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Recognition versus disclosure: evidence from fair value of investment property

Doron Israeli[1]

Abstract The application of International Accounting Standard 40, Investment Property, in the European Union created a unique setting to study the implications of a decision to recognize versus disclose financial statements' items, because in this setting recognized and disclosed investment-property-related amounts share a common measurement base, i.e., fair value. I use this setting to (1) explore a firm's choice to recognize versus disclose fair values of investment properties, (2) test whether recognized and disclosed amounts are valued equally by investors, and (3) determine whether these amounts exhibit equivalent associations with future financial outcomes. To correct for self-selection concerns and assure I compare analogous amounts, I develop a selection model and construct investment-property-related amounts that differ only in whether their components are recognized or disclosed. I find that (1) contractual and asset-pricing incentives help to explain the recognition versus disclosure choice, (2) investors place smaller valuation weights on disclosed amounts, and (3) recognized and disclosed amounts exhibit statistically equivalent associations with future changes in net rental income and cash flows from operations. Taken together, the evidence suggests that managers are opportunistic in making the recognition versus disclosure choice and that even when recognized and disclosed amounts share an equivalent measurement base and are equally relevant for future financial outcomes, investors weight disclosed information less heavily in determining a firm's value.

Keywords Recognition versus disclosure · Fair value of investment property · Analogous amounts · Value relevance

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1 Introduction

The application of International Accounting Standard (IAS) 40, Investment Property, in the European Union (EU), with mandatory adoption of IFRS, effective January 1, 2005, created a unique setting where recognized and disclosed investment-property-related amounts share a common measurement base, i.e., fair value. IAS 40 allows firms to choose between the cost and fair-value models to account for investment properties, while requiring firms that apply the cost model to disclose the fair values of these assets in the notes. For firms that, prior to the transition to IFRS, applied the cost model for investment properties without disclosing their fair values, the provisions of IAS 40 offered, at the transition to IFRS,[1] a choice between recognition and disclosure of fair values of investment properties and of related revaluation gains.[2] Hence firms that choose to apply the fair-value model (i.e., adopt the recognition regime) exhibit higher book values of equity and more volatile net incomes than firms that choose to apply the cost model (i.e., adopt the disclosure regime).

I use the setting created by first-time adoption of IAS 40 to (1) explore factors associated with a firm's choice to recognize versus disclose fair values of investment properties and of related revaluation gains, (2) test whether recognized and disclosed amounts are valued equally by equity investors (hereafter, "market valuation tests"), and (3) determine whether these amounts exhibit equivalent associations with future financial outcomes, such as future changes in net rental income (hereafter, "value relevance tests"). Addressing these questions in the context of investment properties, as reported under IAS 40, has the potential to provide new, substantiated insights into the drivers of a choice of recognition versus disclosure and the market valuation and value relevance of recognized and disclosed amounts in a setting where, regardless of the reporting form, the measurement base is held constant.

The setting studied here has several distinctive features. First, it permits investigation of both statement of financial position (SFP) and income statement (I/S) amounts (i.e., fair values of investment properties and changes in these fair values) and not one type of amount in isolation. Second, since investment properties are assets with identifiable financial outcomes, it allows an investigation of differences in association between recognized and disclosed amounts with related future financial outcomes. This feature enables, for the first time, to test whether the potential differences in market valuation of recognized versus disclosed amounts are due to differing value relevance of these amounts for future outcomes. Third, disclosure requirements of IAS 40 permit construction of analogous SFP and I/S amounts, so that the market valuation and value relevance tests are based on comparing SFP and I/S amounts that differ only in whether their components are recognized or disclosed. Fourth, fair values of investment properties and related

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[1] For firms that adopt the cost model, the choice remains also during periods after the transition to IFRS.

[2] As I discuss in Sect. 2, the combination of characteristics of investment properties with the requirements of IAS 36, Impairment of Assets, results in a situation in which under the cost model the firm recognizes revaluation losses but not gains, whereas under the fair value model the firm recognizes losses and gains.

revaluation gains or losses often represent a substantial fraction of firms' total assets, allowing the drawing of insights based on material SFP and I/S amounts.[3]

To explore factors associated with a choice of recognition versus disclosure, I build on accounting choice literature (e.g., Watts and Zimmerman 1978, 1979; Aboody et al. 2004; Choudhary et al. 2009), which prescribes two sets of incentives as potential drivers of the accounting choice subject of this study. Accordingly, my first hypothesis is that firms with stronger contractual incentives (e.g., those closer to violating debt covenants that are tied to SFP amounts) are more likely to adopt the recognition regime. My second hypothesis is that firms with stronger asset-pricing incentives (e.g., those with more potential to improve the reported SFP and I/S amounts) are more likely to adopt the recognition model. My third and fourth hypotheses, stated in the null form, concern the market valuation and value relevance of recognized versus disclosed amounts.

My research strategy for testing for differences in market valuation and value relevance of recognized versus disclosed SFP and I/S amounts consists of two elements. First, building on my insights regarding factors associated with a choice of recognition versus disclosure, I develop a selection model which I use, as prescribed by Heckman (1979), to control for potential self-selection issues. Second, holding measurement base constant at fair value, I construct analogous SFP and I/S investment-property-related amounts, which differ only in whether their components are recognized or disclosed.[4]

To test my hypotheses, I hand-collect investment-property-related data items that are necessary to construct analogous SFP and I/S amounts from annual financial statements of publicly traded firms in four large EU economies whose domestic pre-IFRS GAAP prescribed the cost model for investment properties (without disclosing fair values). The countries are France, Germany, Italy, and Spain. To increase the power of my tests, I focus on a homogeneous group of firms that are classified as either "Real Estate and Investment Services" or "Real Estate Investment Trusts" on the Thomson Financial Worldscope database (hereafter, "Worldscope").[5] At the transition to IFRS, about 47 % of sample firms adopted the disclosure regime, and there do not seem to be notable differences in either the composition of their investment property portfolios or measures that reflect the materiality of investment-properties-related activities relative to other activities.

Consistent with my first and second hypotheses, I find that contractual and asset-pricing incentives help explain the choice. Regarding contractual incentives, firms

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[3] For instance, in the sample used in this study, the mean of the ratio between the fair values of investment properties and firms' total assets exceeds 70 %.

[4] Specifically, as I discuss in Sect. 4.2, I use disclosed information and construct amounts (e.g., asset values and revaluation gains/losses), which as recognized under IAS 40, are affected by a firm's choice of recognition versus disclosure but are independent of it after incorporating the disclosed information.

[5] Focusing on a homogenous group of firms allows me (1) to minimize the concern that, in my sample, the switch to IFRS was associated with many accounting decisions that might affect not only the investment property choice but also the reported numbers, and (2) to test my hypotheses in a setting where disclosed and recognized amounts constitute substantial fraction of firms' total assets and net income. For example, property, plant, and equipment (PP&E) can be accounted for using either the cost or revaluation models, which raises the first concern stated above. In my setting, all the firms apply the cost model for PP&E.

with higher leverage (a proxy for the proximity of the firm to debt covenant violation) and firms with a more dispersed ownership (a proxy for the extent to which firms' managers are monitored) have a significantly higher probability of adopting the recognition regime. Regarding asset-pricing incentives, my results indicate that firms whose operating income relative to cash flows from operations was less smooth prior to the transition to IFRS and whose potential investment-property-related gains were larger have a significantly higher probability of adopting the recognition regime.

With respect to differences in market valuation, controlling for self-selection concerns, I find evidence that equity investors place smaller valuation weights on disclosed than on recognized analogous SFP and I/S amounts. This suggests that market participants do not, on average, perceive disclosed information as a substitute for recognized information in determining a firm's value. Regarding the value relevance tests, controlling for both self-selection concerns and potential differences in reliability (e.g., Dietrich et al. 2001; Muller and Reidl 2002), I show that recognized and disclosed analogous SFP and I/S amounts have statistically equivalent associations with 1- and 2-years-ahead changes in net rental income and cash flows from operations. This suggests that disclosed and recognized fair values of investment properties are equally relevant for future financial outcomes and that differences in relevance cannot explain the market's undervaluation of disclosed information in determining a firm's value.

Taken together, the evidence from my research suggests managers are opportunistic in making the recognition versus disclosure choice and that, even when recognized and disclosed amounts share an equivalent measurement base and are equally relevant for future financial outcomes, investors weight disclosed information less heavily in determining a firm's value.

My inferences are the same when I exploit one of the unique features of the study's setting and use a within-firm-changes design to test my third and fourth hypotheses. The within-firm-changes design helps to mitigate some self-selection concerns as well as potential differences in reliability related to omitted firm characteristics, which might be constant over time. Specifically, on average, sample firms that switch to recognition from disclosure experience an increase in valuation weights placed on analogous SFP and I/S amounts, even though the association between these amounts and directly related future financial outcomes remains the same. In addition, my inferences are robust to different model specifications, inclusion of additional control variables, and proxies.

This study contributes to three streams of prior research. First, it extends the accounting choice literature by illuminating factors associated with the choice to recognize versus disclose financial statement amounts when (1) essentially the same information is provided regardless of the choice, (2) both SFP and I/S amounts are affected by the choice, and (3) the choice concerns material amounts of financial statements.[6] Second, this study adds to the recognition versus disclosure literature by testing market valuation of both SFP and I/S analogous amounts (1) that

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[6] It should be noted that while this part of my study extends the accounting choice literature (e.g., Aboody et al. 2004; Choudhary et al. 2009), its key goal is to develop a selection model to correct for self-selection concerns in market valuation and value relevance tests.

constitute a substantial fraction of a firm's total assets and net income, (2) whose information content is independent of the firm's choice of recognition versus disclosure, (3) that share a common measurement base (i.e., fair value), and (4) that have identifiable future financial outcomes (e.g., net changes in rental income).[7] This paper's analyses suggest that the common finding in prior literature that investors value disclosed amounts less heavily in determining a firm value cannot be attributed to their being informationally different (e.g., measured differently), constituting a negligible part of firms' total assets and net incomes, or having different relevance for future financial outcomes.[8] Third, this study extends asset revaluation literature, which had focused on testing for associations between recognized amounts and future outcomes, by investigating whether the relation between revalued amounts and directly related future financial outcomes differs for analogous SFP and I/S recognized versus disclosed amounts.

The remainder of the paper proceeds as follows. Section 2 provides a detailed description of the reporting requirements of IAS 40. Section 3 discusses related research and develops the hypotheses. Section 4 outlines the research design, while Sect. 5 describes the sample and provides descriptive statistics. Section 6 presents the primary findings, Sect. 7 reports findings from additional analyses, and Sect. 8 concludes.

2 Reporting requirements of IAS 40

IAS 40 defines investment property as property (land or a building, part of a building, or both) held by the owner or by the lessee under a finance lease to earn rentals or for capital appreciation or both, rather than for (1) use in the production or supply of goods or services or for administrative purposes or (2) sale in the ordinary course of business (IAS 40, para. 5).

After initial recognition at cost, IAS 40 permits firms to choose between the fair-value and cost models for recognition purposes and requires that they apply the chosen model to all investment property.[9] Under the cost model, investment property is accounted for using the cost model as prescribed by IAS 16, Property, Plant and Equipment (PP&E), that is, at its initial cost less any accumulated depreciation and any accumulated impairment losses. Firms that choose to apply the cost model must disclose the fair value of investment property in the notes. Under the fair-value model, investment property is measured at fair value, with all changes in fair value recognized in profit or loss (i.e., all changes are reflected in changes of

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[7] This enables me to more clearly attribute any observed valuation differences to these amounts' recognition versus disclosure status.

[8] As Michels (2015) suggests, investors' failure to fully incorporate disclosed information into prices can be due to the fact that disclosed amounts require greater effort or expertise to understand and use.

[9] IAS 40 allows one exception to this requirement. Firms can apply the cost and fair-value models separately to (1) all investment property backing liabilities that pay a return linked directly to the fair value of, or returns from, specified assets including that investment property and (2) all other investment property (IAS 40, para. 32A). Firms included in this study's sample apply either the cost or the fair-value model to all investment property.

fair value and no depreciation is recorded under this model). After initial choice, firms can switch from the cost to the fair value model, but a switch from the fair value to the cost model is effectively prohibited.[10]

The reporting choices under IAS 40 affect both SFP and I/S reported amounts. Firms adopting the fair value model report, on the face of the I/S, revaluation gains/ losses related to investment properties. Firms adopting the cost model usually do not report depreciation charges on the face of I/S in an identifiable way; however, these amounts can be extracted from the notes in which they provide separate information about the investment properties. Both types of firms disclose in footnotes the details of developments in investment property values (i.e., initial value for all firms; depreciation charges, impairment losses, and reversals for firms adopting the cost model; and changes in fair values for firms adopting the fair-value model) as well as rental revenues and related operating expenses incurred in obtaining them.

Compared to firms that adopt the cost model for investment properties, firms that choose to apply the fair-value model for investment properties exhibit higher book values of equity and more volatile net incomes. This is because characteristics of investment properties and the requirements of IAS 36, Impairment of Assets, together create a situation where, under the cost model, the firm recognizes revaluation losses but not gains, while under the fair-value model, the firm recognizes revaluation gains and losses. Figure 1 of "Appendix 2" illustrates the SFP and I/S effects of the choice of the accounting model.

Before the adoption of IFRS in the EU, investment property was accounted for under the domestic accounting standards of the firm's country of domicile. Italy explicitly required that investment property be accounted for under the cost model (PwC 2008), while this was also the de facto requirement in France, Germany, and Spain, because they did not have a separate standard for investment property (KPMG 2003; Deloitte and Touche 2001).[11] Under the cost model, investment properties are presented on the SFP at cost less any accumulated depreciation and impairment losses.[12] None of the EU countries had domestic standards allowing or requiring the fair-value model, under which revaluation gains or losses are recognized in profit or loss.

For firms which, prior to the transition to IFRS, applied the cost model for investment properties without disclosing their fair values (e.g., France, Germany, Italy, Spain), the provisions of IAS 40 offered, at the transition to IFRS, a choice between recognition and disclosure of fair values of investment properties and of related revaluation gains. This choice, combined with the fact that under IAS 40 all

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[10] Although 12 of this study's sample firms switched from the cost model to the fair-value model, none did the reverse.

[11] Thus, in these countries, investment property is considered PP&E and accounted for using the cost model.

[12] Domestic standards in other countries require that investment properties be accounted for using the revaluation model (e.g., UK) or permit a choice between the cost and revaluation models (e.g., Belgium). Under the revaluation model, investment properties are recognized at fair value; however, unrealized changes in fair value do not flow through profit or loss but rather are recognized directly in equity.

firms provide essentially the same information about their investment properties,[13] enables me to undo the accounting for reported SFP and I/S investment-property-related amounts to construct analogous SFP and I/S amounts. As illustrated in Fig. 2, "Appendix 2", the information content of these amounts is independent of a firm's choice of recognition versus disclosure, and they differ only in whether their components are recognized or disclosed (i.e., whether they belong to firms adopting the recognition regime or those adopting the disclosure regime).

3 Hypotheses development

3.1 Accounting choice literature: hypotheses related to factors associated with the choice of recognition versus disclosure

Accounting choice is defined as any decision whose primary purpose is to influence (either in form or in substance) the output of the accounting system in a particular way (Fields et al. 2001).[14] Within this definition, the choice of recognition versus disclosure, subject of this study, is classified as an accounting method choice permitted by GAAP.[15] The accounting choice literature identifies two main categories of incentives—contractual and asset pricing—that can explain the choices among accounting methods permitted by GAAP (e.g., Watts and Zimmerman 1978, 1979; Holthausen 1990; Fields et al. 2001; Aboody et al. 2004; Choudhary et al. 2009). I build on this literature in developing hypotheses concerning factors associated with the choice of recognition versus disclosure and in developing a selection model to be used in market valuation and value relevance tests.[16]

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[13] I say "essentially" because firms that adopt the fair-value model are not required to disclose the costs of investment properties (although in practice many firms do so) and are not required to disclose as-if depreciation charges. However, these charges can be estimated using common depreciation methods, information provided in financial statements, and adjustments made at the transition to IFRS.

[14] This definition is broad enough to include the choice of LIFO versus FIFO, the choice to structure a lease so that it qualifies for operating/financing lease treatment, choices affecting the level of disclosure, and choices regarding the timing of adoption of new standards.

[15] Few settings in accounting permit a choice between recognition and disclosure. In U.S. GAAP, such a choice existed under Statement of Financial Accounting Standard (SFAS) 123, Accounting for Stock-Based Compensation, before it was eliminated in December 2004 by the revised version of the standard, SFAS 123R.

[16] Aboody et al. (2004) and Choudhary et al. (2009) also study incentives to recognize versus disclose information in arguably a free choice environment: application of SFAS 123 and anticipation of SFAS 123R. Similar to this study, those authors mention contractual and asset-pricing incentives and find that firms are opportunistic in making the recognition versus disclosure choice (e.g., firms accelerate the vesting of executive stock options to avoid recognition of expenses in the future). However, there are at least two notable differences between those studies and my study, which permit me to contribute to the accounting choice literature. First, while those studies examine incentives to recognize versus disclose information that affects I/S amounts only, I explore incentives to recognize versus disclose information that affects both I/S and SFP amounts. Second, while those studies examine incentives to recognize versus disclose expenses, I investigate incentives to recognize versus disclose fair values and related revaluation gains that result in increased book values of equity and more volatile I/S amounts. Thus my study illuminates dimensions of contractual and asset-pricing incentives that have not been studied before (e.g., proximity to violation of debt covenants that are tied to SFP amounts).

3.1.1 Contractual incentives

Contractual incentives stem mainly from the presence of agency costs and the absence of complete markets. Under the opportunistic contractual perspective, managers choose accounting techniques to reduce the extent to which accounting-based debt covenants are binding or to increase their compensation.[17] Prior accounting choice literature provides evidence that firm-specific factors such as leverage (as a proxy for the proximity of the firm to violation of its debt covenant), the presence or absence of a management earnings-based compensation plan, and size (as a proxy for political attention) are associated with accounting choices. For example, Bowen et al. (1981) find that firms with financial ratios closer to likely debt constraints are more likely to elect to capitalize interest expenses. Dhaliwal (1980) reports that firms in the oil and gas industry that use the full-cost method and argue against the successful-efforts method have higher leverage ratios.[18]

Because the choice under IAS 40 concerns recognition versus disclosure of fair value of investment property (which is not lower than cost less accumulated depreciation and impairment losses), firms choosing the recognition regime enjoy higher book values of equity and higher total asset values. Such a reporting choice might allow managers to avoid violation of debt covenants that are tied to SFP amounts. This reasoning leads to the following hypothesis:

H1a Ceteris paribus, the probability of a firm choosing to recognize the fair value of investment property and related revaluation gains is increasing in its proximity to violation of debt covenants that are tied to SFP values.

Prior research finds that managers select accounting methods opportunistically to increase their compensation (e.g., Matsunaga and Park 2001; Aboody et al. 2004; Choudhary et al. 2009). Because under the recognition regime the reported amounts are subject to substantial managerial discretion, managers whose compensation package is more closely related to reported amounts are more likely to opportunistically choose the recognition regime.[19] Prior research also shows that outside monitoring counteracts the private incentives of senior managers (e.g., La Porta et al. 1998; Pollock et al. 2001; Muller et al. 2008; Choudhary et al. 2009). Specifically, firms with stronger external governance exert more control over management, among other things, by influencing the accounting method chosen (to limit management influence on reported numbers). Also, firms with stronger outside monitoring are more likely to use compensation contracts that are not based on reported amounts, thereby reducing management's compensation-related incentives to adopt the recognition regime. This reasoning leads to the following hypothesis:

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[17] For example, management compensation contracts (e.g., Healy 1985; Murphy 2000) and bond covenants (e.g., Smith and Warner 1979) are frequently based on reported financial accounting numbers.

[18] Other related studies include Hagerman and Zmijewski (1979), Holthausen (1981), Lilien and Pastena (1982), Dhaliwal et al. (1982), Watts and Zimmerman (1990), Lemke and Page (1992), Aboody et al. (2004), Wyatt (2005), and Choudhary et al. (2009).

[19] Alternatively, managers with a larger influence on board decisions will tend to tie their compensation package to reported accounting numbers and accompany this action by adopting the recognition regime, which allows them more discretion in setting the final annual compensation.

H1b Ceteris paribus, the probability of a firm choosing to recognize the fair value of investment property and related revaluation gains is decreasing in the level of monitoring imposed on its management.

3.1.2 Asset pricing incentives

Asset pricing incentives are driven by information asymmetries between informed managers and less well-informed investors and creditors. Under the opportunistic information perspective, because accounting choices are made by self-interested managers, they might be used to increase (or reduce) earnings in a given period, to smooth earnings over time, to avoid losses or earnings declines, or a combination of these, among other strategies, to influence stock prices.[20]

Although the choice under IAS 40 does not have direct cash flow implications, prior research shows that accounting method choices are associated with changes in stock prices (e.g., Aboody 1996; Espahbodi et al. 2002). In addition, Graham et al. (2005) report that corporate executives believe net income is the most important financial metric for public firms and they desire to report smooth earnings or meet earnings targets—to the extent that they are willing to sacrifice long-term firm value to achieve these goals. Because recognition of fair value of investment property increases earnings volatility, I raise the following hypothesis:

H2a Ceteris paribus, the probability of a firm choosing to recognize the fair value of investment property and related revaluation gains is decreasing in its income smoothing.

At the adoption of IAS 40 (or at the switch from the cost to fair value model), the choice of recognition versus disclosure of fair value of investment property provides firms with an opportunity to increase the book value of equity and current profit or loss. Because firms make this choice after observing the fair values of investment properties and related revaluation gains, the opportunity to substantially increase the book value of equity and current profit or loss (i.e., adopt the recognition regime) is likely to be more tempting whenever such gains are high. Thus I offer the following hypothesis:

H2b Ceteris paribus, the probability of a firm choosing to recognize the fair value of investment property and related revaluation gains is increasing in available revaluation gains.

3.2 Recognition versus disclosure and asset revaluation literatures: hypotheses related to market valuation and value relevance of recognized versus disclosed amounts

Generally, studies that examine whether disclosed and recognized amounts are valued equivalently by equity investors find that investors weight recognized

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[20] Although the mechanism for influencing stock prices is not, in general, well articulated, these studies have their roots in the association between earnings and stock prices first documented by Ball and Brown (1968).

amounts more heavily in determining a firm value.[21] Aboody ([1996](#)) finds that oil and gas firms recognizing a write-down in connection with a decrease in oil prices experience a negative stock market reaction, whereas there is no significant stock market reaction for firms disclosing, but not recognizing, a write-down. Espahbodi et al. ([2002](#)) examine the equity price reaction to the pronouncements related to accounting for stock-based compensation. The authors document that firms exhibit significant abnormal returns around the issuance of exposure drafts proposing recognition of stock-based compensation costs and around the event reversing the decision to require disclosure only. Ahmed et al. ([2006](#)) use a sample of banks that have some recognized and some disclosed derivatives before SFAS 133 and find that the valuation coefficients on recognized derivatives are significant whereas the valuation coefficients on disclosed derivatives are not. Using the context of subsequent events, Michels ([2015](#)) finds that market prices are more sensitive to recognized values than to disclosed values.[22]

Asset revaluation literature focuses primarily on the relation between fixed asset revaluation amounts and share prices, returns, or both. Easton et al. ([1993](#)) and Barth and Clinch ([1998](#)) find for a sample of Australian firms that, although revaluation increments have weak explanatory power for returns, the revaluation reserve has significant explanatory power for prices. They interpret their findings as evidence that Australian revaluations are value-relevant but not always timely. Aboody et al. ([1999](#)) focus on UK firms and find that upward revaluations of fixed assets are significantly positively related to changes in future firm performance, measured by operating income and cash flow from operations, and to annual returns and prices, indicating that revaluations are value-relevant for asset value changes.

Investment property assets, as reported under IAS 40, have three of the unique features: (1) they have identifiable, directly related future outcomes (e.g., net rental income); (2) by incorporating disclosed information, it is possible to construct analogous SFP and I/S amounts whose informational content is independent of the firm's choice of recognition versus disclosure; and (3) they constitute a substantial fraction of the total assets and reported earnings, that is, meaningful SFP and I/S amounts. Equity investors might place equal or different valuation weights on recognized versus disclosed amounts depending on their associations with future firm performance. This is because stock prices and returns summarize investors' assessments of firms' asset values and expectations about future performance implied by these values (e.g., Barth and Clinch [1998](#); Aboody et al. [1999](#)).[23]

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[21] A few studies report evidence suggesting equity investors price disclosed and recognized amounts equivalently (e.g., Gopalakrishnan [1994](#); Davis-Friday et al. [1999](#); Balsam et al. [2004](#)). For example, Davis-Friday et al. ([1999](#)) find only modest and model-sensitive evidence that the recognized liability receives more weight than the disclosed liability. Similarly, Bratten et al. ([2013](#)) provide evidence that disclosed items are not processed differently from recognized items when the disclosures are salient and not based on management estimates (i.e., when reliability is not an issue).

[22] Some experimental studies provide additional evidence that individuals tend to distinguish between recognized and disclosed accounting information in assessing a firm's performance, value, risk, and other attributes (e.g., Harper et al. [1987](#); Hirst et al. [2004](#); Viger et al. [2008](#); Libby et al. [2006](#)).

[23] The fair value of investment property and related revaluation gains reflect, among other things, net rental income (and hence, to some extent, future cash flows from operations) from future leases in the light of current conditions.

However, because in this setting recognized and disclosed amounts share a common measurement base—fair value—and have the same information content (i.e., the information content of analogous SFP and I/S amounts is independent of the recognition versus disclosure choice), controlling for potential differences in reliability (e.g., Choudhary 2011; Bratten et al. 2013),[24] there is, a priori, no reason that the two types of amounts will differ in their relevance for future related outcomes. Also, the recognized and disclosed amounts investigated in this study represent meaningful fractions of total SFP and I/S amounts, implying that equity investors are likely to pay attention to them (e.g., Hirshleifer and Teoh 2003) and invest time in studying them (e.g., Barth et al. 2003). This reasoning leads to the following hypotheses related to market valuation and value relevance, stated in the null form:

H3 Equity investors place equivalent weights on recognized and disclosed fair values and related revaluation gains in determining a firm's value.

H4 Recognized and disclosed fair values and related revaluation gains exhibit equivalent associations with directly related future financial outcomes.

4 Research design

My research design consists of two elements: (1) exploration of factors associated with a choice of recognition versus disclosure and development of a selection model to correct for self-selection concerns in tests of H3 and H4, and (2) construction of analogous SFP and I/S amounts, to ensure tests of H3 and H4 are based on comparing analogous amounts.

4.1 Factors associated with the choice of recognition versus disclosure

To test H1a, H1b, H2a, and H2b and to develop a selection model, I conduct univariate analyses and estimate the following cross-sectional probit model:[25]

$$
\begin{aligned}
\Pr(REC = 1) = \ &\Phi(\beta_0 + \beta_1 LEV^* + \beta_2 BLOCKHOLD + \beta_3 INCSMOOTH \\
&+ \beta_4 TRANSGAIN + \beta_5 IP\_ACTIVITY + \beta_6 Log(MVE) + \beta_7 MTB^* \\
&+ \beta_8 ROA + \beta_9 REIT + \beta_k \sum_k IP\_TYPE \\
&+ \beta_p \sum_p YEAR\_FE + \beta_q \sum_q COUNTRY\_FE)
\end{aligned}
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$$(1)$$

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[24] For instance, Bratten et al. (2013) find that the differences between market weights on recognized versus disclosed amounts is most prevalent when disclosed values are less reliable.

[25] I use a probit model because according to Heckman (1979), the inverse Mills ratio of a selection model must be generated from the estimation of a probit model. My inferences relating to factors associated with the choice of recognition versus disclosure are the same if I use a logit model instead.

where Pr(·) denotes probability, and Φ(·) is the cumulative distribution function of the standard normal distribution. *REC* is an indicator variable that equals 1 if firm *i* chooses the recognition regime and 0 otherwise. All variables are measured as defined in "Appendix 1".

To test H1a, I examine whether the coefficient on LEV^*, β_1, is positive. LEV^* is a firm's leverage adjusted for the choice of recognition versus disclosure to include, for firms choosing the disclosure regime, the fair value of investment property and related revaluation gains. I follow prior literature and use leverage as a proxy for the proximity of the firm to debt covenant violation (e.g., Press and Weintrop 1990; DeAngelo et al. 1994; DeFond and Jiambalvo 1994; Aboody et al. 2004; Alissa et al. 2013).[26]

To test H1b, I explore whether the coefficient on *BLOCKHOLD*, β_2, is negative. *BLOCKHOLD* is the total percentage of a firm's shares held by investors who hold 5 % or more of those shares. I follow prior literature and use the proportion of shares held by large blockholders as a proxy for the level of monitoring or outside control imposed on the firm's managers (e.g., Muller et al. 2008; Choudhary et al. 2009; Core et al. 2014).

To test H2a, I investigate whether the coefficient on *INCSMOOTH*, a proxy for a firm's income smoothing, β_3, is positive. *INCSMOOTH* is the ratio between the standard deviation of a firm's operating income and the standard deviation of its cash flows from operations during the last 4 years, minus its country of domicile real estate firms' average, to control for country-specific GAAP or local effects.[27] If firms' past income smoothing is related to the choice of recognition versus disclosure, the coefficient on *INCSMOOTH* will be positive. That is, firms with less smooth earnings (larger values of *INCSMOOTH*) in the past will be more inclined to adopt the recognition regime than firms with smoother earnings.

To test H2b, I check whether the coefficient on *TRANSGAIN*, β_4, is positive. *TRANSGAIN* is the sum of net-of-tax difference between fair value and carrying amount of investment property at the beginning of the year of transition to IFRS or adoption of the recognition regime and $REVGAIN^*$, scaled by beginning-of-year market value of equity.

Equation (1) also includes control variables. First, as a control for the possible influence of the materiality of a firm's investment-property-related assets/revenues with respect to its total assets/revenues and the composition of its investment property portfolio on its choice, Eq. (1) includes *IP_ACTIVITY* and *IP_TYPE* variables, respectively. Second, following prior literature's finding that size is an important determinant of accounting method choice (e.g., political costs), Eq. (1) includes a natural logarithm of size, *Log(MVE)*. Third, as a control for possible effects of risk, investment opportunities, firm profitability, and firm type, Eq. (1)

---

[26] Ideally, I would have preferred to use a measure of debt covenants; however, such data are not readily available. My use of firm leverage is consistent with prior literature. As Nini et al. (2012) and Cohen et al. (2014) indicate, leverage ratio, as computed in this study, is very commonly used in debt contracts. As I discuss in Sect. 7.3, my inferences are the same when I use alternative proxies for proximity of debt covenant violations.

[27] Firms that just went public or those for which information about operating income, cash flow from operation, or both is not available are assigned their country of domicile average, implying these firms get a variable of zero.

includes MTB^*, ROA, and $REIT$. Finally, to control for potential country-level variation in IFRS implementation (e.g., Ball 2006; Daske et al. 2013) and related accounting method choices as well as time specific effects, Eq. (1) includes country- and year-fixed effects, $COUNTRY\_FE$ and $YEAR\_FE$.

Because H1 and H2 state that the choice to recognize versus disclose fair values of investment properties and related revaluation gains is correlated with several factors related to contractual and asset pricing incentives, the setting studied in this paper raises self-selection-related concerns, which can affect the results concerning tests of H3 and H4. To address this concern, I use a two-stage procedure (Heckman 1979).[28] That is, I use Eq. (1) as a selection model to correct for self-selection in subsequent second-stage analyses (i.e., tests of H3 and H4). In particular, I calculate an inverse Mills ratio, $InvMillsRatio$, for each firm-year, separately for firm-years reporting under the recognition regime and for those reporting under the disclosure regime (and include the $InvMillsRatio$ as a control variable in Eqs. (2)–(5)).

4.2 Analogous SFP and I/S investment-property-related amounts

To construct analogous investment-property-related amounts whose information content is independent of the recognition versus disclosure choice, I first identify reported SFP and I/S amounts that are affected by the firm's choice of recognition versus disclosure. For firms choosing the recognition regime, such amounts include (1) fair value of investment property (SFP-related amount), (2) revaluation gains/ losses (I/S-related amounts), and (3) disposal gains/losses (I/S-related amounts). For firms choosing the disclosure regime, such amounts include (1) the carrying amount of investment property (SFP-related amount), (2) depreciation charges (I/S-related amount), (3) impairment losses/reversals (I/S-related amount), and (4) disposal gains/losses (I/S-related amount). Next, I combine the SFP and I/S amounts that are affected by the choice of recognition versus disclosure with disclosed amounts, or undo the accounting, and achieve analogous SFP and I/S amounts. For example, for firms choosing the disclosure regime, I combine the SFP and I/S amounts that are affected by the choice of recognition versus disclosure with the following disclosed amounts: (1) fair value of investment property, (2) cost of investment property, (3) accumulated depreciation charges, and (4) current period subtracted accumulated depreciation due to sell.

The SFP-related analogous amounts include the (1) $IPFV$, which is the recognized (disclosed) fair value of investment property for firms adopting the recognition (disclosure) regime and (2) TA^*, computed as follows:

$$TA^* = \begin{cases} TA - IPFV & \text{if } REC = 1 \\ TA - IPBV & \text{Otherwise} \end{cases}$$

The I/S-related analogous amounts include the (1) NI^*, which is the portion of a firm's net income that is not affected by the choice of recognition versus disclosure, and (2) $REVGAIN^*$, denoting revaluation gains/losses of both types of firms, computed as follows:

$$NI^* = \begin{cases} NI - (REVGAIN + DISPGAIN) \times (1 - TAXRATE) & \text{if } REC = 1 \\ NI - (DISPGAIN - IPDEP\_CHRG - IMPAIRLOSS) \times (1 - TAXRATE) & \text{Otherwise} \end{cases}$$

$$REVGAIN^* = \begin{cases} (REVGAIN + DISPGAIN) \times (1 - TAXRATE) & \text{if } REC = 1 \\ (\Delta IPFV - \Delta IPCOST + DISPGAIN - IPSUBT\_DEP) \times (1 - TAXRATE) & \text{Otherwise} \end{cases}$$

"Appendix 2" provides a simplified example, which illustrates the construction of these amounts and shows how the information content of $IPFV$, TA^*, NI^*, and $REVGAIN^*$ is independent of the firm's choice of recognition versus disclosure and these amounts differ only in whether they belong to firms choosing the recognition regime or disclosure regime.[29]

4.3 Market valuation and value relevance tests of recognized versus disclosed amounts

To test H3, I estimate two regression models, treating them as second-stage analyses given the selection model developed above. First, I estimate the following pooled cross-sectional equation relating market value of equity to accounting amounts and allowing for different coefficients on the fair values of investment properties and related revaluation gains, depending on whether they relate to recognition or disclosure regime firm-years:

$$\begin{aligned} MVE_{i,t} = {}& \beta_0 + \beta_1 TA_{i,t}^* + \beta_2 TL_{i,t} + \beta_3 NI_{i,t}^* + \beta_4 IPFV_{i,t} + \beta_5 REVGAIN_{i,t}^* \\ & + \beta_6 DISC_{i,t} + \beta_7 (DISC_{i,t} \times IPFV_{i,t}) + \beta_8 (DISC_{i,t} \times REVGAIN_{i,t}^*) \\ & + \beta_9 InvMillsRatio_{i,t} + \beta_p \sum_p YEAR\_FE_t + \beta_q \sum_q COUNTRY\_FE_i + \varepsilon_{i,t} \end{aligned}$$

$$(2)$$

where MVE is market value of equity 3 months after end of year, and $DISC$ is an indicator variable that equals one for disclosure regime firm-years.[30] I use market value of equity 3 months after end of year to ensure all the accounting information is available to the market.[31]

One can view Eq. (2) as based on the Ohlson (1995) valuation model, where book value of equity is the difference between total assets and total liabilities (TL), and total assets and net income are disaggregated into (1) amounts that are not related to the choice of recognition versus disclosure of investment properties (e.g., TA^*, NI^*) and (2) those that are related to that choice but constructed in a way that

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[29] The appendix also illustrates how the formulas I developed to construct analogous amounts are robust to various investment-property-related transactions/activities (e.g., disposals of investment property).

[30] All variables, except $DISC$, $YEAR\_FE$, $COUNTRY\_FE$, and $InvMillsRatio$ are deflated by market value of equity at the beginning of year t (e.g., Barth and Clinch 2009).

[31] My inferences remain the same if I use market value of equity at the end of the fiscal year.

achieves analogous amounts (e.g., *IPFV*, *REVGAIN**). Alternatively, one can view Eq. (2) as deriving from an asset-based valuation equation, where earnings is a proxy for unrecognized net assets (Barth and Landsman 1995). Both views lead to similar interpretations of the coefficients on *IPFV*, *REVGAIN**, and the related interaction variables. Specifically, if investors place similar valuation weights on disclosed and recognized amounts, β_7 and β_8 will not differ from 0. Based on prior research, I predict positive coefficients on *TA**, *NI**, *IPFV*, and *REVGAIN** and a negative coefficient on *TL*.

To address the concern that inferences from Eq. (2) are attributable to intertemporally constant omitted variables (Landsman and Magliolo 1988), I also estimate the following pooled cross-sectional equation relating stock returns to current year net income and change in net income allowing for different coefficients on recognized versus disclosed amounts:[32]

$$
\begin{aligned}
RETURN_{i,t} = {} & \beta_0 + \beta_1 NI^*_{i,t} + \beta_2 REVGAIN^*_{i,t} + \beta_3 \Delta NI^*_{i,t} + \beta_4 \Delta REVGAIN^*_{i,t} \\
& + \beta_5 DISC_{i,t} + \beta_6 (DISC_{i,t} \times REVGAIN^*_{i,t}) + \beta_7 (DISC_{i,t} \times \Delta REVGAIN^*_{i,t}) \\
& + \beta_8 MTB_{i,t-1} + \beta_9 Log(MVE_{i,t-1}) + \beta_{10} InvMillsRatio_{i,t} \\
& + \beta_p \sum_p YEAR\_FE_t + \beta_q \sum_q COUNTRY\_FE_i + \varepsilon_{i,t}
\end{aligned}
$$

$$(3)$$

where *RETURN* is firm i's year t equity return, measured from 3 months after year-end for year $t - 1$ to 3 months after year-end for year t, and Δ denotes annual change. This specification resembles those estimated by Easton et al. (1993), Barth and Clinch (1998), and Aboody et al. (1999), with *MTB* and *MVE* at the beginning of the period added as controls for the market-to-book and size effects in stock returns (e.g., Fama and French 1992). If revaluation gains provide timely information and the timeliness is similar across recognized and disclosed amounts, β_6 and β_7 will not differ from 0. Based on prior research (e.g., Easton and Harris 1991; Aboody et al. 1999), I predict β_1, β_2, β_3, and β_4 (β_8 and β_9) are positive (negative).

To test H4, I consider two investment-property-related identifiable future outcomes—net rental income and cash flows from operations—and I estimate two equations, controlling for differences in reliability. First, I estimate the following pooled cross-sectional equation:

$$
\begin{aligned}
\Delta NETRENTINC_{i,t+\tau} = {} & \beta_0 + \beta_1 REVGAIN^*_{i,t} + \beta_2 IPFV_{i,t} + \beta_3 \Delta NETRENTINC_{i,t} \\
& + \beta_4 DISC_{i,t} + \beta_5 (DISC_{i,t} \times REVGAIN^*_{i,t}) + \beta_6 (DISC_{i,t} \times IPFV_{i,t}) \\
& + \beta_7 BigFour_{i,t} + \beta_8 ExtAppraiser_{i,t} + \beta_9 InvMillsRatio_{i,t} \\
& + \beta_p \sum_p YEAR\_FE_t + \beta_q \sum_q COUNTRY\_FE_i + \varepsilon_{i,t}
\end{aligned}
$$

$$(4)$$

where $\Delta NETRENTINC_{i,t+\tau}$ is firm i's net rental income in year $t + \tau$ minus net rental income in year t scaled by market value of equity at the beginning of year t,

---

[32] Consistent evidence from a returns specification provides support for my inferences on H3 based on Eq. (2).

and τ equals 1 or 2.[33] I include only investment-property-related amounts to predict changes in net rental income because it is a direct outcome of investment property assets. If recognized and disclosed amounts are equally relevant for future financial outcomes, as measured by net rental income, then β_5 and β_6 will not differ from zero. Based on prior research, I predict β_1, β_2, and β_3 are positive.

I next estimate the following pooled cross-sectional equation that focuses on changes in cash flows from operations, instead of changes in net rental income:

$$\begin{aligned}
\Delta CFO_{i,t+\tau} = {} & \beta_0 + \beta_1 REVGAIN^*_{i,t} + \beta_2 IPFV_{i,t} + \beta_3 TA^*_{i,t} + \beta_4 \Delta WC_{i,t} + \beta_5 \Delta CFO_{i,t} \\
& + \beta_6 DISC_{i,t} + \beta_7 (DISC_{i,t} \times REVGAIN^*_{i,t}) + \beta_8 (DISC_{i,t} \times IPFV_{i,t}) \\
& + \beta_9 BigFour_{i,t} + \beta_{10} ExtAppraiser_{i,t} + \beta_{11} InvMillsRatio_{i,t} \\
& + \beta_p \sum_p YEAR\_FE_t + \beta_q \sum_q COUNTRY\_FE_i + \varepsilon_{i,t}
\end{aligned}$$

(5)

Equation (5) resembles Eq. (4) except for the focus on changes in cash from operations, $\Delta CFO_{i,t+\tau}$, and the inclusion of $\Delta WC_{i,t}$, the scaled change in working capital from year $t-1$ to year t, and the inclusion of TA^*. I include change in working capital because of the documented significant association between operating cash flows and lagged working capital accruals (e.g., Dechow 1994). I include TA^* to control for potential effects of size. If recognized and disclosed amounts are equally relevant for future financial outcomes, as measured by changes in cash flows from operations, then β_7 and β_8 will not differ from zero. Following prior research, I predict β_1, β_2, and β_4 are positive.

To strengthen the argument that the tests of associations of recognized and disclosed investment-property-related amounts with changes in net rental income and cash flows from operations (i.e., tests of H4) are attributed to relevance rather than reliability, I follow prior literature and include controls for an external appraiser, *ExtAppraiser*, and Big Four auditor, *BigFour*, which are expected to capture differences in reliability in Eqs. (4) and (5) (e.g., Titman and Trueman 1986; Beatty 1989; Dietrich et al. 2001; Muller and Reidl 2002).[34]

Finally, to control for unobservable year and country trends, I include year- and country-fixed effects, and to mitigate concerns related to within-firm correlation of residuals (e.g., Gow et al. 2010), I base reported z-values [i.e., Eq. (1)] and t-statistics [i.e., Eqs. (2)–(5)] on standard errors clustered by firm.

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[33] Because change in net rental income is before taxes, *REVGAIN** in this specification is before taxes. My results are insensitive to this tax adjustment.

[34] IAS 40 encourages, but does not require, determining the fair value of investment property on the basis of a valuation by an independent appraiser. Firms that employ an external appraiser are more likely to have more precise fair value estimates (e.g., Dietrich et al. 2001; Muller and Reidl 2002); in addition, prior research suggests larger auditors provide stronger monitoring (e.g., Titman and Trueman 1986; Beatty 1989) and are more likely to have experience in estimating fair value. To control for these reliability-related issues, I include in Eqs. (4)–(5) indicator variables for use of independent appraiser and use of a Big Four audit firm.

5 Data, sample selection, and descriptive statistics

5.1 Data and sample selection

Market and accounting data items that are not related to investment properties are obtained from the Worldscope, and all of the investment-property-related data are hand-collected. I start by hand-collecting information about a firm's initial (i.e., at the transition to IFRS) and subsequent investment-property-related accounting choice. Next, for firms adopting the recognition regime, I hand-collect the following investment-property-related items: (1) carrying amount (i.e., fair value), (2) revaluation gains/losses, (3) disposal gains/losses (if reported),[35] (4) rental revenues and related expenses, and (5) adjustment to equity at the transition to IFRS (i.e., increase in book value of equity that is associated with the first adoption of the fair value model).

For firms reporting under the disclosure regime, I hand-collect the following investment-property-related items: (1) carrying amount, (2) fair value, (3) cost, (4) current period depreciation charges, (5) accumulated depreciation, (6) subtracted accumulated depreciation due to disposal, (7) disposal gains/losses, (8) impairment losses/reversals, (9) rental revenues and related expenses, and (10) adjustment to equity attributable to change in accounting policy (i.e., the increase in book value of equity that is associated with the switch from a disclosure to a recognition regime).[36]

To increase the power of my tests, that is, (1) to test the hypotheses on a homogenous sample of firms for which investment properties are likely to constitute a large fraction of their total assets and reported net income and (2) to ensure that the sample firms are affected similarly by accounting differences or choices due to transition to IFRS, I focus on firms that are classified as either "Real Estate Investment Services" or "Real Estate Investment Trusts" (REITs), (hereafter, "real estate firms"). To ensure that the accounting choice is between recognition and disclosure of fair value and related revaluation gains, I focus on firms from countries in which the fair value model (or any other type of revaluation model) was not allowed for investment properties under domestic GAAP.[37] To facilitate hand-collection, I focus on real estate firms from four large EU economies—France, Germany, Italy, and Spain—from 2005 or "first IFRS year" to 2010. I define "first

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[35] Some firms reporting under the recognition regime include disposal gains/losses in the revaluation gains/losses (i.e., these firms re-measure the disposed investment property to its sell price and thus have no disposal gains/sales).

[36] For firms reporting under both the recognition and the disclosure regimes, I also hand-collect data about (1) whether the firm uses an internal or external appraiser to determine the fair values of investment properties; (2) whether the firm employs a Big 4 auditor; (3) the number and the fair value of each of the following investment property types, *IP_TYPE*: industrial (e.g., warehouses and manufacturing spaces), retail (e.g., shopping centers and parking lots), office (e.g., office buildings), residential (e.g., apartment complexes), hotels; and other; and (4) whether it has investment-property-related investments outside its country of domicile (international investments).

[37] Hence countries where the revaluation model for investment properties was either required (e.g., UK, Denmark) or permitted (e.g., Belgium, Switzerland, Poland) under domestic GAAP are not part of my sample.

Table 1 Sample selection procedure

	Number of firms		Percent of firms	
	Less	Remaining	Less (%)	Remaining (%)
Firms traded on their own country of origin stock exchanges (i.e., France, Germany, Italy, Spain) that are classified as either Real Estate Investment and Services or Real Estate Investment Trusts in Thompson Financial Worldscope in October 2011		214		100
Excluding the firms				
That went public after 1.1.2008	14	200	7	93
That are subsidiaries	8	192	4	90
With no investment property assets (or with investment properties equal to zero) during 2005–2010	18	174	8	81
For which the fair value of investment properties did not exceed 10 % of total assets in any of the sample years (2005–2010)	9	165	4	77
For which less than three sets of financial statements could be obtained	21	144	10	67
For which no annual reports were found	51	93	24	43
For which the fair value of investment property in the first "IFRS year" (or subsequent "IFRS years") could not be obtained	7	86	3	40
Final sample				
Firms		86		40
Firm-years		532		

This table presents the sample selection procedure. Specifically, I begin with all active real estate firms (classified in Thomson Financial Worldscope as either "Real Estate Investment and Services" or "Real Estate Investment Trusts") publicly traded on the stock exchanges of their country of origin (i.e., France, Germany, Italy, and Spain). I exclude firms (1) that went public after 1.1.2008, (2) that are subsidiaries, (3) for which the fair value of investment properties did not exceed 10 % of total assets in any of the sample years, (4) for which less than three sets of financial statements could be obtained, (5) for which no annual reports were found, and (6) for which fair value of investment property could not be obtained

IFRS year" as the first financial reporting year for which the firm's consolidated financial statements according to IFRS are publicly available.[38]

Table 1 presents the sample selection procedure. I begin with an initial list of 214 real estate firms from France, Germany, Italy, and Spain that appear on Worldscope as "Active" in October 2011. Excluding firms that became public after January 1, 2008 (to ensure at least three observations for each firm) and firms that are subsidiaries (because the reporting choice under IAS 40 is unlikely to be independent of the choice made by the parent firm), I get a list of 192 potential

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[38] For firms publicly traded in France, Italy, and Spain, the first IFRS year begins on or after January 1, 2005. In Germany, early adoption of IFRS was allowed, and thus the first IFRS year can begin earlier.

firms. After locating annual financial reports of the firms,[39] I further exclude firms with no investment properties, firms for which the fair value of investment properties did not exceed 10 % of total assets in any sample year, and firms with fewer than three publicly available annual reports.[40] This results in a final sample of 86 publicly traded real estate firms with 532 firm-year observations.

5.2 Descriptive statistics and univariate comparisons of firms reporting under the recognition regime to those reporting under the disclosure regime

Table 2 provides a country breakdown of sample firms and firm-years and their initial and subsequent recognition versus disclosure choices. The table reveals that France and Germany have the highest representation in the sample, together comprising 80 % of firms and 79 % of firm-years. In addition, the table shows that, at the transition to IFRS, 40 (46) firms adopted the disclosure (recognition) regime and that, of these 40 firms, 12 subsequently switched to the recognition regime, resulting in 198 (334) firm-years that report under the disclosure (recognition) regime.[41]

Table 3 presents distributional statistics as well as univariate comparisons of firm-years reporting under the recognition regime to those reporting under the disclosure regime, across key variables used in the analyses. As is shown in the table, the differences between mean values of many of the variables are not statistically different from zero (e.g., *MVE*, *IP_ACTIVITY*, *IPFV*, *MTB**, *TA**, *NI**, *REVGAIN**), implying that the two groups of firms are similar in many respects including their size, the materiality of investment-property-related assets and revenues to their total assets and revenues, and the size and changes in fair values of their investment properties. The table also reveals that rental revenues and fair values of investment properties constitute a material fraction of firms' total revenues (mean *RENTREVRATIO* of 64.2 and 62.6 % for firms under the recognition and disclosure regimes) and their total assets (mean *IP_ASSETRATIO* of 72.7 and 71.3 %, for firms under the recognition and disclosure regimes).[42]

Despite the many similarities, Table 3 also reveals some notable differences between firms reporting under the two regimes. First, consistent with hypotheses H1a, H1b, H2a, and H2b, compared to firms adopting the disclosure regime, those adopting the recognition regime have a significantly higher leverage ratio (mean *LEV** of 0.507

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[39] I base my analyses on annual data because interim financial statements are not available for many firms.

[40] Firms that had investment property assets for the first time after 2005 are included in the sample starting with the year they had these assets because this is the first year they must make the reporting choice under IAS 40.

[41] Similar analysis of sample firms that are classified as REITs on Worldscope (35 out of 86 firms) reveals that most of the REITs are in France and that, at the transition to IFRS, 19 of them adopted the recognition regime and, in subsequent years, three REITs switched to the recognition regime.

[42] This suggests the choice of recognition versus disclosure is meaningful for the sample firms and that, at the transition to IFRS, the firms are likely affected mostly by requirements of IAS 40 and, to a lesser extent, by other accounting changes brought up by the adoption of IFRS.

Table 2 Breakdown of the sample by country and the choice of recognition versus disclosure

| | Sample firms | | Initial accounting choice | | | | Subsequent accounting choice | | Sample firm-years | | Sample firm-years by accounting policy | | | |
| | | | Recognition | | Disclosure | | Switch to recognition | | | | Recognition | | Disclosure | |
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
France	37	43.02	20	43.48	17	42.50	3	25.00	226	42.48	134	40.12	92	46.46
Germany	32	37.21	20	43.48	12	30.00	6	50.00	199	37.41	151	45.21	48	24.24
Italy	5	5.81	3	6.52	2	5.00	0	0.00	31	5.83	17	5.09	14	7.07
Spain	12	13.95	3	6.52	9	22.50	3	25.00	76	14.29	32	9.58	44	22.22
	86	100	46	100	40	100	12	100	532	100	334	100	198	100

This table presents the country distribution of the sample firms and firm-years and their initial and subsequent choices of recognition versus disclosure of fair value of investment property and related revaluation gains, during the period from first year of transition to IFRS to 2010

Table 3 Distributional statistics and univariate analyses

	Rec. regime		Disc. regime		Mean (Rec. regime) – Mean (Disc. regime)				Two sample t-test	
	Mean	SD	Mean	SD	Hyp.	Pred.	Diff.		t-stat	p-value
Dependent variables										
MVE	774.2	1857.0	774.1	1087.0		?	0.100		0.00	1.000
RETURN	0.184	1.165	0.105	0.849		?	0.079		0.82	0.414
ΔNETRENTINC	0.040	0.148	0.020	0.068		?	0.020		1.90	0.058*
ΔCFO	0.017	0.828	0.062	0.578		?	−0.666		−0.67	0.506
Independent variables										
LEV*	0.507	0.180	0.383	0.195	H1a	+	0.124		6.58	0.000***
BLOCKHOLD	0.367	0.305	0.601	0.382	H1b	−	−0.234		−4.74	0.000****
INCSMOOTH	0.151	0.891	−0.342	0.349	H2a	+	0.493		8.31	0.000***
TRANSGAIN	0.241	0.393	0.075	0.115	H2b	+	0.166		3.02	0.003***
IP_ACTIVITY										
RENTREVRATIO	0.642	0.357	0.626	0.378		?	0.017		0.45	0.652
IP_ASSETRATIO	0.727	0.269	0.713	0.265		?	0.013		0.29	0.769
IP_TYPE										
INDUSTRIAL	8.70	18.04	2.62	5.37		?	6.08		5.31	0.000***
RETAIL	27.49	28.35	34.05	33.59		?	−6.56		−2.08	0.038**
OFFICE	28.83	31.59	37.18	32.69		?	−8.36		−2.61	0.009***
RESIDENTIAL	29.81	35.77	22.13	29.47		?	7.68		2.44	0.015**
HOTELS	2.66	10.06	2.54	7.10		?	0.11		0.14	0.891
OTHER	2.58	7.91	1.45	3.51		?	1.13		2.08	0.038**
IPFV	1597.0	3448.0	1542.0	2478.0		?	55.0		0.19	0.846
ROA	0.003	0.109	0.017	0.047		?	−0.014		−1.89	0.059*

Table 3 continued

	Rec. regime		Disc. regime		Mean (Rec. regime) − Mean (Disc. regime)			Two sample t-test	
	Mean	SD	Mean	SD	Hyp.	Pred.	Diff.	t-stat	p-value
MTB*	1.048	0.500	1.248	2.136		?	−0.200	−1.16	0.247
TA*	600.6	1159.0	619.7	1159.0		?	−19.1	−0.17	0.865
TL	1569.0	2438.0	1208.0	1946.0		?	361.0	1.71	0.089*
NI*	0.011	0.771	0.016	0.184		?	−0.004	−0.30	0.766
REVGAIN*	0.040	0.367	0.026	0.225		?	0.014	0.84	0.399
REIT	0.382	0.49	0.430	0.50		?	−0.049	−0.99	0.322
BigFour	0.594	0.49	0.753	0.43		?	−0.159	−3.54	0.000***
ExtAppraiser	0.917	0.28	0.861	0.35		?	0.056	1.74	0.083*

This table represents mean values and standard deviations, separately for firm-years reporting under the recognition regime and those reporting under the disclosure regime as well as associated differences in means along with the related two-sample t-statistics. All variables are calculated as defined in "Appendix 1". TRANSGAIN, ΔNETRENTINC, ΔCFO, and NI* are deflated by beginning-of-year market value of equity

*, **, and *** indicate significance at the less than 10, 5, and 1 % levels, respectively

versus 0.383, t-statistic $= 6.58$), significantly more dispersed ownership (mean *BLOCKHOLD* of 0.367 versus 0.601, t-statistic $= -4.74$), significantly larger income smoothing parameter (mean *INCSMOOTH* of 0.151 versus -0.342, t-statistic $= 8.31$), and a significantly larger sum of fair value adjustments to equity and revaluation gains in the year of transition to IFRS or of switching to the recognition regime (mean *TRANSGAIN* of 0.241 versus 0.075, t-statistic $= 3.02$).

In addition, there seem to be some differences in the mean percentages of fair values of certain investment property types. In particular, mean percentage of fair value invested in *INDUSTRIAL* and *RESIDENTIAL* (*RETAIL* and *OFFICE*) assets is significantly larger (smaller) among firms adopting the recognition regime than among those reporting under the disclosure regime.[43] Similarly, although a large fraction of the sample firm-years employ a Big Four auditor and an independent appraiser to determine the fair value of investment properties, some differences exist (mean *BigFour* of 0.594 versus 0.753, t-statistic $= -3.54$ and mean *ExtAppraiser* of 0.917 versus 0.861, t-statistic $= 1.74$). I control for these differences using the selection model I develop as well as using control variables in market valuation and value relevance tests, that is, Eqs. (2)–(5).

Untabulated Pearson and Spearman correlations between variables used in estimating Eq. (1) reveal that the correlation between variables assumed to capture different incentives for accounting choice within the same category (i.e., contractual or asset pricing) are negligible. For example, the Pearson correlation between LEV^* and *BLOCKHOLD* is -0.045 and between *INCSMOOTH* and *TRANSGAIN* is 0.017. Pearson (Spearman) correlations between variables used in market valuation tests, that is, Eqs. (2) and (3), and value-relevance tests, that is, Eqs. (4) and (5), are as expected. For example, *IPFV* and $REVGAIN^*$ have high Pearson correlations with *MVE* (0.484 and 0.304) and low Pearson correlations with NI^* (0.057 and 0.098). *RETURN* has positive and relatively large Pearson correlation with $REVGAIN^*$ (0.21) and negative correlations with beginning-of-year market-to-book ratio and market value of equity.

6 Results

6.1 Factors associated with the choice of recognition versus disclosure[44]

Table 4 presents summary statistics from estimating two versions of Eq. (1), that is, the probit model, one with *RENTREVRATIO* and another with *IP_ASSETRATIO*, both denoted by *IP_ACTIVITY* in Eq. (1).[45] As is shown in the table, both models

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[43] Untabulated results show that the mean number of investment properties types and the percentage of firm-years with international investment properties (i.e., investment-property-related investments outside the country of domicile) are not statistically different between the two types of firms.

[44] If not otherwise stated, "significant" implies statistical significance at the 5 % level of a well-specified test.

[45] I do so because these variables are highly correlated and capture the same construct, i.e., the materiality of a firm's investment-property-related assets/revenues to its total assets/revenues (*IP_ACTIVITY*).

Table 4 Regression analysis of factors associated with the choice of recognition versus disclosure

	Hyp.	Pred.	(1)		(2)	
			Coef.	z-value	Coef.	z-value
Experimental variables						
LEV*	H1a	+	2.018	4.240***	2.054	4.280***
BLOCKHOLD	H1b	−	−0.489	−2.140**	−0.496	−2.071**
INCSMOOTH	H2a	+	0.884	4.630***	0.879	4.640***
TRANSGAIN	H2b	+	0.621	1.840*	0.624	2.043**
Control variables						
IP_ACTIVITY						
RENTREVRATIO		?	0.158	0.510		
IP_ASSETRATIO		?			−0.043	−0.100
Log(MVE)		?	0.280	1.330	0.298	1.280
MTB*		?	−0.846	−1.440	−0.845	−1.427
ROA		?	0.638	0.600	0.626	0.590
REIT		?	−0.582	−1.990**	−0.492	−1.680*
IP_TYPE			YES		YES	
YEAR_FE			YES		YES	
COUNTRY_FE			YES		YES	
Full model statistics						
Chi-squared test			114.1***		113.3***	
% Correctly predicted			82.3 %		81.8 %	
McFadden R^2			40.9 %		40.8 %	
Experimental variables statistics						
Chi-squared test			57.6***		57.6***	
% Correctly predicted			74.0 %		74.0 %	
McFadden R^2			19.6 %		19.6 %	

This table provides summary statistics from estimating two probit models, Eq. (1), to test whether the hypothesized variables help explain firms' choices of recognition versus disclosure, and to develop a selection model to be used in market valuation and value-relevance tests, using all sample firm-years. All variables are calculated as defined in "Appendix 1". TRANSGAIN is deflated by beginning-of-year market value of equity. Reported z-values are based on standard errors clustered by firm

*, **, and *** indicate significance at the less than 10, 5, and 1 % levels, respectively

correctly predict around 82 % of recognition versus disclosure choices with high Chi-squared statistics (114.1 or 113.3), and in both specifications, the variables of interest have significant coefficient estimates with hypothesized signs.

With respect to contractual incentives, consistent with H1a, Table 4 shows that the coefficient estimate on LEV* is positive and significant (z-value = 4.240 or 4.280), meaning that firms with higher leverage ratios, that is, closer to violating debt covenants that are tied to SFP values, have higher probability of adopting the recognition regime. In addition, in support of H1b, the coefficient estimate on BLOCKHOLD is negative and significant (z-value = −2.140 or −2.071), implying

that firms that have more dispersed ownership, that is, impose lower external monitoring on their management, are more likely to adopt the recognition regime.

With respect to asset pricing incentives, Table 4 reveals that, consistent with H2a, the coefficient estimate on *INCSMOOTH* is positive and significant (*z*-value = 4.630 or 4.640), indicating that firms with less smoothed profits in the past, relative to other firms in their country of domicile, have higher probability of choosing the recognition regime. Similarly, consistent with H2b, the coefficient estimate on *TRANSGAIN* is positive and significant at least at the 10 % level test (*z*-value = 1.840 or 2.043), suggesting that firms with larger sums of fair value adjustments to equity and revaluation gains have higher probability of adopting the recognition regime.

Estimating the explanatory power and the predictive ability of the four experimental variables—*LEV**, *BLOCKHOLD*, *INCSMOOTH*, *TRANSGAIN*—relative to that of the full model (which includes, among others, controls for composition of investment property portfolio and firm profitability), Table 4 reveals that they are responsible for about 48 % of the total explanatory power (using McFadden R^2), and that, using these variables, it is only possible to correctly predict 74 % of the recognition versus disclosure choices (which represents 90 % of the full model's predictive ability).

Collectively, evidence presented in Tables 3 and 4 indicates that, despite the many similarities, firms choosing the recognition regime have higher leverage (H1a), more dispersed ownership (H1b), more volatile operating profits in the past (H2a), and more investment-property-related gains at the adoption of the recognition regime (H2b) than those choosing the disclosure regime. This implies that, in the context of investment properties, various dimensions of both contractual and asset pricing incentives help explain the recognition versus disclosure choice. In addition, results presented in Table 4 suggest it is appropriate to use Eq. (1) as a selection model to correct for self-selection concerns in subsequent second-stage market valuation and value-relevance tests, that is, tests of H3 and H4, (Heckman 1979).[46]

6.2 Market valuation tests of recognized versus disclosed amounts

Table 5 provides regression summary statistics from estimating four versions of Eq. (2) and of Eq. (3), which are designed to test H3 using specifications in which *MVE* is the dependent variable (panel A) and in which *RETURN* is the dependent variable (panel B). The coefficients of interest in panel A of Table 5 are those on the analogous SFP and I/S amounts, that is, *IPFV* and *REVGAIN**, and on their interaction with a firm's choice of recognition versus disclosure, that is, *DISC* × *IPFV* and *DISC* × *REVGAIN**. The coefficients of interest in panel B of Table 5 are those on *REVGAIN** and Δ*REVGAIN** and on their interaction with a

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[46] Because the first version of Eq. (1), i.e., with *RENTREVRATIO* as a control variable for investment-property-related activity, has slightly higher Chi-squared statistic and McFadden R-squared, I use this version of Eq. (1) as my selection model and to compute the *InvMillsRatio*, to be controlled for in Eqs. (2)–(5). My inferences are the same if I use the second version of Eq. (1), i.e., with *IP_ASSETRATIO* as a control variable.

Table 5 Market valuation tests of recognized versus disclosed amounts

Panel A: An analysis of market value of equity [Eq. (2), N = 440]

	Hyp.	Pred.	(1)		(2)		(3)		(4)	
			Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
TA*		+	0.422	4.44***	0.444	4.70***	0.454	5.33***	0.466	5.45***
TL		–	−0.418	−4.35***	−0.438	−4.66***	−0.448	−5.28***	−0.463	−5.49***
NI*		+	0.158	1.18	0.173	1.09	0.172	1.20	0.183	1.29
IPFV		+	0.458	5.17***	0.485	5.61***	0.480	6.02***	0.498	6.32***
REVGAIN*		+	0.721	1.71*	0.721	1.77*	1.121	2.24**	1.068	2.23**
DISC		?			0.049	0.47	−0.113	−0.40	0.039	0.32
DISC × IPFV	H3	∓			−0.097	−1.76*			−0.093	−2.12**
DISC × REVGAIN*	H3	∓					−0.843	−2.37**	−0.811	−2.46**
InvMillsRatio		?			0.483	1.45	0.583	1.87*	0.399	1.19
YEAR_FE			YES		YES		YES		YES	
COUNTRY_FE			YES		YES		YES		YES	
Adj R²			66.0 %		66.8 %		68.3 %		68.6 %	
IPFV + DISC × IPFV					0.388				0.406	
F-stat (F-test if the sum = 0)					171.0***				196.0***	
F-stat (F-test if the sum = IPFV)					10.41***				8.67***	
REVGAIN* + DISC × REVGAIN*							0.277		0.256	
F-stat (F-test if the sum = 0)							3.17*		3.34*	
F-stat (F-test if the sum = REVGAIN*)							35.60***		28.90***	
F-stat (F-test if both sums = 0)									111.0***	
F-stat (F-test if the first sum = IPFV and the second sum = REVGAIN*)									23.20***	

Table 5 continued

Panel B: An analysis of stock returns [Eq. (3), N = 354]

	Hyp.	Pred.	(1) Coef.	(1) t-stat	(2) Coef.	(2) t-stat	(3) Coef.	(3) t-stat	(4) Coef.	(4) t-stat
NI*		+	0.944	3.47***	1.030	3.65***	0.959	3.44***	1.032	3.66***
REVGAIN*		+	1.015	2.98***	1.346	3.13***	1.093	3.01***	1.378	3.03***
ΔNI*		+	0.466	1.79*	0.482	1.85*	0.481	1.77*	0.482	1.85*
ΔREVGAIN*		+	0.036	0.74	0.045	1.25	0.067	1.87*	0.069	1.93*
DISC		?			0.060	0.78	0.098	0.89	0.051	0.62
DISC × REVGAIN*	H3	∓			−0.904	−2.34**			−0.993	−2.31**
DISC × ΔREVGAIN*	H3	∓					−0.032	−2.55**	−0.036	−2.06**
MTB		−	−0.088	−2.02**	−0.046	−1.39	−0.100	−1.82*	−0.096	−1.69*
Log(MVE)		−	−0.052	−1.54	−0.055	−0.99	−0.050	−1.52	−0.046	−1.39
InvMillsRatio		?			0.045	−0.13	−0.105	−0.32	−0.029	−0.08
YEAR_FE			YES		YES		YES		YES	
COUNTRY_FE			YES		YES		YES		YES	
Adj R²			37.0 %		38.1 %		37.7 %		38.4 %	
REVGAIN* + DISC × REVGAIN*					0.442				0.385	
F-stat (F-test if the sum = 0)					4.14**				4.11**	
F-stat (F-test if the sum = REVGAIN*)					4.99**				5.18**	
ΔREVGAIN* + DISC × ΔREVGAIN*							0.035		0.033	
F-stat (F-test if the sum = 0)							2.94*		3.13*	
F-stat (F-test if the sum = ΔREVGAIN*)							4.07**		4.43**	
F-stat (F-test if both sums = 0)									3.64**	

Table 5 continued

Panel B: An analysis of stock returns [Eq. (3), N = 354]

	Hyp.	Pred.	(1) Coef.	t-stat	(2) Coef.	t-stat	(3) Coef.	t-stat	(4) Coef.	t-stat
F-stat (F-test if the first sum = REVGAIN* and the second sum = ΔREVGAIN*)									9.85***	

This table presents regression summary statistics from estimating Eqs. (2) and (3) to test H3, i.e., market valuation tests of recognized versus disclosed amounts. Panel A reports the statistics from estimating Eq. (2), where *MVE* serves as a dependent variable. Panel B provides summary statistics from estimating Eq. (3), where *RETURN* serves as a dependent variable. All variables are calculated as described in "Appendix 1". All variables except *DISC*, *MTB*, and *Log(MVE)* are deflated by beginning-of-year market value of equity. Reported *t*-statistics are based on standard errors clustered by firm

*, **, and *** indicate significance at the less than 10, 5, and 1 % levels, respectively

firm's choice of recognition versus disclosure, that is, $DISC \times REVGAIN^*$ and $DISC \times \Delta REVGAIN^*$.

As is shown in Table 5, panel A, across all versions of Eq. (2), the coefficient estimates on $IPFV$ and $REVGAIN^*$ are significantly positive. (For $IPFV$, they range from 0.458 to 0.498 with t-statistics between 5.17 and 6.32; for $REVGAIN^*$, they range from 0.721 to 1.121 with t-statistics between 1.71 and 2.24.) However, the coefficient estimates on $DISC \times IPFV$ and $DISC \times REVGAIN^*$ are significantly negative. (For $DISC \times IPFV$, they are -0.097 and -0.093 with t-statistics -1.76 and -2.12; for $DISC \times REVGAIN^*$, they are -0.843 and -0.811 with t-statistics -2.37 and -2.46.) Although the sums of coefficient estimates on $IPFV$ and $DISC \times IPFV$ and on $REVGAIN^*$ and $DISC \times REVGAIN^*$ are significantly positive, they are significantly lower than the coefficient estimates on $IPFV$ and $REVGAIN^*$.

For example, as column (4) in panel A of Table 5 reveals, the sum of coefficient estimates on $IPFV$ and $DISC \times IPFV$ is 0.405 (F-statistic for test of equality to zero is 196 and for test of equality to coefficient estimate on $IPFV$ is 8.67), and the sum of coefficient estimates on $REVGAIN^*$ and $DISC \times REVGAIN^*$ is 0.257 (F-statistic for test of equality to zero is 3.34 and for test of equality to coefficient estimate on $REVGAIN^*$ is 28.90). F-statistics for simultaneous tests of (1) equality of both sums to zero is 111 and of (2) equality of the first sum to coefficient estimate on $IPFV$ and of the second sum to coefficient estimate on $REVGAIN^*$ is 23.2. This implies that, although equity investors place simultaneously positive valuation weights on analogous SFP and I/S amounts for firms reporting under both the recognition and disclosure regimes, these valuation weights are significantly lower for firms reporting under the disclosure regime.

A similar picture emerges from results pertaining to various versions of Eq. (3), presented in Table 5, panel B. Specifically, the panel reveals that, while coefficient estimates on $REVGAIN^*$ and $\Delta REVGAIN^*$ are significantly positive (for $REVGAIN^*$, they range from 1.015 to 1.378 with t-statistics between 2.98 and 3.13; for $\Delta REVGAIN^*$, they range from 0.036 to 0.069 with t-statistics between 0.74 and 1.93), the coefficient estimates on $DISC \times REVGAIN^*$ and $DISC \times \Delta REVGAIN^*$ are significantly negative (for $DISC \times REVGAIN^*$, they are -0.904 and -0.993 with t-statistics -2.34 and -2.31; for $DISC \times \Delta REVGAIN^*$, they are -0.032 and -0.036 with t-statistics -2.55 and -2.06). The sums of coefficient estimates on $REVGAIN^*$ and $DISC \times REVGAIN^*$ and on $\Delta REVGAIN^*$ and $DISC \times \Delta REVGAIN^*$, which represent valuation weights placed on analogous SFP and I/S amounts for firms reporting under the disclosure regime, are significantly positive. However, they are significantly lower than the coefficient estimates on $REVGAIN^*$ and $\Delta REVGAIN^*$.

In particular, as is evident from column (4) in panel B of Table 5, the sum of coefficient estimates on $REVGAIN^*$ and $DISC \times REVGAIN^*$ is 0.385 (F-statistic for test of equality to zero is 4.11 and for test of equality to coefficient estimate on $REVGAIN^*$ is 5.18), and the sum of coefficient estimates on $\Delta REVGAIN^*$ and $DISC \times \Delta REVGAIN^*$ is 0.033 (F-statistic for test of equality to zero is 3.13 and for test of equality to coefficient estimate on $\Delta REVGAIN^*$ is 4.43). F-statistics for simultaneous tests of (1) equality of both sums to zero is 3.64 and of (2) equality of

the first sum to coefficient estimate on $REVGAIN^*$ and of the second sum to coefficient estimate on $\Delta REVGAIN^*$ is 9.85.

Taken together, findings presented in Table 5 indicate that, in both specifications (i.e., using either MVE or $RETURN$ as the dependent variable), correcting for self-selection (i.e., including $InvMillsRatio$) and controlling for year- and country-fixed effects and for other important variables (e.g., TA^*, TL, NI^*) that load in the predicted way, investors place smaller valuation weights on disclosed analogous SFP and I/S amounts than on recognized analogous SFP and I/S amounts in determining a firm value. This evidence leads to a rejection of H3.

6.3 Value-relevance tests of recognized versus disclosed amounts

Table 6 presents regression summary statistics from estimating several versions of Eq. (4) and of Eq. (5), which are designed to test H4 using specifications in which the investment-property-related identifiable future outcomes are represented by $\Delta NETRENTINC_{t,t+\tau}$ (panel A) and by $\Delta CFO_{t,t+\tau}$ (panel B; in both panels, $\tau = 1$ or $\tau = 2$). Similar to market valuation tests, the coefficients of interest in panels A and B of Table 6 are those on the analogous SFP and I/S amounts, that is, $REVGAIN^*$ and $IPFV$, and on their interaction with a firm's choice of recognition versus disclosure, that is, $DISC \times REVGAIN^*$ and $DISC \times IPFV$.

Panel A of Table 6 reveals that, in both 1- and 2-years-ahead specifications (i.e., $\Delta NETRENTINC_{t,t+1}$ and $\Delta NETRENTINC_{t,t+2}$ are the dependent variables), while the coefficient estimates on $REVGAIN^*$ and $IPFV$ are significantly positive (for $REVGAIN^*$, they range from 0.055 to 0.261 with t-statistics between 1.94 and 2.42; for $IPFV$, they range from 0.024 to 0.033 with t- statistics between 2.57 and 12.47), the coefficient estimates on $DISC \times REVGAIN^*$ and $DISC \times IPFV$ are statistically indistinguishable from zero. Accordingly, in both specifications, the sums of coefficient estimates on $REVGAIN^*$ and $DISC \times REVGAIN^*$ and on $IPFV$ and $DISC \times IPFV$ are significantly positive and statistically equal to coefficient estimates on $REVGAIN^*$ and $IPFV$.

For example, as column (2) in panel A of Table 6 reveals, the sum of coefficient estimates on $REVGAIN^*$ and $DISC \times REVGAIN^*$ is 0.056 (F-statistic for test of equality to zero is 4.56 and for test of equality to coefficient estimate on $REVGAIN^*$ is 0.32), and the sum of coefficient estimates on $IPFV$ and $DISC \times IPFV$ is 0.03 (F-statistic for test of equality to zero is 6.77 and for test of equality to coefficient estimate on $IPFV$ is 0.12). F-statistics for simultaneous tests of (1) equality of both sums to zero is 8.71 and of (2) equality of the first sum to coefficient estimate on $REVGAIN^*$ and of the second sum to coefficient estimate on $IPFV$ is 0.21. This implies that analogous SFP and I/S amounts simultaneously have significantly positive associations with identifiable future outcomes and that these associations are statistically the same among firms reporting under both the recognition and disclosure regimes.

Evaluation of results relating to various versions of Eq. (5), presented in Table 6, panel B, offers similar inferences. In both 1- and 2-years-ahead specifications (i.e., $\Delta CFO_{t,t+1}$ and $\Delta CFO_{t,t+2}$ are the dependent variables), while the coefficient estimates on $REVGAIN^*$ and $IPFV$ are significantly positive, the coefficient

Table 6 Value-relevance tests of recognized versus disclosed amounts

Panel A: An analysis of net rental income [Eq. (4)]

	Hyp.	Pred.	1-year-ahead association				2-years-ahead association			
			(1)		(2)		(3)		(4)	
			Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
REVGAIN*		+	0.055	2.19**	0.070	2.42**	0.254	1.94*	0.261	2.21**
IPFV		+	0.033	10.45***	0.032	12.47	0.026	5.33***	0.024	2.57***
ΔNETRENTINC		?	0.150	1.86*	0.148	0.64	0.182	2.26**	0.244	1.87*
DISC		?			−0.020	−0.37			−0.021	−0.34
DISC × REVGAIN*	H4	∓			−0.014	−0.51			−0.007	−0.22
DISC × IPFV	H4	∓			−0.003	−0.12			0.002	0.17
BigFour		?	0.040	1.36	0.039	1.46	0.019	1.20	0.020	1.28
ExtAppraiser		?	0.091	2.07**	0.093	1.99**	0.082	1.88*	0.088	1.91*
InvMillsRatio		?			0.103	1.75*			0.167	1.84*
YEAR_FE			YES		YES		YES		YES	
COUNTRY_FE			YES		YES		YES		YES	
N			343		343		257		257	
Adj R²			59.9 %		59.9 %		29.8 %		29.7 %	
REVGAIN* + DISC × REVGAIN*					0.056				0.254	
F-stat (F-test if the sum = 0)					4.51**				5.85**	
F-stat (F-test if the sum = REVGAIN*)					0.32				0.17	
IPFV + DISC × IPFV					0.030				0.025	
F-stat (F-test if the sum = 0)					6.77***				4.26**	
F-stat (F-test if the sum = IPFV)					0.12				0.20	
F-stat (F-rest if both sums = 0)					8.71***				6.89***	

Table 6 continued

Panel A: An analysis of net rental income [Eq. (4)]

		1-year-ahead association				2-years-ahead association			
		(1)		(2)		(3)		(4)	
Hyp.	Pred.	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
F-stat (F-test if the first sum = REVGAIN* and the second sum = IPFV)				0.21				0.13	

Panel B: An analysis of cash flows from operations [Eq. (5)]

		1-year-ahead association				2-years-ahead association			
		(1)		(2)		(3)		(4)	
	Hyp.	Pred.	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
REVGAIN*		+	0.297	2.17**	0.324	2.01**	0.197	1.94*	0.207	2.01**
IPFV		+	0.030	3.67***	0.029	3.54***	0.058	2.85***	0.068	2.82***
TA*		?	−0.111	−2.14**	−0.112	−2.12**	−0.066	−1.72*	−0.066	−0.93
ΔWC		+	0.213	2.52**	0.215	2.52**	0.103	2.01**	0.088	1.88*
ΔCFO		?	−0.537	−1.23	−0.536	−1.22	−0.374	−1.81*	−0.383	−2.13**
DISC		?			0.047	0.55			0.012	0.90
DISC × REVGAIN*	H4	∓			−0.032	−0.36			−0.018	−0.64
DISC × IPFV	H4	∓			0.005	0.65			−0.009	−0.58
BigFour		?	0.058	0.86	0.056	0.84	0.076	0.64	0.069	1.79*
ExtAppraiser		?	0.335	1.86*	0.345	1.80*	0.200	1.28	0.164	0.95
InvMillsRatio		?			0.127	1.76*			0.092	1.72*

Table 6 continued

Panel B: An analysis of cash flows from operations [Eq. (5)]

| | 1-year-ahead association | | | | | | 2-years-ahead association | | | |
| | (1) | | | | (2) | | (3) | | (4) | |
	Hyp.	Pred.	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
YEAR_FE			YES		YES		YES		YES	
COUNTRY_FE			YES		YES		YES		YES	
N			340		340		254		254	
Adj R²			23.4 %		23.3 %		23.8 %		25.5 %	
REVGAIN* + DISC × REVGAIN*					0.292				0.189	
F-stat (F-test if the sum = 0)					5.94***				3.91**	
F-stat (F-test if the sum = REVGAIN*)					0.45				0.07	
IPFV + DISC × IPFV					0.034				0.058	
F-stat (F-test if the sum = 0)					7.32***				5.56**	
F-stat (F-test if the sum = IPFV)					0.43				0.04	
F-stat (F-test if both sums = 0)					9.64***				8.08***	
F-stat (F-test if the first sum = REVGAIN* and the second sum = IPFV)					0.34				0.05	

This table presents regression summary statistics from estimating Eqs. (4) and (5) to test H4, i.e., value-relevance tests of recognized versus disclosed amounts. Panel A reports summary statistics from estimating Eq. (4), where the investment-property-related identifiable future outcomes are denoted by $\Delta NETRENTINC_{t+\tau}$. Panel B reports the results from estimating Eq. (5), where the investment-property-related identifiable future outcomes are denoted by $\Delta CFO_{t+\tau}$. In both panels, the columns under "1-year-ahead association" correspond to the case when $\tau = 1$, and the columns under "2-years-ahead association" correspond to the case when $\tau = 2$. All variables are calculated as described in "Appendix 1". All variables except DISC are deflated by beginning-of-year market value of equity. Reported t-statistics are based on standard errors clustered by firm

*, **, and *** indicate significance at the less than 10, 5, and 1 % levels, respectively

estimates on $DISC \times REVGAIN^*$ and $DISC \times IPFV$ are statistically indistinguishable from zero. As in panel A, Table 6, in both specifications, the sums of coefficient estimates on $REVGAIN^*$ and $DISC \times REVGAIN^*$ and on $IPFV$ and $DISC \times IPFV$, which represent value-relevance of analogous SFP and I/S amounts for identifiable future investment-property-related outcomes among firms reporting under the disclosure regime, are significantly positive and statistically equal to coefficient estimates on $REVGAIN^*$ and $IPFV$.

Overall, evidence shown in Table 6 indicates that in both specifications (i.e., using either $\Delta NETRENTINC_{t,t+\tau}$ or $\Delta CFO_{t,t+\tau}$ as dependent variables, $\tau = 1$ or $\tau = 2$), correcting for self-selection (i.e., including $InvMillsRatio$), controlling for potential differences in reliability (i.e., using $BigFour$ and $ExtAppraiser$), controlling for year- and country-fixed effects, and for other important variables (e.g., TA^*, ΔWC^*), disclosed and recognized analogous SFP and I/S amounts are equally relevant for identifiable investment-property-related future outcomes. This finding leads to a rejection of H4.[47]

7 Findings from additional analyses

7.1 Within-firm-changes research design

To draw inferences regarding market valuation and value-relevance of recognized versus disclosed analogous SFP and I/S amounts, I employ cross-sectional specifications [i.e., Eqs. (2)–(5)] and use $invMillsRatio$ to correct for self-selection concerns (e.g., Heckman 1979) and $BigFour$ and $ExtAppraiser$ to control for potential differences in reliability (e.g., Dietrich et al. 2001; Muller and Reidl 2002).

Despite these controls, one concern is that there might be omitted firm characteristics that are not captured by $invMillsRatio$ as well as some differences in reliability that are not addressed by $BigFour$ and $ExtAppraiser$. To mitigate this concern, I utilize one of the unique features of the study's setting and conduct market valuation and value-relevance tests using a within-firm-changes research design.[48] Specifically, in my sample, 12 of the firms that initially adopt the disclosure regime (71 firm-years) switched at some point to the recognition regime. Using this subsample of firms, it is possible to conduct market valuation and value-relevance tests of analogous SFP and I/S amounts, which belong to the same firms and differ in only whether the firms report under the recognition or the disclosure regime. Such tests help to mitigate some self-selection concerns as well as

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[47] Note that, due to sample-size-related issues, the value-relevance tests of recognized versus disclosed amounts only consider two periods in the future. Thus the findings of no difference in relevance between the recognized and disclosed amounts are limited to a two-year foresight approach. A longer-term approach could in fact yield significant differences.

[48] I thank the anonymous referee for raising this point.

differences in reliability related to omitted firm characteristics which might be constant over time.[49]

Untabulated results show that all my inferences are the same when I use this alternative research design to test H3 and H4. In particular, despite the fact that analyses are based on the same firms, the analogous SFP and I/S amounts are weighted more heavily when they are reported under the recognition regime and their associations with identifiable future outcomes are statistically equivalent under both reporting methods.

7.2 Alternative model specifications

One potential concern with inferences based on results presented in Tables 5 and 6 is that they are based on Eqs. (2)–(5), which include interaction variables for investment-property-related amounts only (i.e., $IPFV$, $REVGAIN^*$, $\Delta REVGAIN^*$) and not for other variables such as TA^*, TL. To address this concern, I estimate Eqs. (2)–(5), using fully interacted specifications.

In addition, to make sure the results presented in Tables 5 and 6 are not driven by unobserved differences between "Real Estate Investment Services" firms and REITs (defined by Worldscope), between the compositions of firms' investment property portfolios, or both, I estimate Eqs. (2)–(5), controlling for $REIT$ and IP_TYPE (the variables that I originally include in the selection model I develop). Untabulated results show that all of my inferences are the same when I use these alternative specifications to test H3 and H4.

7.3 Alternative proxies for the proximity of violating debt covenants

In investigating factors associated with the choice of recognition versus disclosure, I follow prior literature and use LEV^* as a proxy for how close the firm is to violating debt covenants that are tied to SFP amounts. Because a firm with high leverage may cover its debt well, I follow Nini et al.'s (2012) observation that, besides leverage, two additional commonly used measures in debt covenants are $CURR\_RATIO$ (current ratio, defined as current assets divided by current liabilities) and INT_COV (interest coverage ratio, defined as the ratio of interest expense to lagged assets). Untabulated results show that all my inferences are the same when I use these alternative proxies for the proximity of violating debt covenants.

8 Conclusion

The application of International Accounting Standard 40, Investment Property in the European Union, with mandatory adoption of IFRS, effective January 1, 2005, created a unique setting where the recognized and disclosed investment-property-

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[49] The drawback of the within-firm-changes research design is that it requires a sample of firms that initially adopt the disclosure regime and later switch to the recognition regime. Such a requirement limits the size of the sample and thus the power of the tests.

related amounts share a common measurement base i.e., fair value. I use the setting created by first-time adoption of IAS 40 to (1) explore factors associated with a firm's choice to recognize versus disclose fair values of investment properties and of related revaluation gains, (2) test whether recognized and disclosed amounts are valued equally by equity investors, and (3) determine whether these amounts exhibit equivalent associations with future financial outcomes, such as future changes in net rental income.

I acknowledge the fact that, under IAS 40, firms self-select whether to adopt the recognition or the disclosure regime and take steps to assure that, in market valuation and value-relevance tests, I compare analogous recognized and disclosed amounts. In particular, I develop a selection model, which I use to control for potential self-selection issues, and I construct analogous SFP and I/S investment-property-related amounts that differ only in whether their components are recognized or disclosed.

I find that contractual and asset-pricing incentives help explain the choice. With respect to differences in market valuation, controlling for self-selection concerns, I find strong evidence that equity investors place smaller valuation weights on disclosed than on recognized analogous SFP and I/S amounts. Regarding the value-relevance tests, controlling for both self-selection concerns and potential differences in reliability, I reveal that recognized and disclosed analogous SFP and I/S amounts have statistically equivalent associations with 1- and 2-years-ahead changes in net rental income and cash flows from operations.

Taken together, the evidence suggests that managers are opportunistic in making the recognition versus disclosure choice and that, even when recognized and disclosed amounts share an equivalent measurement base and are equally relevant for future financial outcomes, investors weight disclosed information less heavily in determining a firm value.

Several limitations of my analyses provide opportunities for future research. First, my sample includes real estate firms from four EU countries. Future research can address questions related to recognition versus disclosure in other industries as well as other EU countries. Second, IAS 40 is one of the many financial reporting changes brought about by the adoption of IFRS. Future research might take steps to evaluate the other changes as well as potential differences in implementation of IFRS across the EU countries and examine the potential effect of valuation and value-relevance of recognized versus disclosed amounts. Finally, inferences concerning factors associated with the choice of recognition versus disclosure are partly based on proxies (e.g., debt covenants). Future research might expand this line of research by exploring the debt covenants themselves.

Appendix 1: Variable definitions

REC	An indicator variable equals 1 if, at the transition to IFRS, the firm chooses to recognize fair value of investment properties and related revaluation gains; it equals 0 otherwise
	Similarly, *DISC* is an indicator variable that equals 1 if a firm-year observation reports under the disclosure regime; it equals 0 otherwise
MVE	3 months after end-of-fiscal-year market value of equity. Accordingly, *Log(MVE)* denotes the natural logarithm of 3 months after end-of-fiscal-year market value of equity
IPFV	End-of-year fair value of investment properties
IPBV	End-of-year carrying amount (or book value) of investment properties: for firms choosing the recognition regime—the fair value; for firms choosing the disclosure regime—depreciated cost
TA	End-of-year carrying amount (or book value) of total assets
TA*	End-of-year carrying amount (or book value) of total assets other than investment properties
	For firms choosing the recognition regime:
	$TA^* = TA - IPFV$
	For firms choosing the disclosure regime:
	$TA^* = TA - IPBV$
IP_ACTIVITY	Represents the materiality of a firm's investment-property-related assets/revenues with respect to its total assets/revenues. *IP_ACTIVITY* is measured by either (1) *RENTREVRATIO* or (2) *IP_ASSETRATIO*
RENTREVRATIO	The ratio between average rental and average total revenues during the last 2 years
IP_ASSETRATIO	The ratio between the average fair value of investment properties and average total assets adjusted for fair value of investment properties (for firms choosing the disclosure reporting regime) during the last 2 years
	For firms choosing the recognition regime:
	$IP\_ASSETRATIO_{i,t} = \frac{IPFV_{i,t-1} + IPFV_{i,t}}{TA_{i,t-1} + TA_{i,t}}$
	For firms choosing the disclosure regime:
	$IP\_ASSETRATIO_{i,t} = \frac{IPFV_{i,t-1} + IPFV_{i,t}}{TA_{i,t-1} - IPBV_{i,t-1} + IPFV_{i,t-1} + TA_{i,t} - IPBV_{i,t} + IPFV_{i,t}}$
	where *i* and *t* are firm and year subscripts

IP_TYPE	Denotes the composition of a firm's investment property portfolio, and it represents six variables: (1) *INDUSTRIAL*, (2) *RETAIL*, (3) *OFFICE*, (4) *RESIDENTIAL*, (5) *HOTELS*, and (6) *OTHER*. Each variable, respectively, measures the percentage of total fair value of investment properties invested in each of the following investment property types: (1) warehouses and manufacturing spaces, (2) shopping centers and parking lots, (3) office buildings, (4) apartment complexes, (5) hotels, and (6) other investment property assets
BLOCKHOLD	Total percentage of firm's shares held by large blockholders (i.e., investors holding 5 % or more of the firm's common stock), as indicated by Worldscope and hand-collected data
INCSMOOTH	Income smoothing parameter, measured as the ratio between standard deviation of the firm's operating income and standard deviation of its cash flows from operations during 4 years before transition to IFRS or during the last 4 years, excluding investment-property-related amounts, minus its country of domicile real estate firms' average, to control for country-specific GAAP or local effects
DISPGAIN	Annual gains or losses resulting from disposal of investment property assets
IPDEP_CHRG	Investment-property-related annual depreciation charges (relevant only for firms adopting the disclosure regime)
IPSUBT_DEP	Annual subtracted investment-property-related accumulated depreciation charges due to sale (relevant for firms reporting under the disclosure regime)
IPCOST	End-of-year total cost of investment properties (disclosed by all firms reporting under the disclosure regime and by most firms reporting under the recognition regime)
IMPAIRLOSS	Investment-property-related annual impairment losses. For firms adopting the recognition regime, it is often included in reported revaluation gains
TAXRATE	Corporate tax rate applicable to capital gains in a given year, a given country, and a particular type of firm (i.e., Real Estate Investment and Services rather than REITs)
*LEV**	The adjusted leverage ratio, calculated differently depending on the reporting regime
	For firms choosing the recognition reporting regime:
	$$LEV^*_{i,t} = \frac{DEBT_{i,t-1} + DEBT_{i,t}}{TA_{i,t-1} + TA_{i,t}}$$
	For firms choosing the disclosure reporting regime:
	$$LEV^*_{i,t} = \frac{DEBT_{i,t-1} + DEBT_{i,t}}{TA_{i,t-1} + TA_{i,t} + 2 \times (IPFV_{i,t-1} - IPBV_{i,t-1}) + REVGAIN^*_{i,t}(1 - TAXRATE_{i,t}) - (DISPGAIN_{i,t} - IPDEP\_CHRG_{i,t} - IMPAIRLOSS_{i,t})}$$
	where *DEBT* denotes the book value of total debt, and *i* and *t* are firm and year subscripts
MTB	The ratio between end-of-year market value of equity and end-of-year book value of equity

MTB^*	The adjusted market-to-book ratio, calculated differently depending on the reporting regime
	For firms choosing the recognition reporting regime:
	$$MTB^*_{i,t} = \frac{MVE_{i,t-1}+MVE_{i,t}}{BVE_{i,t-1}+BVE_{i,t}}$$
	For firms choosing the disclosure reporting regime:
	$$MTB^*_{i,t} = \frac{MVE_{i,t-1}+MVE_{i,t}}{BVE_{i,t-1}+BVE_{i,t}+2\times(IPFV_{i,t-1}-IPBV_{i,t-1})\times(1-TAXRATE_{i,t})+REVGAIN^*_{i,t}-(DISPGAIN_{i,t}-IPDEP\_CHRG_{i,t}-IMPAIRLOSS_{i,t})\times(1-TAXRATE_{i,t})}$$
	where i and t are firm and year subscripts
$REVGAIN$	Annual revaluation gains from the re-measurement of investment properties to fair value (relevant for firms reporting under the recognition regime)
NI	Annual net income before discontinued operations
NI^*	The portion of reported net income that is not sensitive to the choice of recognition versus disclosure of unrealized fair value gains
	For firms choosing the recognition reporting regime:
	$NI^* = NI - (REVGAIN + DISPGAIN) \times (1 - TAXRATE)$
	For firm choosing the disclosure reporting regime:
	$NI^* = NI - (DISPGAIN - IPDEP\_CHRG - IMPAIRLOSS) \times (1 - TAXRATE)$
$REVGAIN^*$	Investment property revaluation gains/losses as either recognized or disclosed
	For firms choosing the recognition reporting regime:
	$REVGAIN^* = (REVGAIN + DISPGAIN) \times (1 - TAXRATE)$
	For firms choosing the disclosure reporting regime:
	$REVGAIN^* = (\Delta IPFV - \Delta IPCOST + DISPGAIN - IPSUBT\_DEP) \times (1 - TAXRATE)$
	where Δ is the annual change operator
$TRANSGAIN$	The sum of net-of-tax difference between fair value and carrying amount of investment property at the beginning of the year of transition to IFRS or adoption of the recognition regime and $REVGAIN^*$
	For firms choosing the recognition regime:
	$TRANSGAIN_{i,t} = EQUITYADJ_{i,t-1} + REVGAIN^*_{i,t}$
	where $EQUITYADJ_{i,t-1}$ is net of tax difference between fair value and carrying amount of investment property at the beginning of the year, and i and t are firm and year subscripts
	For firms choosing the disclosure regime:
	$TRANSGAIN_{i,t} = (IPFV_{i,t-1} - IPBV_{i,t-1}) \times (1 - TAXRATE_{i,t-1}) + REVGAIN^*_{i,t}$
	where i and t are firm and year subscripts

Variable	Definition
TL	End-of-year total liabilities of the firm as reported in the statement of financial position
ROA	Total net income scaled by average total assets
REIT	An indicator variable that equals 1 if a firm-year is classified as a real estate investment trust (REIT); it equals 0 otherwise
BigFour	An indicator variable that equals 1 if a firm-year's financial statements are audited by Big Four audit firm; it equals 0 otherwise
ExtAppraiser	An indicator variable that equals 1 if a firm-year's end-of-year fair value of investment property (either recognized or disclosed) is determined by an external appraiser; it equals 0 otherwise
InvMillsRatio	The inverse Mills ratio, following Heckman (1979), calculated separately for firms reporting under the recognition regime and for firms under the disclosure regimes, using the fitted values obtained from estimating Eq. (1) (i.e., the probit model)
RETURN	Annual stock return adjusted for dividends and stock splits
ΔNETRENTINC	Annual change in *NETRENTINC*, net rental income
NETRENTINC is annual investment-property-related rental revenue minus directly attributed expenses incurred in obtaining these revenues (as disclosed under IAS 40)
ΔCFO	Annual change in *CFO*, which denotes annual cash flows from operations
ΔWC	Annual change in *WC*, working capital
	WC is the difference between current assets and current liabilities
COUNTRY_FE	Represents country-fixed-effect variables
YEAR_FE	Represents year-fixed-effect variables

Appendix 2: Numerical example

Overview

This appendix uses a simplified example of a fictional firm and consists of two figures. Figure 1 presents the financial reporting effects of the choice of recognition versus disclosure under IAS 40 on amounts reported in the statement of financial position (SFP) and the income statement (I/S). Figure 2 shows how, despite the apparent differences in reported SFP and I/S amounts, the method I develop and discuss in Sect. 4.2 allows one to construct analogous SFP-related amounts (i.e., TA^* and $IPFV$) as well as I/S-related amounts (i.e., NI^* and $REVGAIN^*$) whose information content is independent of the firm's choice of recognition versus disclosure. All variables mentioned in this appendix are defined in "Appendix 1".[50]

Example details

Consider a firm that was created at the end of 2004 and was involved in the following set of transactions during the period from December 31, 2004 to December 31, 2007:

December 31, 2004:

Received $7000 of initial investment capital (initial issuance of common stock shares) to begin the business.

Received $5000 cash in exchange for a bank loan. Bank loan terms required 5 % interest (compounded annually) and interest-only payments to be made on the last day of each year. Principal is due on December 31, 2014.

Purchased a building for $10,000 in cash. Ten percent of the building's space was designated for own use (i.e., management offices) and the rest, 90 %, was held for rental. Land accounted for $3000 of the purchase price (i.e., 30 % of the building value). Building's space is estimated to have useful life of 50 years (with no residual value). The building was depreciated using the straight-line method.

December 31, 2006:

Sold 50 % of building's space held for rental for $5400 in cash.

December 31, 2007:

Sold 50 % of the remainder of building's space held for rental for $2250 in cash.

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[50] An alternative approach would be to illustrate the financial reporting effects as well as the strength of the method I develop to construct analogous amounts, using real numbers. The reason I use a fictional firm is that it demonstrates in a cleaner setting that while the reported SFP and I/S numbers are sensitive to various transactions (e.g., changes in fair values, asset disposal), the analogous SFP and I/S amounts that I construct are robust to these and are unaffected by the choice of recognition versus disclosure. Also, the details in this example are inspired by real transactions and changes in fair values of investment properties which I have observed during the massive hand-collection task.

The table below presents building's fair values (100 % of the building) at the end of 2004–2007 and total rental revenues and related expenses during these years (in $):

	FV of building	Rental revenue	Maintenance expenses
2004	10,000		
2005	11,000	900	100
2006	12,000	950	110
2007	10,500	450	50

Starting with January 1, 2005, the firm reports according to IFRS, which distinguishes between investment properties and property, plant, and equipment (PP&E) and accounts for its PP&E using the cost model.

For simplicity, assume there are no taxes and that the firm does not incur any costs in selling the assets (i.e., costs to sell are 0). Also, suppose that all of the firm's cash inflows and outflows (i.e., rental revenues and maintenance expenses) occur at the end of the year.

This figure presents selected accounting amounts as reported in the SFP and I/S of the firm discussed in the example, for the years 2005 to 2007, once assuming that it adopts the recognition regime (i.e., the fair value model) and once assuming that it adopts the disclosure regime (i.e., the cost model).

Disclosure Regime				Recognition Regime			
Statement of Financial Position (12.31.2005)				**Statement of Financial Position (12.31.2005)**			
Current Assets		**Current Liabilities**		**Current Assets**		**Current Liabilities**	
Cash	2550		-	Cash	2550		-
Non Current Assets		**Non Current Liabilities**		**Non Current Assets**		**Non Current Liabilities**	
PP&E (Net)	986	Debt	5000	PP&E (Net)	986	Debt	5000
Investment Property (Net)	8874			Investment Property	9900		
		Equity	7410			Equity	8436
		Total Liabilities and				**Total Liabilities and**	
Total Assets	12410	**Equity**	12410	**Total Assets**	13436	**Equity**	13436
2550=2000-250+900-100				2550=2000-250+900-100			
986=1000-(1000-1000*0.3)/50				986=1000-(1000-1000*0.3)/50			
8874=9000-(9000-9000*0.3)/50				9900=11000*0.9			
7410=7000+410				8436=7000+1436			
Income Statement (1.1.2005-12.31.2005)				**Income Statement (1.1.2005-12.31.2005)**			
Revenues				**Revenues**			
Rental Revenue	900			Rental Revenue	900		
				Gains arising from changes in			
				FV of Investment Property	900 = 11000*0.9-9000		
Maintanance Expenses	100			Maintanance Expenses	100		
Depreciation of PP&E	14 = (1000-300)/50			Depreciation of PP&E	14 = (1000-300)/50		
Depreciation of Investment Property	126 = (9000-2700)/50						
Operating Income	660			**Operating Income**	1686		
Interest Expenses	250 = 5000*0.05			Interest Expenses	250 = 5000*0.05		
Net Income	**410**			**Net Income**	**1436**		

Fig. 1 Financial reporting effects of recognition versus disclosure

Disclosure Regime			Recognition Regime		
Statement of Financial Position (12.31.2006)			Statement of Financial Position (12.31.2006)		
Current Assets		**Current Liabilities**	**Current Assets**		**Current Liabilities**
Cash	8540	-	Cash	8540	-
Non Current Assets		**Non Current Liabilities**	**Non Current Assets**		**Non Current Liabilities**
PP&E (Net)	972	Debt 5000	PP&E(Net)	972	Debt 5000
Investment Property (Net)	4374		Investment Property	5400	
		Equity 8886			**Equity** 9912
Total Assets	**13886**	**Total Liabilities and Equity** **13886**	**Total Assets**	**14912**	**Total Liabilities and Equity** **14912**

8540=2550-250+950-110+5400
972=1000-((1000-1000*0.3)/50)*2
4374=(9000-((9000-9000*0.3)/50)*2)/2
8886=7410+1476

8540=2550-250+950-110+5400
972=1000-((1000-1000*0.3)/50)*2
5400=(12000*0.9)/2
9912=8436+1476

Income Statement (1.1.2006-12.31.2006)			Income Statement (1.1.2006-12.31.2006)		
Revenues			**Revenues**		
Rental Revenue	950		Rental Revenue	950	
			Gains arising from changes in FV of Investment Property	900 = 12000*0.9-9900	
Maintanance Expenses	110		Maintanance Expenses	110	
Depreciation of PP&E	14 = (1000-300)/50		Depreciation of PP&E	14 = (1000-300)/50	
Depreciation of Investment Property	126 = (9000-2700)/50				
Disposal Gains	1026 = 5400-(9000-((9000-9000*0.3)/50)*2)/2		Disposal Gains	0 = 5400-10800/2	
Operating Income	1726		**Operating Income**	1726	
Interest Expenses	250 = 5000*0.05		Interest Expenses	250 = 5000*0.05	
Net Income	**1476**		**Net Income**	**1476**	

Disclosure Regime			Recognition Regime		
Statement of Financial Position (12.31.2007)			Statement of Financial Position (12.31.2007)		
Current Assets		**Current Liabilities**	**Current Assets**		**Current Liabilities**
Cash	10940	-	Cash	10940	-
Non Current Assets		**Non Current Liabilities**	**Non Current Assets**		**Non Current Liabilities**
PP&E (Net)	958	Debt 5000	PP&E (Net)	958	Debt 5000
Investment Property (Net)	2156		Investment Property	2363	
		Equity 9054			**Equity** 9261
Total Assets	**14054**	**Total Liabilities and Equity** **14054**	**Total Assets**	**14261**	**Total Liabilities and Equity** **14261**

10940=8540-250+450-50+2250
958=1000-((1000-1000*0.3)/50)*3
2156=(9000-((9000-9000*0.3)/50)*3)/4
9054=8886+168

10940=8540-250+450-50+2250
958=1000-((1000-1000*0.3)/50)*3
2363=10500*0.9/4
9261=9912-652

Income Statement (1.1.2007- 12.31.2007)			Income Statement (1.1.2007-12.31.2007)		
Revenues			**Revenues**		
Rental Revenue	450		Rental Revenue	450	
			Gains arising from changes in FV of Investment Property	(675) = (10500-12000)*0.9/2	
Maintanance Expenses	50		Maintanance Expenses	50	
Depreciation of PP&E	14 = (1000-300)/50		Depreciation of PP&E	14 = (1000-300)/50	
Depreciation of Investment Property	63 = ((9000-2700)/50)/2				
Disposal Gains	95 = 2250-2155.5		Disposal Gains	(113) = 2250-2363	
Operating Income	418		**Operating Income**	(402)	
Interest Expenses	250 = 5000*0.05		Interest Expenses	250 = 5000*0.05	
Net Income	**168**		**Net Income**	**(652)**	

As shown in figure 1, regardless of the investment-properties-related transactions made by the firm, the recognized value of investment properties, total assets, and total equity under the recognition regime is always greater than or equal to those under the disclosure regime. However, the same is not true for I/S amounts. As the figure shows, the reported profit or loss, *NI*, under the recognition regime can be higher than, equal to, or lower than that under the disclosure regime and hence is more volatile under the recognition regime than under the disclosure regime.

Fig. 1 continued

This figure shows how, despite the financial reporting differences presented in figure 1, using the method I developed allows one to construct SFP-related and I/S-related amounts whose information content is independent of the firm's choice of recognition versus disclosure.

Recall, the SFP-related analogous amounts include TA^* and $IPFV$, where TA^* is computed as follows:

$$TA^* = \begin{cases} TA - IPFV & \text{if} \quad REC = 1 \\ TA - IPBV & \text{Otherwise} \end{cases}$$

The I/S-related analogous amounts include NI^* and $REVGAIN^*$. Following the formulas presented in section 4.2, ignoring taxes and impairment losses, and denoting $IPCOST$ more explicitly as $IPBV+ACCUMDEP$, the NI^* and $REVGAIN^*$ can be computed as follows:

$$NI_t^* = \begin{cases} NI_t - (REVGAIN_t + DISPGAIN_t) & \text{if} \quad REC = 1 \\ NI_t - (DISPGAIN_t - IPDEP\_CHRG_t) & \text{Otherwise} \end{cases}$$

$$REVGAIN_t^* = \begin{cases} REVGAIN_t + DISPGAIN_t & \text{if} \quad REC = 1 \\ \begin{aligned} &\left[IPFV_t - (IPBV_t + ACCUMDEP_t)\right] + \left[DISPGAIN_t - IPSUBT\_DEP_t\right] \\ &- \left[IPFV_{t-1} - (IPBV_{t-1} + ACCUMDEP_{t-1})\right] \end{aligned} & \text{Otherwise} \end{cases}$$

Disclosure Regime	Recognition Regime
2005	
$TA^* = 3536 = 12410 - 8874$ $IPFV = 9900$ $NI^* = 536 = 410 - (0 - 126)$ $REVGAIN^* = 900 = [9900 - (8874 + 126)]$ $+ [0 - 0] - [9000 - (9000 + 0)]$	$TA^* = 3536 = 13436 - 9900$ $IPFV = 9900$ $NI^* = 536 = 1436 - (900 - 0)$ $REVGAIN^* = 900 = 900 + 0$
2006	
$TA^* = 9512 = 13886 - 4374$ $IPFV = 5400$ $NI^* = 576 = 1476 - (1026 - 126)$ $REVGAIN^* = 900 = [5400 - (4374 + 126)]$ $+ [1026 - 126] - [9900 - (8874 + 126)]$	$TA^* = 9512 = 14912 - 5400$ $IPFV = 5400$ $NI^* = 576 = 1476 - (900 - 0)$ $REVGAIN^* = 900 = 900 + 0$
2007	
$TA^* = 11898 = 14054 - 2156$ $IPFV = 2363$ $NI^* = 136 = 167.5 - (94.5 - 63)$ $REVGAIN^* = -787.5 = [2362.5 - (2155.5 + 94.5)] +$ $+ [94.5 - 94.5] - [5400 - (4374 + 126)]$	$TA^* = 11898 = 14261 - 2363$ $IPFV = 2363$ $NI^* = 136 = -651.5 - (-675 - 112.5)$ $REVGAIN^* = -787.5 = -675 - 112.5$

Hence the methodology presented in section 4.2 to construct analogous SFP- and I/S-related amounts is robust to various investment properties related to (1) investment decisions (i.e., purchase/sale of investment properties) and (2) changes in the fair values. In particular, while the reported amounts differ substantially depending on whether a firm adopts a disclosure or a recognition regime (e.g., $REVGAIN$ is not applicable if the firm adopts the disclosure regime); TA^*, $IPFV^*$, NI^* and $REVGAIN^*$ are identical under both reporting methods, as they should be.

Fig. 2 Obtaining analogous SFP and I/S amounts

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