings for "disclosure firms" is lower than that for "recognition firms."

Our second set of hypotheses examines *why* recognition and disclosure have different degrees of earnings informativeness. As discussed previously, prior literature proposes two potential explanations regarding lower valuation of disclosed items relative to recognized items: 'differential relevance/reliability' and 'incomplete processing' (Bernard and Schipper 1994). Under 'differential relevance/reliability,' differential informativeness of recognition firms' and disclosure firms' earnings is attributable to lower relevance and/or reliability of the disclosed information underlying disclosure firms' earnings. Under 'incomplete processing,' this differential informativeness is attributable to investors' incompletely processing the disclosed information underlying disclosure firms' earnings. Note that the 'differential relevance/reliability' explanation is consistent with disclosure firms' earnings having higher measurement error, whereas the 'incomplete processing' explanation is consistent with returns not fully capturing economic earnings for disclosure firms. Distinguishing between these alternative explanations is important, as 'incomplete processing' implies mispricing and potentially negative capital allocation consequences,

whereas 'differential relevance/reliability' is consistent with investors in efficient markets rationally discounting the earnings of disclosure firms.

This distinction has eluded prior literature; our European real estate industry setting allows us to provide direct evidence speaking to both potential explanations. Regarding 'differential relevance/reliability,' we assume that fair value information is equally *relevant* for the investors of recognition firms and disclosure firms. Therefore, differences in earnings informativeness should reflect lower *reliability* of disclosed relative to recognized investment property fair values; for expositional convenience, we thus focus on 'differential reliability.' Specifically, we expect that recognized fair values are subject to greater internal (i.e., by management) as well as external (e.g., by auditors or other monitors) scrutiny, and are therefore more reliable than disclosed fair values. Less reliable fair value estimates, *ceteris paribus*, introduce more noise into the earnings component reflecting unrealized fair value changes. Accordingly, we expect that lower informativeness of earnings observed for disclosure firms can be attenuated through higher reliability of disclosure firms' investment property fair value estimates. This leads to the following hypothesis:

H_{2A}: The lower informativeness of fair value-based earnings of "disclosure firms" relative to that of "recognition firms" is attenuated through higher reliability of the fair value measures.

Regarding 'incomplete processing,' we expect that less sophisticated investors, *ceteris paribus*, will face higher information processing costs with respect to disclosed information, causing them to underweight such information relative to more sophisticated investors. Accordingly, we expect that any lower earnings informativeness for disclosure firms is attenuated through higher sophistication of investors. This leads to the following hypothesis:

H_{2B}: The lower informativeness of fair value-based earnings of "disclosure firms" relative to that of "recognition firms" is attenuated through higher investor sophistication.

IV. RESEARCH DESIGN

Following Easton and Harris (1991), Francis et al. (2005) and Hanlon et al. (2008), we assess earnings informativeness by examining the slope coefficients from regressions of annual returns on annual earnings. Specifically, we base our tests on the following model:[8]

$$R_{it} = \alpha_0 + \alpha_1 E_{it} + \sum_{k=2}^{5} \alpha_k \, (E_{it} \times Controls_{it}^{k}) + \varepsilon_{it} \qquad (1)$$

where:

R_{it} firm *i*'s cumulative stock return, measured by the total return index, starting three months after fiscal year *t-1* and ending three months after fiscal year *t*;[9] and

E_{it} for "recognition firms" ("disclosure firms") is firm *i*'s reported earnings for fiscal year *t* (is firm *i*'s reported earnings for fiscal year *t* adjusted for measuring investment property at fair value), scaled by market value of equity at the beginning of year *t*.[10]

Data for all variables is obtained from Worldscope; data for adjusting the earnings of disclosure firms is hand-collected from annual reports. A significantly positive coefficient α_1 would indicate the usefulness of earnings as a summary measure of information affecting firm value, given other explanatory factors for stock returns.[11]

Prior literature has identified several firm-specific factors that influence the coefficient relating earnings and returns. Accordingly, we augment this model with a vector of control variables (*Controls*), each interacted with *E*, to isolate the effect of noise on earnings informativeness:

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[8] Our main analysis uses a regression of returns on earnings levels. Results are unchanged using regressions of returns on earnings changes, as well as returns on earnings levels and changes (see Section VI).

[9] We truncate *R* at the 5th and 95th percentiles in order to mitigate the effect of extreme outliers. As we compare the ability of accounting earnings to capture economic earnings, winsorizing would potentially yield inadequate comparisons.

[10] Appendix A details the restatement of disclosure firms' reported earnings to "fair value-based" earnings.

[11] Our primary analyses are pooled OLS regressions with firm-clustered, robust standard errors. Results (untabulated) are unchanged to conducting fixed-effects panel regressions with robust standard errors.

$Size_{it}$ for "recognition firms" ("disclosure firms") is firm *i*'s reported total assets (total assets adjusted to reflect measuring investment property at fair value), measured at the end of fiscal year *t*, in millions;[12]

MTB_{it} for "recognition firms" ("disclosure firms") is firm *i*'s market capitalization, divided by firm *i*'s reported common equity (divided by firm *i*'s common equity adjusted to reflect measuring investment property at fair value), both measured at the end of fiscal year *t*;

$Loss_{it}$ is an indicator variable equal to 1 if firm *i*'s E_{it} is negative, and 0 otherwise; and

Lev_{it} for "recognition firms" ("disclosure firms") is firm *i*'s reported short-term plus long-term debt, divided by the firm's total assets (divided by the firm's total assets adjusted to reflect measuring investment property at fair value), both measured at the end of the fiscal year *t*.

First, we include firm size (*Size*). While earlier studies predict greater size will reduce earnings informativeness, due to greater anticipation of accounting earnings for larger firms, (e.g., Freeman 1987), Chaney and Jeter (1992) provides evidence that the broader set of information available for large firms enables market participants to interpret financial statement information more completely, leading to decreased uncertainty; accordingly, we do not predict the sign of the coefficient interacting earnings and *Size*. Second, we include the market-to-book ratio (*MTB*). As growth opportunities have a positive effect on observed coefficients on earnings (Collins and Kothari 1989), we predict a positive coefficient on the interaction of earnings and *MTB*. Third, we include an indicator variable for reported losses (*Loss*). As losses are more transitory than profits (Hayn 1995), we predict a negative coefficient interacting earnings and *Loss*. Finally, we include leverage (*Lev*). As higher leverage reflects greater default risk, which reduces the coefficient on earnings (Dhaliwal et al. 1991), we predict a negative coefficient on the interaction of earnings and *Lev*.[13]

[12] Inferences are unchanged to alternative size measures, including use of natural logarithm of total assets.

[13] Note that all control variables for the disclosure firms are based on accounting numbers adjusted to reflect investment property fair values, which should better reflect these firms' underlying economics. Results are qualitatively unchanged using control variables based on disclosure firms' as-reported accounting numbers.

To assess our hypotheses, we augment Equation (1) as follows. H_1 predicts that the informativeness of fair value-based earnings is lower for firms disclosing fair values (disclosure firms) relative to those recognizing fair values (recognition firms). That is, we predict that earnings informativeness is affected by presentation of the fair value information within the financial statements, leading to:

$$R_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 Discl_{it} + \beta_3 E_{it} \times Discl_{it} + \sum_{k=4}^{7} \beta_k \, (E_{it} \times Controls_{it}^{k}) + \varepsilon_{it} \qquad (2)$$

where:

$Discl_{it}$ is an indicator variable equal to 1 if firm *i* in year *t* is a "disclosure firm" (i.e., discloses investment property fair values via footnote disclosure), and 0 otherwise (i.e., is a "recognition firm," that recognizes these fair values on the balance sheet and fair value changes in the income statement).

All other variables are as previously defined. The experimental variable is *Discl*, which partitions the sample into disclosure firms and recognition firms. If earnings informativeness is lower for earnings based on disclosed relative to recognized unrealized fair value changes, we expect a negative coefficient on the interaction of $E \times Discl$ (i.e., β_3) in Equation (2); this is our test of H_1.

Our second set of hypotheses tests two explanations for differential informativeness of recognition firms' earnings relative to disclosure firms' earnings: 'differential reliability' and 'incomplete processing.' Specifically, consistent with the 'differential reliability' explanation, H_{2A} states that differences in coefficients on fair value-based earnings across disclosure and recognition firms are attenuated through higher reliability of disclosure firms' fair value measures. Consistent with the 'incomplete processing' explanation, H_{2B} states that differences in coefficients on fair value-based earnings across disclosure and recognition firms are attenuated through higher sophistication of disclosure firms' investors. To test these predictions, we augment Equation (2) as follows:

$$R_{it} = \gamma_0 + \gamma_1 E_{it} + \gamma_2 Discl_{it} + \gamma_3 Ext_{it} + \gamma_4 E_{it} \times Discl_{it} + \gamma_5 E_{it} \times Ext_{it} + \gamma_6 Discl_{it} \times Ext_{it} + \gamma_7 E_{it} \times Discl_{it} \times Ext_{it} + \sum_{k=8}^{11} \gamma_k \, (E_{it} \times Controls_{it}^{k}) + \varepsilon_{it} \quad (3a)$$

$$R_{it} = \varphi_0 + \varphi_1 E_{it} + \varphi_2 Discl_{it} + \varphi_3 CHS_{it} + \varphi_4 E_{it} \times Discl_{it} + \varphi_5 E_{it} \times CHS_{it} + \varphi_6 Discl_{it} \times CHS_{it} + \varphi_7 E_{it} \times Discl_{it} \times CHS_{it} + \sum_{k=8}^{11} \gamma_k \, (E_{it} \times Controls_{it}^{k}) + \varepsilon_{it} \quad (3b)$$

where:

Ext_{it} is an indicator variable equal to 1 if firm *i* in year *t* employs an external appraiser to derive investment property fair values, and 0 otherwise (i.e., derives these fair values through internal management estimates); and

CHS_{it} is the percentage of closely held shares of firm *i* for fiscal year *t*.

To assess 'differential reliability' (H_{2A}), we use *Ext*, which captures a firm's use of an external monitor (i.e. a property appraisal firm) to assess investment property fair values. Consistent with Dietrich et al. (2001) and Muller and Riedl (2002), we expect that investment property firms employing external property appraisers are perceived by market participants as having more reliable investment property fair value estimates than firms that estimate fair values relying on internal staff. If differences in the informativeness of fair value-based earnings across disclosure and recognition firms are explained by (perceived) differences in fair value measurement reliability across these groups (i.e., H_{2A}), we expect the coefficient on the interaction of *E* x *Discl* x *Ext*, (i.e., γ_7) in Equation (3a) to be positive.

To assess 'incomplete processing' (H_{2B}), we use *CHS*, which captures the percentage of a firm's shares owned by institutional investors and other block holders. To the extent that such owners are more sophisticated (i.e., incur lower information processing costs related to disclosed information), we expect that the disclosed information of investment property firms with higher institutional ownership is processed more completely than that of firms with lower institutional ownership. If differences in the informativeness of fair value-based earnings across disclosure and recognition firms are explained by differences in investor

sophistication across these groups (i.e., H_{2B}), we expect the coefficient on the interaction of *E x Discl x CHS*, (i.e., φ_7) in Equation (3b) to be positive.

V. SAMPLE AND EMPIRICAL RESULTS

Sample Description

Panel A of Table 1 presents the sample selection. Starting with the population of European real estate sector firms, we eliminate firms that: report under accounting standards other than IFRS, are not in the investment property business, are controlled by a parent, or for which required data are unavailable. Our analysis spans 2005–2009, leading to a potential sample of 166 unique firms and 664 firm-year observations (i.e., 4 x 166). Excluding firm-years in which a firm either is not publicly traded or lacks sufficient data for our main tests leaves us with the sample sizes underlying the Table 3 analyses.

Panel B of Table 1 presents the sample of 166 unique firms by reporting model choice and country. We observe that recognition firms outnumber disclosure firms by a factor of approximately three. The disclosure firms are concentrated in eight out of the 14 countries represented, with the remaining six countries having only recognition firms. Significant variation in terms of recognition versus disclosure is primarily observed in France, Germany, Italy, and Spain. The third column confirms that the France, Germany, and the UK have the highest number of firm-year observations.

Descriptive statistics

Table 2 presents descriptive statistics separately for recognition and disclosure firms, along with tests of mean and median differences across this partition. The table indicates that returns, *R*, are significantly lower for recognition firms compared to disclosure firms.

However, fair value-based earnings, *E*, are not significantly different, suggesting that the returns-earnings relation differs across the partition.

Turning to our experimental variables for H_{2A} and H_{2B}, the indicator variable *Ext* indicates that recognition firms are more likely to employ external appraisers (86%) relative to disclosure firms (68%), whereas disclosure firms have significantly higher institutional/ block ownership (*CHS* of 65% for disclosure firms, versus 41% for recognition firms). Regarding the control variables, disclosure firms tend to be smaller in terms of total assets (*Size*), have higher market-to-book ratios (*MTB*), and are less leveraged. Finally, based on reported balance sheet amounts, investment property represents a significantly larger portion of total assets for recognition firms (72%) compared to disclosure firms (52%).

Multivariate Results

Next, we present the results of our hypothesis tests in Table 3. Four regression specifications are presented: column (1) presents baseline results excluding experimental variables based on Equation (1); column (2) adds the experimental variables to test H_1, based on Equation (2); and columns (3a) and (3b) add the experimental variables to test H_{2A} and H_{2B}, respectively, based on Equations (3a) and (3b). The main coefficients of interest are highlighted in bold.

Turning to the base regression results, column (1) shows a significantly positive coefficient on earnings (coefficient = 1.56, *t*-statistic = 7.30), indicating that earnings, on average, is informative for our sample firms. The size of the coefficient is consistent with material transitory elements in the earnings figure, which is expected since our earnings variable includes realized as well as unrealized fair value changes relating to investment property. The interactions of *E* with our four control variables yield significant coefficients for *Size*, *Loss*, and *Lev*, indicating that earnings informativeness is higher for larger firms, and

lower for firms reporting losses or having higher leverage.[14] The overall model fit (R^2 = 21%) is consistent with prior literature. We conclude from these baseline results that our returns-on-earnings regression is well-specified.

In our test of H_1, column (2) reveals that the coefficients on earnings and the control interactions remain qualitatively the same. Of primary interest, the interaction of *E* x *Discl* is significantly negative as predicted (coefficient = –0.45, *t*-statistic = 1.86). This is consistent with disclosure firms having lower earnings informativeness *on average* relative to recognition firms, and supports H_1.

Consistent with the above, column (3a) shows that the negative coefficient on the interaction of *E* x *Discl* becomes more significant (coefficient = –1.66, *t*-statistic = 4.53) when controlling for the reliability of fair value measurement through *Ext*, our indicator variable reflecting the use of an external appraisal expert to derive fair values. Of primary interest, the coefficient on the interaction of *E* x *Discl* x *Ext* is significantly positive (coefficient = 1.63, *t*-statistic = 2.80). This provides evidence that the lower earnings informativeness of disclosed (compared to recognized) fair values is mitigated by the increased reliability provided by external appraisals, consistent with H_{2A}.

In our test of H_{2B}, column (3b) shows an insignificant coefficient on *E* x *Discl* x *CHS* (coefficient = –0.01, *t*-statistic = 0.06). This suggests investor sophistication is not significantly related to earnings informativeness, and fails to find evidence supporting H_{2B}.

Overall, the results of Table 3 suggest that disclosure (versus recognition) of material information leads to lower earnings informativeness *on average*, and that adding a proxy for (perceived) fair value measurement reliability (i.e., *Ext*) reveals that disclosure impairs earnings informativeness through lower reliability. However, we fail to find evidence that higher investor sophistication attenuates the lower informativeness of earnings reflecting

[14] Results are qualitatively unchanged to fully interacting the control variables with *E x Discl*.

disclosed information. In aggregate, we interpret these results as consistent with disclosure (versus recognition) reducing earnings informativeness (H_1), and with the 'differential reliability' explanation for this phenomenon (H_{2A}), but inconsistent with the type of market inefficiencies implied by the 'incomplete processing' explanation (H_{2B}).

VI. SENSITIVITY ANALYSES

Controlling for Self-Selection into Recognition vs. Disclosure Groupings

Having observed that earnings informativeness is lower for firms that disclose (versus recognize) investment property fair values, we now investigate if particular characteristics that distinguish "disclosure firms" from "recognition firms" can explain this difference. That is, we examine the characteristics explaining why some firms chose disclosure, whereas others chose recognition, to rule out that these properties explain our findings. We use the following probit regression to investigate firms' choice to be a "disclosure firm" (i.e., to disclose investment property fair values under the cost model):

$$Discl_{it} = \delta_0 + \delta_1 Size_{it} + \delta_2 BigN_i + \delta\gamma_3 Switch_i + \delta_4 EPRA_i + \delta_5 Pre\_GAAP_i + \delta_6 MLiq_i + \delta_7 IP\_Exposure_i + \varepsilon_i \quad (4)$$

where:

$Discl_{it}$	is an indicator variable equal to 1 if firm *i* in year *t* is a "disclosure firm" (i.e., discloses investment property fair values via footnote disclosure), and 0 otherwise (i.e., is a "recognition firm," that recognizes these fair values on the balance sheet and fair value changes in the income statement);
$Size_{it}$	for "recognition firms" ("disclosure firms") is firm *i*'s reported total assets (total assets adjusted to reflect measuring investment property at fair value), measured at the end of fiscal year *t*, in millions;
$BigN_i$	is an indicator variable equal to 1 if firm *i* employs a Big Four auditor in the year of IFRS adoption, and 0 otherwise;
$Switch_i$	is an indicator variable equal to 1 if firm *i* switches from the cost model to the fair value model after IFRS adoption;

$EPRA_i$ is an indicator variable equal to 1 if firm *i* belongs to the European Public Real Estate Association in the year of IFRS adoption, and 0 otherwise;

Pre_GAAP_i is an indicator variable equal to 1 if firm *i*'s country of domicile, assessed just prior to IFRS adoption, allowed or required recognition of investment property fair values on the balance sheet, and 0 otherwise (i.e. indicating that recognition of investment property fair values was prohibited prior to IFRS);

$MLiq_i$ is property market turnover in firm *i*'s country of domicile in the year of IFRS adoption; and

$IP\_Exposure_i$ is firm *i*'s reported ("recognition firms") or disclosed ("disclosure firms") fair value of investment property, divided by *Size*, for fiscal year *t*.

Our accounting choice model includes factors that capture the firm's commitment to transparent reporting (e.g., Daske et al. 2011).[15] Assuming that recognizing (versus disclosing) investment property fair values is perceived by market agents as a commitment to more transparent reporting, we expect a negative coefficient on firm size (*Size*), consistent with larger firms providing more transparent reporting information. We include *BigN* to capture the effect of auditor on this reporting choice; as large audit firms are more likely to encourage clients to adopt recognition, the predicted coefficient is negative. We include *Switch* to identify systematic differences between firms applying either the fair value or cost model permanently, versus those that later switch reporting models; the predicted coefficient is positive. Next, we include membership in the European Public Real Estate Association (*EPRA*), the primary real estate association in Europe; as EPRA explicitly advocates use of the fair value model, the predicted coefficient is negative. We include *Pre_GAAP* to capture the path dependency of firms' financial reporting choices in line with their response to the demand for accounting information (e.g., Ball et al. 2000); as firms domiciled in countries in

[15] Note that the notion of a commitment to transparency should be correlated with other firm-level reporting choices, including the decision to employ an external appraiser (captured by our indicator variable *Ext*). As such, controlling for self-selection into the recognitions and disclosure firm groupings likely mitigates self-selection into the groups of firms using versus not using an external appraiser. We further note that including *Ext* as an explanatory variable into Equation (4) does not change the results.

which recognition of investment property fair values was prevalent before IFRS adoption are more likely to continue using this model under IFRS, the predicted coefficient is negative. We include *MLiq* to capture the difficulty of valuing the firm's investment property portfolio; as higher market liquidity should lower firms' costs of providing reliable investment property fair values, the predicted coefficient is negative. Finally, we include firms percentage of the overall asset base that are investment property (*IP_Exposure*); as higher exposure to these assets may bias firms towards adopting recognition, the predicted coefficient is negative.

Panel B of Table 4 presents the probit model in Equation (4), estimated at the time of IFRS adoption (i.e., when the decision to be a recognition firm or a disclosure firm is first made).[16] As predicted, *Pre_GAAP* (–1.05, *t*-statistic = 5.34) and *IP_Exposure* (–1.18, *t*-statistic = 1.81) are negatively associated with choosing disclosure, and *Switch* (1.92, *t*-statistic = 3.62) is positively associated with this decision. The high *Pseudo-*R^2 (51.1%) suggests that the model explains a fair portion of the variation in this choice.

We then use the inverse Mills ratios obtained from Panel B to re-assess our Table 3 findings. As we expect the determinants of this accounting choice to be associated with the returns-earnings relation, rather than with returns *per se*, we include the inverse Mills ratios by interacting them with the earnings variable, *E*, rather than as a main effect.[17] Panel A of Table 4, which parallels the layout of Table 3, presents the results. The Mills ratios are significant in two out of four regressions, consistent with self-selection bias. The interaction of *E* x *Discl*, which tests H_1, maintains the expected negative sign, but turns insignificant (–0.32, *t*-statistic = 1.08). However, the results continue to support H_{2A}, as the interaction on *E* x *Discl* x *Ext* is significantly positive (1.52, *t*-statistic = 3.78). This suggests that disclosure relative to recognition reduces earnings informativeness, especially where disclosure is

[16] Results for Table 4 are unchanged to estimating the probit model over the whole sample period.
[17] Results are unchanged to including the inverse Mills ratio as a main effect.

associated with lower reliability of the information being provided. In addition, the interaction of *E* x *Discl* is now significantly negative (–1.24, *t*-statistic = 3.23). Inferences regarding H_{2B} are unchanged.

Balance Sheet Specification

Several prior studies also assess the valuation implications of recognition versus disclosure using a balance sheet, or "levels", specification (e.g., Davis-Friday et al. 1999; Ahmed et al. 2006). Accordingly, we parallel our development of H_1 using the following balance sheet specification that models the firm's market value of equity as a function of its assets (investment property and other assets) and liabilities in place:

$$MVE_{it} = \zeta_0 + \zeta_1 IP_{it} + \zeta_2 OtherAssets_{it} + \zeta_3 Liabilities_{it} + \zeta_4 Discl_{it} + \zeta_5 IP_{it} \, x \, Discl_{it} + \varepsilon_{it} \quad (5)$$

where:

MVE_{it}	is firm *i*'s market value of equity for fiscal year *t*;
IP_{it}	is firm *i*'s reported ("recognition firms") or disclosed ("disclosure firms") fair value of investment property for fiscal year *t*;
$OtherAssets_{it}$	is firm *i*'s other (i.e., non-investment property) assets for fiscal year *t* defined as firm *i*'s reported total assets for fiscal year *t* minus firm *i*'s reported investment property for fiscal year *t*; and
$Liabilities_{it}$	is firm *i*'s total liabilities for fiscal year *t* defined as firm *i*'s total assets for fiscal year *t* minus firm *i*'s common equity for fiscal year *t*. For disclosure firms, *Liabilities* is adjusted by an additional deferred tax liability that arises from measuring investment property at fair value.

The experimental variable, *Discl*, is as previously defined. If disclosed investment property fair values have lower explanatory power for stock prices compared to recognized investment property fair values, we expect a negative coefficient on the interaction of *IP* x *Discl* (i.e., ζ_5), providing an alternative test of H_1.

Paralleling our development of H_{2A} and H_{2B}, we then augment Equation (5) as:

$$MVE_{it} = \eta_0 + \eta_1 IP_{it} + \eta_2 OtherAssets_{it} + \eta_3 Liabilities_{it} + \eta_4 Discl_{it} + \eta_5 IP_{it} \times Discl_{it} + \eta_6 Ext_{it} + \eta_7 IP_{it} \times Ext_{it} + \eta_8 Discl_{it} \times Ext_{it} + \eta_9 IP_{it} \times Discl_{it} \times Ext_{it} + \varepsilon_{it} \quad (6a)$$

$$MVE_{it} = \rho_0 + \rho_1 IP_{it} + \rho_2 OtherAssets_{it} + \rho_3 Liabilities_{it} + \rho_4 Discl_{it} + \rho_5 IP_{it} \times Discl_{it} + \rho_6 CHS_{it} + \rho_7 IP_{it} \times CHS_{it} + \rho_8 Discl_{it} \times CHS_{it} + \rho_9 IP_{it} \times Discl_{it} \times CHS_{it} + \varepsilon_{it} \quad (6b)$$

The experimental variables, *Ext* and *CHS*, are as previously defined. Under H_{2A} (the 'differential reliability' explanation), we expect the coefficient on the interaction of *IP* x *Discl* x *Ext*, (i.e., η_9 in Equation (6a)) to be positive. Under H_{2B} (the 'incomplete processing' explanation), we expect the coefficient on the interaction of *IP* x *Discl* x *CHS*, (i.e., ρ_9 in Equation (6b)) to be negative.[18]

Table 5 reports the results, with a base model in Column (1) that appears well-specified.[19] Column (2) presents our alternative test of H_1. Of primary interest, the interaction of *IP* x *Discl* is negative as predicted, but insignificant (coefficient = –0.02, *t*-statistic = 0.89); thus, we fail to find evidence that recognition and disclosure firms differ in terms of explanatory power of investment property fair values for stock price *on average*. However, results presented in column (3a) show that the negative coefficient on the interaction of *IP* x *Discl* becomes significant (coefficient = –0.17, *t*-statistic = 3.33) when controlling for the reliability of fair value measurement through *Ext*, our indicator variable reflecting the use of an external appraisal expert. Of primary interest, the coefficient on the interaction of *E* x *Discl* x *Ext* is significantly positive (coefficient = 0.14, *t*-statistic = 2.35), as expected under H_{2A}. This provides evidence that lower explanatory power of disclosed versus recognized investment property fair values for stock price is mitigated by the increased reliability provided by external appraisals, supporting H_1 as well as H_{2A}. Finally,

[18] Results are unchanged to including common shares outstanding as an additional variable to control for scale (Barth and Kallapur 1996).

[19] Specifically, the coefficient on *IP* is significantly positive (0.94, *t*-statistic = 9.81), suggesting that investment property fair values, *on average*, are associated with market values. In addition, the coefficient values for *IP* and *Other Assets* (*Liabilities*) are consistent with theory, i.e., close to 1 (–1); and the R^2 of 86% is in line with prior literature.

Column (3b) shows an insignificant coefficient on the interaction of *IP* x *Discl* x *CHS*. Thus, we again fail to find evidence supporting H_{2B}. Overall, the results from the balance sheet specification are consistent with the main results reported in Table 3.

Alternative Specifications Including Earnings Changes

Other earnings informativeness studies use regressions of returns on independent variables including earnings changes (e.g., Francis et al. 2005; Hanlon et al. 2008). To confirm the robustness of our results, we estimate the following regressions:

Earnings changes model: $R_{it} = \theta_0 + \theta_1 \Delta E_{it} + \varepsilon_{it}$ (7a)

Earnings levels and changes model: $R_{it} = \tau_0 + \tau_1 E_{it} + \tau_2 \Delta E_{it} + \varepsilon_{it}$ (7b)

ΔE_{it} is firm *i*'s change in E_{it} for fiscal year *t*, and E_{it} is defined as above. (Note that both (7a) and (7b) include interactions with our vector of control variables, *Controls*, i.e. *Size*, *MTB*, *Loss*, and *Lev*; these are not presented for ease of exposition.)

Paralleling our previous developments of analyses to test H_1, H_{2A}, and H_{2B}, Equations (7a) and (7b) are augmented to incorporate interactions of *E* and ΔE with our experimental variables *Discl* (to test H_1), *Discl* x *Ext* (to test H_{2A}), and *Discl* x *CHS* (to test H_{2B}). To test H_1, we expect a negative coefficient on the interaction of ΔE x *Discl* in the earnings changes model, as well as on the linear combination of the interactions of *E* x *Discl* and ΔE x *Discl* in the earnings levels and earnings changes model. To test H_{2A}, we expect the coefficient on the interaction of ΔE x *Discl* x *Ext* in the earnings changes model, as well as the linear combination of the interactions of *E* and ΔE with *Discl* x *Ext* in the earnings levels and changes model, to be positive. To test H_{2B}, we expect the coefficient on ΔE x *Discl* x *CHS* in the earnings changes model, as well as the linear combination of the interactions of *E* and ΔE with *Discl* x *CHS* in the earnings levels and changes model, to be positive.

Table 6 presents the results, with Panel A presenting the earnings changes regressions, and Panel B the earnings levels and changes regressions. Panel A reveals a significantly negative coefficient on ΔE x *Discl* (–0.77, *t*-statistic = 3.43), providing support for H_1. Column (3a) reveals a significantly positive coefficient on ΔE x *Discl* x *Ext* (1.14, *t*-statistic = 2.68), supporting H_{2A}. Column (3b) shows that the interaction of ΔE x *Discl* x *CHS* is negative, failing to support H_{2B}.[20] In Panel B, the coefficient on the linear combination of (*E* x *Discl*) + (ΔE x *Discl*) is negative but insignificant (–0.34, *t*-statistic = 0.99), which fails to support for H_1. H_{2A} is supported by the significantly positive coefficient on the linear combination of (*E* x *Discl* x *Ext*) + (ΔE x *Discl* x *Ext*) (coefficient = 2.01, *t*-statistic = 3.74) in column (3a). Also, this specification yields a significantly negative coefficient on the linear combination of (*E* x *Discl*) + (ΔE x *Discl*), supporting H_1. Finally, we again fail to find support for H_{2B}, reflected in the linear combination of (*E* x *Discl* x *CHS*) + (ΔE x *Discl* x *CHS*) in column (3b) failing to yield a significantly positive coefficient. Overall, results remain consistent with those presented above.

VII. CONCLUSION

This paper documents that recognition versus disclosure of fair values affects earnings informativeness by showing that earnings based on disclosed fair values is less informative than earnings based on recognized fair values. Further, the paper provides evidence that this difference appears attributable to lower *ex ante* reliability of the disclosed fair value information; we fail to find evidence consistent with incomplete processing of disclosed fair values by investors. We provide this evidence in the setting of the European investment property (i.e., real estate) industry. This setting is advantageous as it provides a relatively

[20] We note that the negative coefficient on ΔE x *Discl* x *CHS* may capture information asymmetry versus investor sophistication.

homogenous primary operating asset (investment property), for which the relevant IFRS provide a key reporting choice: a subset of firms recognizes this primary asset at fair value (i.e., "recognition firms"), while another subset recognizes investment property at amortized cost, but discloses the fair value in the notes (i.e., "disclosure firms"). The mandated disclosure of these fair values allows us to derive fair value-based earnings figures that are directly comparable across the two sets of firms.

We exploit this setting to first examine how recognition versus disclosure affects earnings informativeness, modeling earnings as a signal that can be affected by noise that reduces the price reaction to this signal (e.g., Holthausen and Verrecchia 1988). Following the literature on recognition versus disclosure (Bernard and Schipper 1994), we expect that disclosed financial data will have greater noise (i.e., more measurement error) relative to recognized financial data, owing to greater scrutiny of recognized data by both internal and external parties. Consistent with this expectation, we find that earnings of disclosure firms has lower informativeness relative to earnings of recognition firms.

We then add to research on recognition versus disclosure by addressing whether the above differences may be explained by 'differential reliability' (i.e., disclosed information appropriately being viewed by rational agents as having lower reliability) and/or 'incomplete processing' (i.e., inefficient markets). Using as a proxy for fair value measurement reliability firms' use of an external appraiser, we provide evidence that the lower earnings informativeness for disclosure firms is attenuated through their use of this external monitor. This finding is consistent with disclosure firms improving earnings informativeness through greater *ex ante* reliability of their fair value measures, evidenced through use of an external appraiser. However, we fail to find evidence of incomplete processing of disclosed fair values by investors. Specifically, we fail to find differences in earnings informativeness across disclosure firms' level of closely held shares, used as a proxy for sophisticated

investors. Results for all of these findings are robust to numerous sensitivity analyses, including controlling for self-selection, use a levels (i.e., balance sheet) estimation versus a changes (i.e., returns) estimation, and incorporating earnings changes into the regressions.

Taken together, our results contribute to the recognition versus disclosure literature (Bernard and Schipper 1994) in two ways. First, we provide evidence that earnings signals derived from disclosed financial information are noisier relative to those derived from recognized financial information. Second, we document that greater *ex ante* reliability—reflected in the use of an external monitor—increases earnings informativeness. This latter finding is consistent with market agents in an efficient market perceiving disclosed information as having lower reliability, whereas it is inconsistent with incomplete processing of disclosed information by irrational agents. Distinguishing between these alternative explanations has eluded prior literature; it is important, as 'incomplete processing' implies mispricing and potentially negative capital allocation consequences, while 'differential reliability' is consistent with rational behavior on the part of investors.

We note that our findings may not generalize to industries in which non-financial assets measured at fair value are of low significance, or in which distinguishing across different levels of fair value measurement reliability is non-trivial for investors. On the other hand, our results suggest that perceived disadvantages of disclosure may not, in fact, be caused by the 'geography' of the information *per se*, but by (perceived) reliability differences. Therefore, they are likely to be of interest to standard setters generally, in their debate whether recognition and disclosure of financial information are substitutes, and specifically in the context of convergence efforts between the FASB and IASB, who are deliberating to require real estate firms to recognize investment property at fair value, which would eliminate the choice now existing under IFRS.

REFERENCES

Aboody, D. (1996). "Recognition versus Disclosure in the Oil and Gas Industry." Journal of Accounting Research **34**(Suppl.): 21-32.

Amir, E. (1993). "The Market Valuation of Accounting Information: The Case of Postretirement Benefits Other Than Pensions." Accounting Review **68**(4): 703-724.

Ahmed, A. S., E. Kilic and G. J. Lobo (2006). "Does Recognition versus Disclosure Matter? Evidence from Value-Relevance of Banks' Recognized and Disclosed Derivative Financial Instruments." Accounting Review **81**(3): 567-588.

Ball, R., S. P. Kothari and A. Robin (2000). "The Effect of International Institutional Factors on Properties of Accounting Earnings." Journal of Accounting and Economics **29**(1): 1-51.

Barth, M. E. (1991). "Relative Measurement Errors among Alternative Pension Asset and Liability Measures." Accounting Review **66**(3): 433-463.

Barth, M. E. (1994). "Fair Value Accounting: Evidence from Investment Securities and the Market Valuation of Banks." Accounting Review **69**(1): 1-25.

Barth, M. E., and S. Kallapur (1996). "The Effects of Cross-Sectional Scale Differences on Regression Results in Empirical Accounting Research." Contemporary Accounting Research **13**(2): 527-567.

Bernard, V. and K. Schipper (1994). Recognition and Disclosure in Financial Reporting. Working Paper, University of Michigan and University of Chicago.

Bloomfield, R. and R. Libby (1996). "Market Reactions to Differentially Available Information in the Laboratory." Journal of Accounting Research **34**(2): 183-207.

Chaney, P. K. and D. C. Jeter (1992). "The Effect of Size on the Magnitude of long-window Earnings Response Coefficients" Contemporary Accounting Research **8**(2): 540-560.

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.

Collins, D. W. and S. P. Kothari (1989). "An Analysis of Intertemporal and Cross-sectional Determinants of Earnings Response Coefficients" Journal of Accounting and Economics **11**(2-3): 143-181.

Daske, H., L. Hail, C. Leuz and R. S. Verdi (2011). "Adopting a Label: Heterogeneity in the Economic Consequences around Voluntary IAS Adoptions." SSRN eLibrary.

Davis-Friday, P. Y., L. B. Folami, C.-S. Liu and H. F. Mittelstaedt (1999). "The Value Relevance of Financial Statement Recognition vs. Disclosure: Evidence from SFAS No. 106." Accounting Review **74**(4): 403-423.

Dhaliwal, D. S., L. E. E. Kyung J and N. L. Fargher (1991). "The association between unexpected earnings and abnormal security returns in the presence of financial leverage" Contemporary Accounting Research **8**(1): 20-41.

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

Easton, P. D., P.Eddey and T. S. Harris (1993). "An Investigation of Revaluations of Tangible Long-Lived Assets." Journal of Accounting Research **31**(Suppl.): 1-38.

Easton, P. D. and T. S. Harris (1991). "Earnings as an Explanatory Variable for Returns." Journal of Accounting Research **29**(1): 19-36.

Eccher, E., K. Ramesh and R. Thiagarajan (1996). "Fair value disclosures by bank holding companies." Journal of Accounting and Economics **22**(1-3): 79-117.

Espahbodi, H., P. Espahbodi, Z. Rezaee and H. Tehranian (2002). "Stock price reaction and value relevance of recognition versus disclosure: the case of stock-based compensation." Journal of Accounting and Economics **33**(3): 343-373.

Francis, J. and K. Schipper (1999). "Have Financial Statements Lost Their Relevance?" Journal of Accounting Research **37**(2): 319-352.

Francis, J., K. Schipper and L. Vincent (2005). "Earnings and dividend informativeness when cash flow rights are separated from voting rights." Journal of Accounting & Economics **39**(2): 329-360.

Freeman, R. N. (1987). "The Association between Accounting Earnings and Security Returns for Large and Small Firms" Journal of Accounting and Economics **9**(2): 195-228.

Hall, B. H. (1993). "The Stock Market's Valuation of R&D Investment During the 1980's." The American Economic Review **83**(2): 259-264.

Hanlon, M., E. L. Maydew and T. Shevlin (2008). "An unintended consequence of book-tax conformity: A loss of earnings informativeness." Journal of Accounting and Economics **46**(2-3): 294-311.

Harris, T. S. and J. A. Ohlson (1987). "Accounting Disclosures and the Market's Valuation of Oil and Gas Properties." Accounting Review **62**(4): 651-670.

Harper Jr, R. M., W. G. Mister and J. R. Strawser (1987). "The Impact of New Pension Disclosure Rules on Perceptions of Debt." Journal of Accounting Research **25**(2): 327-330.

Hayn, C. (1995). "The Information Content of Losses" Journal of Accounting and Economics **20**(2): 125-153.

Holthausen, R. W. and R. E. Verrecchia (1988). "The Effect of Sequential Information Releases on the Variance of Price Changes in an Intertemporal Multi-Asset Market." Journal of Accounting Research **26**(1): 82-106.

International Accounting Standards Board (IASB). 2003. International Accounting Standard 40, Investment Property. International Accounting Standards Committee Foundation, London.

Kothari, S. P. (2001). "Capital markets research in accounting." Journal of Accounting and Economics **31**(1-3): 105-231.

Landsman, W. (1986). "An Empirical Investigation of Pension Fund Property Rights." Accounting Review **61**(4): 662-691.

Landsman, W. and J. Ohlson (1990). " Evaluation of market efficiency for supplementary accounting disclosures: The case of pension assets and liabilities." Contemporary Accounting Research **7**(1): 185-198.

Muller, K. A. I. and E. J. Riedl (2002). "External Monitoring of Property Appraisal Estimates and Information Asymmetry." Journal of Accounting Research **40**(3): 865-881.

Muller, K. A. I., E. J. Riedl and T. Sellhorn (2011). "Mandatory Fair Value Accounting and Information Asymmetry: Evidence from the European Real Estate Industry." Management Science **57**(6): 1138-1153.

Riedl, E. J. and G. Serafeim (2011). "Information Risk and Fair Values: An Examination of Equity Betas." Journal of Accounting Research **49**(4): 1038-1122.

Viger, C., R. Belzile and A. A. Anandarajan (2008). "Disclosure versus Recognition of Stock Option Compensation: Effect on the Credit Decisions of Loan Officers." Behavioral Research In Accounting **20**(1): 93-113.

APPENDIX A
Obtaining comparable earnings for "disclosure firms" and "recognition firms"

Panel A. Comparing earnings across "disclosure firms" and "recognition firms"

This panel illustrates the effects of the accounting method choice under IAS 40 on the earnings of "disclosure firms" and "recognition firms." Assume the following fact pattern:

Two identical real estate firms, Firm A and Firm B, are established on 1 January 20X1. Both report under IAS 40, with Firm A electing the cost model ("disclosure"), and Firm B electing the fair value model ("recognition").

On 1 January 20X1, each firm purchases two property assets, Property 1 and Property 2, for $500 each. Each property has a 10-year useful life, with an assumed pattern of value decline of straight-line depreciation.

On 31 December 20X1, each firm sells its Property 1 for $750, and retains Property 2. The fair value of Property 2 is assessed at $800. Under the disclosure requirements of IAS 40, Firm A discloses this fair value in the notes to the financial statements.

Throughout the year 20X1, each firm collects rent of $100 on each property asset. Expenses and income taxes are ignored for simplicity.

At the end of year 20X1, income statements for Firm A and Firm B are as follows:

Income statement for the year 20X1	**Firm A** ("disclosure")	**Firm B** ("recognition")
Rental income	200	200
Realized fair value change (disposal gain)	300	250
Unrealized fair value change	0	300
Depreciation on investment property	-100	0
Earnings	**400**	**750**

While Firm A's earnings exclude the unrealized fair value gain on the retained Property 2 and includes depreciation expense on both properties, Firm B's earnings include the unrealized fair value gain on the retained Property 2 and excludes depreciation expense. Consequently, Firm A recognizes a higher disposal gain because the carrying amount of its Property 1 at the time of sale is $450, whereas it is $500 for Firm B's Property 1.

Panel B. Calculating restated fair value-based earnings for "disclosure firms"

We restate the earnings of disclosure firms to make it consistent with the earnings of recognition firms, obtaining *fair value-based earnings* for the disclosure firms, using the following formula:

$$E_{it} = E\_Cost_{it} + BV\_Cost_{it-1} - BV\_Cost_{it} + FV_{it} - FV_{it-1} - [(FV_{it} - FV_{it-1}) - (BV\_Cost_{it} - BV\_Cost_{it-1}) \times tax] \quad \text{(A1)}$$

where:

E	is earnings of "disclosure firms" adjusted to reflect measuring investment property at fair value;
E_Cost	is earnings of "disclosure firms" as reported under the cost model;
BV_Cost	is book value of investment properties measured under the cost model;
FV	is fair value of investment properties as disclosed in the footnotes of "disclosure firms"; and
tax	is the average corporate income tax rate.

In effect, Equation (A1) substitutes the change in investment property fair values for the change in amortized cost-based carrying amounts, and subtracts the change in the associated deferred tax liability.

Based in the above fact pattern, and again ignoring income taxes,

$E_{it} = 400 + 1{,}000 - 450 + 800 - 1{,}000 =$ \$750,

where:

400	is Firm A's earnings as reported in the income statement in Panel A of Appendix A;
1,000	is the combined acquisition cost, and thus initial carrying amount, of Firm A's Properties A and B on 1 January 20X1;
450	is the amortized cost-based carrying amount at 31 December 20X1 of Firm A's retained Property B;
800	is the fair value at 31 December 20X1 of Firm A's retained Property B; and
1,000	is the combined acquisition cost, and thus initial fair value, of Firm A's Properties A and B on 1 January 20X1.

This illustration shows that the fair value disclosures of disclosure firms allow investors to restate the earnings of disclosure firms to make it equivalent to the earnings of recognition firms. In this paper, we use the restated fair value-based earnings of disclosure firms to compare their informativeness with the fair value-based earnings of recognition firms.

APPENDIX B
Variable Definitions

Dependent Variable

R_{it}	is firm *i*'s cumulative stock return, measured by the total return index, starting three months after fiscal year *t-1* and ending three months after fiscal year *t*.

Experimental Variables

E_{it}	for "recognition firms" ("disclosure firms") is firm *i*'s reported earnings for fiscal year *t* (is firm *i*'s reported earnings for fiscal year *t* adjusted for measuring investment property at fair value), scaled by market value of equity at the beginning of year *t*. (*See Appendix A for details on restating disclosure firms' reported earnings to derive "fair value-based" earnings.*)
ΔE_{it}	is firm *i*'s change in E_{it}.
$Discl_{it}$	is an indicator variable equal to 1 if firm *i* in year *t* is a "disclosure firm" (i.e., discloses investment property fair values via footnote disclosure), and 0 otherwise (i.e., is a "recognition firm," that recognizes these fair values on the balance sheet and fair value changes in the income statement).
Ext_{it}	is an indicator variable equal to 1 if firm *i* in year *t* employs an external appraiser to derive investment property fair values, and 0 otherwise (i.e., derives these fair values through internal management estimates).
CHS_{it}	is the percentage of closely held shares of firm *i* for fiscal year *t*.

Control Variables

$Size_{it}$	for "recognition firms" ("disclosure firms") is firm *i*'s reported total assets (total assets adjusted to reflect measuring investment property at fair value), measured at the end of fiscal year *t*, in millions.
MTB_{it}	for "recognition firms" ("disclosure firms") is firm *i*'s market capitalization, divided by firm *i*'s reported common equity (divided by firm *i*'s common equity adjusted to reflect measuring investment property at fair value), both measured at the end of fiscal year *t*.
$Loss_{it}$	is an indicator variable equal to 1 if firm *i*'s E_{it} is negative, and 0 otherwise.
Lev_{it}	for "recognition firms" ("disclosure firms") is firm *i*'s reported short-term plus long-term debt, divided by the firm's total assets (divided by the firm's total assets adjusted to reflect measuring investment property at fair value), both measured at the end of the fiscal year *t*.

APPENDIX B (cont'd)

Choice Model Variables

$BigN_i$	is an indicator variable equal to 1 if firm *i* employs a Big Four auditor in the year of IFRS adoption, and 0 otherwise.
$Switch_i$	is an indicator variable equal to 1 if firm *i* switches from the cost model to the fair value model after IFRS adoption, and 0 otherwise.
$EPRA_i$	is an indicator variable equal to 1 if firm *i* belongs to the European Public Real Estate Association in the year of IFRS adoption, and 0 otherwise.
Pre_GAAP_i	is an indicator variable equal to 1 if firm *i*'s country of domicile, assessed just prior to IFRS adoption, allows or requires recognition of investment property fair values on the balance sheet, and 0 otherwise (i.e. indicating that recognition of these fair values was prohibited prior to IFRS).
$MLiq_i$	is property market turnover in firm *i*'s country of domicile in the year of IFRS adoption.
$IP\_Exposure_i$	is firm *i*'s reported ("recognition firms") or disclosed ("disclosure firms") fair value of investment property, divided by *Size*, for fiscal year *t*.

Balance Sheet Specification Variables

MVE_{it}	is firm *i*'s market value of equity for fiscal year *t*.
IP_{it}	is firm *i*'s reported ("recognition firms") or disclosed ("disclosure firms") fair value of investment property for fiscal year *t*.
$OtherAssets_{it}$	is firm *i*'s other (i.e., non-investment property) assets for fiscal year *t* defined as firm *i*'s reported total assets for fiscal year *t* minus firm *i*'s reported investment property for fiscal year *t*.
$Liabilities_{it}$	is firm *i*'s total liabilities for fiscal year *t* defined as firm *i*'s total assets for fiscal year *t* minus firm *i*'s common equity for fiscal year *t*. For "disclosure" firms, *Liabilities* is adjusted by an additional deferred tax liability that arises from measuring investment property at fair value.

TABLE 1
Sample Description

Panel A. Sample Selection

	Less	Firms Remaining
Traded on European Economic Area (EEA) stock exchanges classified as real estate firms in Worldscope and active as of 12/15/2006		417
- do not report IFRS in first fiscal year of mandatory IFRS adoption	160	257
- not operating in the investment property business	55	202
- subsidiaries	9	193
- no annual reports were found	4	189
- the recognition versus disclosure decision for the first fiscal year or fair value information could not be obtained	23	166
Potential firm-years (166 firms times 4 fiscal years)		664
Firm-years with available data for main analyses in Table 3		
- Columns (1), (2), and (3a)		525
- Column (3b)		462

Panel B. Reporting Model Choice by Country

	Unique firms		Firm-Years
	Recognition Firms	Disclosure Firms	
Austria	6	1	24
Belgium	10	1	42
Denmark	6	0	15
Finland	4	0	14
France	9	11	61
Germany	10	13	68
Greece	6	1	23
Italy	3	5	18
Netherlands	7	1	27
Norway	3	0	7
Poland	2	0	6
Spain	3	5	19
Sweden	12	0	42
Switzerland	6	0	23
United Kingdom	41	0	136
Total	**128**	**38**	**525**

This table describes our sample selection process (Panel A), and firms' choice to recognize versus disclose investment property fair values, as allowed under *International Accounting Standard 40*, based on their country of domicile (Panel B). The sample includes investment property firms domiciled in European Union countries over the period 2005–2009. The firm-years displayed in the right-hand column of Panel B correspond to those used in columns (1), (2), and (3a) of Table 3.

TABLE 2
Descriptive Statistics

	Recognition firms (N = 445)			Disclosure firms (N = 80)			Tests of Differences (Recognition firms – Disclosure firms)	
	Mean	Median	StDev	Mean	Median	StDev	Means	Medians
Dependent Variable								
R	–0.02	–0.03	0.36	0.06	0.02	0.37	–0.07 (1.65) *	–0.05 (1.61) *
Experimental Variables								
E	0.10	0.08	0.26	0.09	0.09	0.19	–0.00 (0.27)	0.00 (0.14)
Ext	0.86	1.00	0.35	0.68	1.00	0.47	0.18 (4.08) ***	0.00 (3.57) ***
CHS	0.41	0.39	0.28	0.65	0.70	0.22	–0.23 (6.49) ***	–0.28 (6.01) ***
Control Variables								
Size	3,888	1,262	6,272	1,852	935	2,655	2,035 (2.85) ***	327 (3.08) **
MTB	1.15	1.03	0.70	1.77	1.12	2.60	–0.61 (4.18) ***	0.08 (2.04) **
Loss	0.21	0.00	0.41	0.23	0.00	0.42	–0.01 (0.28)	0.00 (0.27)
Lev	0.40	0.42	0.18	0.34	0.36	0.17	0.06 (2.77) **	0.06 (2.64) **
Other Descriptive								
IP_Exposure	0.72	0.82	0.28	0.52	0.61	0.35	0.20 (5.84) ***	0.20 (4.93) ***

This table reports descriptive statistics for the sample used in columns (1), (2), and (3a) of Table 3 (N = 525). The statistics for the variable *CHS* are reported for 462 observations (recognition firms: N = 395; disclosure firms: N = 67). All variables are defined in Appendix B. Across all columns, the sample includes investment property firms domiciled in European Union countries over the period 2005–2009. ***, **, * represent significance at the 1%, 5%, and 10% levels, respectively, for the indicated tests of differences in means (t-statistics in parentheses) and medians (z-statistics in parentheses).

TABLE 3
The Effect of Recognition versus Disclosure of Fair Values on Earnings Informativeness

Variables	Pred Sign	Base Regression	Disclosure (H_1)	Differential Reliability (H_{2A})	Incomplete Processing (H_{2B})
		(1)	(2)	(3a)	(3b)
Intercept	?	–0.12 (4.81) ***	–0.14 (4.95) ***	–0.27 (6.96) ***	–0.15 (4.14) ***
E	+	1.56 (7.30) ***	1.61 (7.59) ***	2.30 (6.90) ***	1.77 (6.46) ***
Discl	?		0.11 (2.17) **	0.28 (3.30) ***	0.24 (1.38)
E* x *Discl	**–**		**–0.45 (1.86) ***	**–1.66 (4.53) ***	**–0.25 (0.23)**
Proxy for Differential Reliability					
Ext	?			0.15 (3.59) ***	
E x *Ext*	+ / –			–0.82 (2.86) ***	
Discl x *Ext*	?			–0.20 (1.82) *	
E* x *Discl* x *Ext	**+**			**1.63 (2.80) ***	
Proxy for Incomplete Processing					
CHS	?				–0.01 (0.83)
E x *CHS*	+ / –				–0.01 (1.56)
Discl x *CHS*	?				–0.01 (1.06) *
E* x *Discl* x *CHS	**+**				**–0.01 (0.06)**
Control Variables					
E x *Size*	+ / –	0.01 (2.43) **	0.01 (2.07) **	0.01 (1.50)	0.01 (1.36)
E x *MTB*	+	–0.07 (1.60)	–0.03 (0.62)	–0.01 (0.12)	–0.03 (0.61)
E x *Loss*	–	–0.56 (1.87) *	–0.56 (1.78) *	–0.48 (1.62)	–0.78 (2.79) ***
E x *Lev*	–	–1.36 (3.30) ***	–1.45 (3.59) ***	–1.37 (3.58) ***	–1.20 (3.48) ***
N		525	525	525	462
R^2		21%	22%	24%	24%

This table presents results of analyses examining the effect of recognizing versus disclosing fair values on earnings informativeness. The sample includes investment property firms domiciled in European Union countries over the period 2005–2009. Across all specifications, the dependent variable is R_{it}, firm *i*'s cumulative stock return, measured by the total return index, starting three months after fiscal year *t-1* and ending three months after fiscal year *t*.

The experimental variables include interactions with three constructs; experimental interactions testing our hypotheses are indicated in bold. First, *Discl* is an indicator variable equal to 1 if firm *i* is a "disclosure firm" (i.e., discloses investment property fair values in the footnotes in year *t*), and 0 otherwise (i.e., is a "recognition firm" that recognizes these fair values on the balance sheet). The coefficient on ***E x Discl*** is used to test whether the informativeness of fair-value based earnings for disclosure firms is equivalent to that for recognition firms (i.e., H_1). Second, *Ext* is an indicator variable equal to 1 if firm *i* uses an external appraiser to derive recognized or disclosed investment property fair values in year *t*, and 0 otherwise. The coefficient on ***E*** x ***Discl*** x ***Ext*** is used to test whether the lower informativeness of fair-value based earnings of disclosure firms relative to that of recognition firms is attenuated through higher reliability of the fair value measures (i.e., H_{2A}). Third, *CHS* is the percentage of closely held shares of firm *i* for fiscal year *t*. The coefficient on ***E*** x ***Discl*** x ***CHS*** is used to test whether the lower informativeness of fair-value based earnings of disclosure firms relative to that of recognition firms is attenuated through higher investor sophistication (i.e., H_{2B}). All other variables are defined in Appendix B.

All regressions are estimated using robust standard errors, with *t*-statistics provided in parentheses. Experimental coefficient combinations are indicated in bold. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the indicated one- or two-tailed tests. *N* varies across specifications due to data requirements.

TABLE 4
Sensitivity Analyses: Controlling for Self-Selection

Panel A. Replication of Earnings Informativeness (Table 3) Results Controlling for Self-Selection

Variables	Pred Sign	Base Regression	Disclosure (H_1)	Differential Reliability (H_{2A})	Incomplete Processing (H_{2B})
		(1)	(2)	(3a)	(3b)
Intercept		–0.16 (7.69) ***	–0.18 (8.16) ***	–0.29 (8.07) ***	–0.18 (5.37) ***
E	+	1.74 (8.26) ***	1.74 (8.04) ***	2.15 (6.80) ***	1.74 (6.45) ***
Discl	?		0.14 (3.04) ***	0.30 (3.34) ***	0.21 (1.44)
E* x *Discl	**–**		**–0.32 (1.08)**	**–1.24 (3.23)** ***	**0.53 (0.58)**
Proxy for Differential Reliability					
Ext	?			0.13 (3.58) ***	
E x *Ext*	+ / –			–0.57 (2.27) **	
Discl x *Ext*	?			–0.22 (2.04) **	
E* x *Discl* x *Ext	**+**			**1.52 (3.78) *** **	
Proxy for Incomplete Processing					
CHS	?				–0.01 (0.77)
E x *CHS*	–				–0.01 (0.40)
Discl x *CHS*	?				–0.01 (0.89)
E* x *Discl* x *CHS	**+**				**–0.01 (1.06)**
Control Variables					
E x *Size*	+ / –	0.01 (1.42)	0.01 (1.21)	0.01 (0.97)	0.01 (0.96)
E x *MTB*	+	–0.05 (1.18)	–0.01 (0.21)	0.02 (0.43)	–0.01 (0.06)
E x *Loss*	–	–1.07 (5.37) ***	–1.11 (5.36) ***	–1.01 (4.57) ***	–1.20 (5.01) ***
E x *Lev*	–	–0.93 (3.62) ***	–0.92 (3.40) ***	–0.85 (2.91) ***	–0.78 (2.83) ***
E x *IMR*	+ / –	–0.32 (2.09) **	–0.29 (1.46)	–0.41 (1.91) *	–0.26 (1.29)
N		525	525	525	462
R^2		26%	27%	29%	29%

Panel B. Self-Selection Model

Variables	Pred Sign	Coefficient (*t*-statisic)
		(4)
Intercept		1.25 (1.94) *
Size	–	–0.00 (1.07)
BigN	–	–0.04 (0.11)
Switch	+	1.92 (3.62) ***
EPRA	–	–0.52 (1.25)
Pre_GAAP	–	–1.05 (5.34) ***
Mliq	–	–0.03 (0.65)
IP_Exposure	–	–0.91 (1.81) *
N		166
Pseudo-R^2		51.1%

This table presents sensitivity analyses that re-examine the effect of recognizing versus disclosing fair values on earnings informativeness by controlling for firms' self-selection into the recognition versus disclosure groupings. The sample includes investment property firms domiciled in European Union countries over the period 2005-2009.

Panel A re-estimates the Table 3 regressions including the Inverse Mills Ratios (*IMR*) obtained from Panel B above. *E* x *IMR* is intended to control for firms' self-selection into the recognition versus disclosure groupings. Across all specifications, the dependent variable is R_{it}, firm *i*'s cumulative stock return, measured by the total return index, starting three months after fiscal year *t-1* and ending three months after fiscal year *t*. The experimental variables include interactions with three constructs; experimental interactions testing our hypotheses are indicated in bold. First, *Discl* is an indicator variable equal to 1 if firm *i* is a "disclosure firm" (i.e., discloses investment property fair values in the footnotes in year *t*), and 0 otherwise (i.e., is a "recognition firm" that recognizes these fair values on the balance sheet). The coefficient on *E x Discl* is used to test whether the informativeness of fair-value based earnings for disclosure firms is equivalent to that for recognition firms (i.e., H_1). Second, *Ext* is an indicator variable equal to 1 if firm *i* uses an external appraiser to derive recognized or disclosed investment property fair values in year *t*, and 0 otherwise. The coefficient on *E* x *Discl* x *Ext* is used to test whether the lower informativeness of fair-value based earnings of disclosure firms relative to that of recognition firms is attenuated through higher reliability of the fair value measures (i.e., H_{2A}). Third, *CHS* is the percentage of closely held shares of firm *i* for fiscal year *t*. The coefficient on *E* x *Discl* x *CHS* is used to test whether the lower informativeness of fair-value based earnings of disclosure firms relative to that of recognition firms is attenuated through higher investor sophistication (i.e., H_{2B}). All other variables are defined in Appendix B.

Panel B examines the determinants of firms' choice to disclose versus recognize investment property fair values, as allowed under *International Accounting Standard 40*. The dependent variable is *Discl*, an indicator variable equal to 1 if firm *i* is a "disclosure firm" (i.e., discloses investment property fair values in the footnotes in year *t*), and 0 otherwise (i.e., is a "recognition firm" that recognizes these fair values on the balance sheet). All other variables are defined in Appendix B. For this panel, the estimation is performed for the year of IFRS adoption, leading to *N* = 166 representing 166 unique firms.

All regressions are estimated using robust standard errors, with *t*-statistics provided in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the indicated one- or two-tailed tests. *N* varies across specifications due to data requirements.

TABLE 5
Sensitivity Analyses: Balance Sheet Specification

Variables	Pred Sign	Base Regression	Disclosure (H_1)	Differential Reliability (H_{2A})	Incomplete Processing (H_{2B})
		(1)	(2)	(3a)	(3b)
Intercept	?	0.05 (1.02)	0.03 (0.66)	0.19 (1.69) *	–0.02 (0.25)
IP	+	0.94 (9.81) ***	0.95 (9.79) ***	0.92 (9.03) ***	0.98 (11.12) ***
Discl	?		0.09 (1.06)	–0.11 (0.96)	0.33 (1.48)
IP x Discl	**–**		**–0.02 (0.89)**	**–0.17 (3.33) *** **	**0.05 (0.61)**
Proxy for Differential Reliability					
Ext	?			–0.18 (1.54)	
IP x *Ext*	+ / –			0.03 (1.04)	
Discl x *Ext*	?			0.28 (1.53)	
IP* x *Discl* x *Ext	**+**			**0.14 (2.35) ** **	
Proxy for Incomplete Processing					
CHS	?				0.01 (0.89)
IP x *CHS*	–				0.01 (0.41)
Discl x *CHS*	?				–0.01 (1.49)
IP* x *Discl* x *CHS	**+**				**–0.01 (1.19)**
Control Variables					
OtherAssets	+	1.05 (7.46) ***	1.04 (7.43) ***	1.03 (7.19) ***	1.04 (7.19) ***
Liabilities	–	–0.89 (6.05) ***	–0.89 (6.04) ***	–0.88 (5.83) ***	–0.96 (8.02) ***
N		536	536	536	468
R^2		86%	86%	86%	88%

This table presents sensitivity analyses that re-examine the effect of recognizing versus disclosing fair values on earnings informativeness by estimating a balance sheet specification. The sample includes investment property firms domiciled in European Union countries over the period 2005–2009. Across all specifications, the dependent variable is MVE_{it}, firm *i*'s market value of equity for year *t* assessed at the fiscal year-end.

The experimental variables include interactions with three constructs; experimental interactions testing our hypotheses are indicated in bold. First, *Discl* is an indicator variable equal to 1 if firm *i* is a "disclosure firm" (i.e., discloses investment property fair values in the footnotes in year *t*), and 0 otherwise (i.e., is a "recognition firm" that recognizes these fair values on the balance sheet). The coefficient on *IP x Discl* is used as an alternative test of whether the explanatory power of investment property fair values for stock price for disclosure firms is equivalent to that for recognition firms (i.e., H_1). Second, *Ext* is an indicator variable equal to 1 if firm *i* uses an external appraiser to derive recognized or disclosed investment property fair values in year *t*, and 0 otherwise. The coefficient on *IP* x *Discl* x *Ext* is used as an alternative test of whether the lower explanatory power of investment property fair values for stock price for disclosure firms relative to recognition firms is attenuated through higher reliability of the fair value measures (i.e., H_{2A}). Third, *CHS* is the percentage of closely held shares of firm *i* for fiscal year *t*. The coefficient on *E* x *Discl* x *CHS* is used as an alternative test of whether the lower explanatory power of investment property fair values for stock price for disclosure firms relative to recognition firms is attenuated through higher investor sophistication (i.e., H_{2B}). All other variables are defined in the Appendix B.

All regressions are estimated using robust standard errors, with *t*-statistics provided in parentheses. Experimental coefficients (or coefficient combinations) are indicated in bold. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, for the indicated one- or two-tailed tests. *N* varies across specifications due to data requirements.

TABLE 6
Sensitivity Analyses: Alternative Specifications Including Earnings Changes

Panel A. Earnings Changes Only

Variables	Pred Sign	Base Regression	Disclosure (H_1)	Differential Reliability (H_{2A})	Incomplete Processing (H_{2B})
		(1)	(2)	(3a)	(3b)
Intercept	?	–0.07 (5.12) ***	–0.08 (5.15) ***	–0.11 (2.92) ***	–0.08 (3.26) ***
ΔE	+	0.97 (3.53) ***	1.34 (5.11) ***	1.70 (4.35) ***	1.45 (5.35) ***
Discl	?		0.01 (0.23)	0.08 (1.02)	0.11 (0.51)
ΔE* x *Discl	**–**		**–0.77 (3.43) *** **	**–1.49 (4.92) *** **	**0.16 (0.37)**
Proxy for Differential Reliability					
Ext	?			0.03 (0.88)	
ΔE x *Ext*	+ / –			–0.44 (1.51)	
Discl x *Ext*	?			–0.07 (0.74)	
ΔE* x *Discl* x *Ext	**+**			**1.14 (2.68) *** **	
Proxy for Incomplete Processing					
CHS	?				–0.00 (0.15)
ΔE x *CHS*	+ / –				–0.00 (0.67)
Discl x *CHS*	?				–0.01 (0.85)
ΔE* x *Discl* x *CHS	**+**				**–0.01 (2.19)**
Control Variables					
ΔE x *Size*	+ / –	0.00 (3.89) ***	0.00 (2.94) ***	0.00 (2.77) ***	0.00 (2.24) **
ΔE x *MTB*	+	–0.06 (5.19) ***	–0.01 (0.97)	0.00 (0.10)	–0.04 (2.09) **
ΔE x *Loss*	–	–0.28 (1.30)	–0.48 (2.60) ***	–0.40 (2.15) **	–0.42 (2.32) **
ΔE x *Lev*	–	–0.46 (0.97)	–0.72 (1.42)	–0.77 (1.55)	–0.90 (1.81) *
N		400	400	400	355
R^2		20%	22%	24%	24%

Panel B. Earnings Levels and Changes

Variables	Pred Sign	Base Regression	Disclosure (H_1)	Differential Reliability (H_{2A})	Incomplete Processing (H_{2B})
		(1)	(2)	(3a)	(3b)
Intercept	?	–0.21 (8.15) ***	–0.20 (7.00) ***	–0.35 (6.42) ***	–0.15 (3.31) ***
E	+	1.36 (4.40) ***	1.17 (3.83) ***	2.16 (3.77) ***	0.57 (1.47)
ΔE	+	0.04 (0.12)	0.42 (1.35)	–0.41 (0.76)	0.91 (3.23) ***
Discl	?		–0.01 (0.16)	0.18 (1.58)	–0.14 (0.55)
E* x *Discl	**–**		**0.38 (1.05)**	**–0.92 (1.32)**	**2.05 (1.31) ***
ΔE* x *Discl	**–**		**–0.73 (2.15) ****	**–0.26 (0.48)**	**1.34 (1.30)**
Proxy for Differential Reliability					
Ext	?			0.17 (2.96) ***	
E x *Ext*	+ / –			–1.23 (2.42) **	
ΔE x *Ext*	+ / –			0.95 (1.96) *	
Discl x *Ext*	?			–0.27 (2.10) **	
E* x *Discl* x *Ext	**+**			**2.34 (2.72) *****	
ΔE* x *Discl* x *Ext	**+**			**–0.33 (0.55)**	
Proxy for Incomplete Processing					
CHS	?				–0.00 (1.32)
E x *CHS*	+ / –				0.01 (1.29)
ΔE x *CHS*	+ / –				–0.01 (1.88) **
Discl x *CHS*	?				0.00 (0.22)
E* x *Discl* x *CHS	**+**				**–0.02 (1.01)**
ΔE* x *Discl* x *CHS	**+**				**–0.03 (1.97)**
Control Variables					
E x *Size*	+ / –	0.00 (0.22)	0.00 (0.29)	–0.00 (0.20)	0.00 (0.55)
E x *MTB*	+	–0.03 (0.90)	–0.04 (0.83)	–0.02 (0.31)	0.08 (0.81)
E x *Loss*	–	–1.37 (6.12) ***	–1.32 (5.55) ***	–1.09 (4.45) ***	–0.90 (2.70) ***
E x *Lev*	–	–0.42 (0.89)	–0.26 (0.55)	–0.22 (0.45)	–0.30 (0.52)
ΔE x *Size*	+ / –	0.00 (2.31) **	0.00 (1.63)	0.00 (2.12) **	0.00 (1.52)
ΔE x *MTB*	+	–0.04 (2.71) ***	–0.00 (0.08)	0.02 (0.77)	–0.06 (1.34)
ΔE x *Loss*	–	0.20 (1.06)	0.05 (0.23)	–0.04 (0.19)	–0.21 (1.12)
ΔE x *Lev*	–	0.32 (0.61)	0.05 (0.09)	–0.03 (0.05)	0.07 (0.13)
Test of Coefficients					
(*E* + *ΔE*)	+	1.40 (4.44) ***	1.58 (4.63) ***	1.75 (4.04) ***	1.48 (4.45) ***
(*E* x *Discl*) + (*ΔE* x *Discl*)	**–**		**–0.34 (0.99)**	**–1.17 (3.06) *****	**3.38 (2.13) ****
(*E* x *Discl* x *Ext*) + (*ΔE* x *Discl* x *Ext*)	**+**			**2.01 (3.74) *****	
(*E* x *Discl* x *CHS*) + (*ΔE* x *Discl* x *CHS*)	**+**				**–0.04 (2.21) ****
N		400	400	400	355
R^2		30%	31%	35%	33%

This table presents sensitivity analyses that re-examine the effect of recognizing versus disclosing fair values on earnings informativeness by including earnings changes. The sample includes investment property firms domiciled in European Union countries over the period 2005–2009. Across all specifications, the dependent variable is R_{it}, firm *i*'s cumulative stock return, measured by the total return index, starting three months after fiscal year *t-1* and ending three months after fiscal year *t*.

Panel A includes earnings changes, and related interactions, as independent variables. Panel B includes both earnings levels and earnings changes, and related interactions, as independent variables.

The experimental variables include interactions with three constructs; experimental interactions testing our hypotheses are indicated in bold. First, *Discl* is an indicator variable equal to 1 if firm *i* is a "disclosure firm" (i.e., discloses investment property fair values in the footnotes in year *t*), and 0 otherwise (i.e., is a "recognition firm" that recognizes these fair values on the balance sheet). The coefficient on *E x Discl* is used to test whether the informativeness of fair-value based earnings for disclosure firms is equivalent to that for recognition firms (i.e., H_1). Second, *Ext* is an indicator variable equal to 1 if firm *i* uses an external appraiser to derive recognized or disclosed investment property fair values in year *t*, and 0 otherwise. The coefficient on *E* x *Discl* x *Ext* is used to test whether the lower informativeness of fair-value based earnings of disclosure firms relative to that of recognition firms is attenuated through higher reliability of the fair value measures (i.e., H_{2A}). Third, *CHS* is the percentage of closely held shares of firm *i* for fiscal year *t*. The coefficient on *E* x *Discl* x *CHS* is used to test whether the lower informativeness of fair-value based earnings of disclosure firms relative to that of recognition firms is attenuated through higher investor sophistication (i.e., H_{2B}). All other variables are defined in Appendix B.

All regressions are estimated using robust standard errors, with *t*-statistics provided in parentheses. Experimental coefficients (or coefficient combinations) are indicated in bold. ***, **, * denote significance at the 1%, 5%, and 10% level for the indicated one- or two-tailed tests. *N* varies across specifications due to data requirements.