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Fair value and audit fees

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Abstract This paper investigates the effect of fair value reporting and its attributes on audit fees. We use as our primary sample the European real estate industry around mandatory IFRS adoption (under which reporting of property fair values becomes compulsory), due to its unique operating and reporting characteristics. We document lower audit fees for firms reporting property assets at fair value relative to those employing depreciated cost—a difference that appears driven, in part, by impairment tests that occur only under depreciated cost. We further find that audit fees are decreasing in firms' exposure to fair value and increasing both in the complexity of the fair value estimation and for recognition (versus only disclosure) of fair values. We corroborate our findings in two alternative settings: contrasting UK and US real estate firms and using UK investment trusts. Overall, the results suggest that fair values can lead to lower monitoring costs; however, any reductions in audit fees will vary with salient characteristics of the fair value reporting, including the difficulty to measure and the treatment within the financial statements.

Keywords Fair value · Audit fees · Audit pricing · Real estate industry · IFRS

JEL Classification M41 · M42 · L85

1 Introduction

This paper examines the effect of fair value reporting and its attributes upon audit fees. Prior research investigates the determinants of audit fees (for a review, see Hay

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et al. 2006). Prior work also shows that fair value reporting is priced by the equity market (e.g., Easton et al. 1993). We combine both literatures to investigate how fair value reporting, and various salient attributes of how it is implemented, affect the pricing of audit services—a major monitoring cost (Jensen and Meckling 1976).

We use as our primary setting real estate firms domiciled in Europe during 2001–2008, which provides several benefits. First, the within-industry design holds constant other factors that could drive audit fee differences across industries, helping us isolate the effect of fair value reporting. Second, European real estate firms exhibit substantial variation in the reporting of fair values for their property assets, which we exploit in our analyses. Specifically, prior to adoption of International Financial Reporting Standards (IFRS) by the European Union, effective 2005, domestic standards varied in the reporting requirements for real estate assets on the balance sheet: either at fair value, or at depreciated cost subject to impairment. Under IFRS, property asset fair values must be reported, either through recognition on the balance sheet or through footnote disclosure. Third, this setting allows examination of four specific fair value attributes: the proportion of a firm's assets reported at fair value, the difficulty of fair value estimation, whether reported fair values are recognized or disclosed, and the effect of using an alternative external monitor—an external appraiser—to derive the fair value estimates. No other institutional setting allows these features to be concurrently examined.

Results reveal that, controlling for other determinants, audit fees are significantly lower for firms reporting property assets at fair value relative to those reporting property assets at depreciated cost. Specifically, using a difference-in-differences design, we find that firms previously reporting property assets at depreciated cost under domestic standards exhibit greater declines in audit fees once required to report property fair values upon IFRS adoption relative to firms already reporting properties at fair value under domestic standards. To challenge this arguably unexpected result, we conduct interviews with real estate audit partners, which suggest that specific reporting requirements arising only within depreciated cost contexts (particularly potential and actual impairments as well as component depreciation) are likely a significant source of higher audit effort for these firms. Consistent with these expectations, we find that impairments reported by depreciated cost firms are a significant driver of observed higher average fees.

We then focus on the European property firms after mandatory IFRS adoption to examine four attributes of fair value implementation. We find that audit fees are lower for firms with above-average exposure to fair-valued assets, consistent with auditors being able to reduce effort, risk, or both when a greater proportion of the client firm's assets is reported at fair value. We further find that audit fees are higher for multiple-sector property portfolios (consistent with more complex portfolios being more difficult to value and audit), as well as for fair values that are recognized on the balance sheet versus disclosed in the footnotes (consistent with incremental audit effort for recognized versus disclosed items, e.g., Libby et al. 2006). We fail to find evidence that use of an external appraiser attenuates audit fees.

We then confirm these findings in two alternative settings. First, to mitigate concerns that results are confined to the European setting, we reassess the relation of reporting model to audit fees by comparing audit pricing for UK real estate firms propensity score-matched with US real estate firms. Because the UK and US are

among the world's largest and most developed real estate markets, this leads to a larger sample size and isolates the primary difference between the countries for this industry: the financial reporting model. Specifically, UK firms report property assets at fair value under both domestic standards and IFRS, while US firms report them at depreciated cost under domestic US standards. Further, while the US generally is considered to have higher audit litigation risk than other countries, prior research fails to designate the real estate industry as a high-risk setting. Consistent with our previous results, we find that audit fees are significantly lower for firms reporting property assets at fair value (i.e., the UK firms) relative to depreciated cost (i.e., the US firms), and that impairments are again a primary driver of this difference.

Second, we reassess the effects of exposure to fair value and complexity in fair value measurement using a sample of UK investment trusts. Restricting the analysis within the UK eliminates cross-country differences in institutional features as a potential source of variation in audit fees. Further, this industry allows a potentially stronger assessment of the difficulty to measure fair value by exploiting fair values for these firms' financial assets calculated based on market inputs (i.e., level 1 fair values) versus those based on less reliable valuation inputs (i.e., level 2 and 3 fair values). Consistent with our previous results, we find that audit fees are decreasing in the firm's exposure to assets reported at fair value and increasing in the firm's exposure to more difficult-to-measure (i.e., levels 2 and 3) fair values.

Overall, the results reveal that reporting assets at fair value, on average, reduces audit fees, where a primary driver of higher audit fees observed under depreciated cost appears to be impairments. However, any reduction in audit fees relative to depreciated cost depends on several salient characteristics of the fair value reporting: the overall exposure to fair-valued assets, the complexity of the fair value measurement, and whether the fair values are recognized in the primary financial statements versus disclosed in the footnotes. These findings suggest that fair value reporting can foster the financial reporting objective of contracting efficiency.

Section 2 presents the prior literature, setting, and hypothesis development. Section 3 presents the research design and primary analyses. Section 4 presents alternative settings to assess the hypotheses, and Sect. 5 reports sensitivity analyses. Section 6 concludes.

2 Prior literature, setting, and hypothesis development

2.1 Prior literature

This study builds upon two literatures: that examining the determinants of audit fees and that examining the effects of fair value reporting. There is a substantial literature on audit pricing, with Simunic (1980) among the earliest to provide theoretical and empirical evidence on the determinants of this monitoring cost.[1] Hay

[1] We follow Jensen and Meckling (1976) in viewing audit fees as one of the agency costs arising from a contractual arrangement between the owners (principal) and the management (agent) of a firm; that is, audit fees represent monitoring (bonding) costs. See also Watts and Zimmerman (1986).

et al. (2006) surveys the literature on the determinants of audit fees, suggesting that, in a competitive audit market, these determinants may be broadly classified as client attributes, auditor attributes, and characteristics specific to the audit engagement. Much research focuses on client attributes, finding that audit fees are increasing in the client's size (e.g., Simunic 1980), risk (e.g., Stice 1991), and complexity (e.g., Hackenbrack and Knechel 1997).

The literature examining the effects of fair value reporting is also extensive, with many papers analyzing the relation of fair values and equity prices. Earlier empirical papers, such as Barth (1994) and Eccher et al. (1996), exploit disclosed fair values relating to financial instruments and provide evidence that fair values are value relevant, that is, reflected in stock prices. Similar results are found for some nonfinancial asset classes (e.g., Easton et al. 1993). Other studies examine the effect of fair values on the information environment, with mixed evidence. For example, Muller et al. (2011) documents that information asymmetry is reduced when fair values are required to be disclosed for European real estate firms' property assets. However, in the banking sector, Riedl and Serafeim (2011) reveal that information risk is higher when fair values are based on unobservable inputs, with Ball et al. (2012) similarly documenting increased information asymmetry when fair values are recognized under SFAS 115. In one of the few papers speaking to contracting implications of fair value accounting, Barth et al. (1995) suggests that fair value accounting, if applied to assess banks' regulatory capital, can address struggling financial institutions' problems earlier than does depreciated cost. Benston (2006) argues that fair value accounting is ill-suited as a basis for accounting-based management compensation.

We contribute to these literatures by investigating the effect of fair value reporting on audit fees in two ways. First, we contrast audit fees across firms using fair value versus depreciated cost as the reporting model for their primary operating assets. Second, we exploit variation in fair value implementation to identify predictable differences in audit fees.

2.2 Setting: the European real estate industry

Although fair value accounting has been adopted by standard setters for numerous reporting elements spanning a number of industries, it is difficult to identify a single setting in which fair value reporting applies to most of a firm's operating assets and in which multiple attributes of fair value reporting can be observed simultaneously. We choose the European real estate industry as our primary setting due to several advantageous features. First, firms in this industry share a common primary operating asset: real estate. That is, they acquire (through purchase, lease, or development), manage, and sell real estate to generate profits through rentals, capital appreciation, or both. Accordingly, the primary asset for our sample firms is held constant: long-lived tangible real estate assets used for investment (i.e., "investment properties"). Further, the industry is well-developed, with more than 180 publicly traded firms domiciled across most European countries and an aggregate equity market value exceeding €150 billion.

Second, this industry exhibits substantial variation in how firms report property assets under domestic standards prior to mandatory IFRS adoption in 2005. As indicated in Appendix 1, the two primary accounting treatments are the cost and revaluation models. Several countries require the cost model (Austria, France, Germany, Italy, Norway, and Spain), under which investment property is reported within property, plant, and equipment and depreciated over an estimate of useful life. Any impairments are reported in profit or loss. In most of these countries, regulatory requirements or industry practice also lead to application of component depreciation, creating additional reporting complexity.[2] Other countries require the revaluation model (the UK, Denmark), under which investment property is recognized on the balance sheet at fair value (or a similar exit-price-type measure), with unrealized fair value changes recognized directly in equity (e.g., in a revaluation reserve). No depreciation is reported. Finally, several countries allow firms to choose either the cost or revaluation model (Belgium, the Netherlands, and Poland).[3] IFRS adoption made reporting of investment property at fair value mandatory, with some variation. Specifically, under the relevant International Accounting Standard (IAS) 40: *Investment Property* (IASB 2000), firms may choose between a fair value model (recognition of property asset fair values on the balance sheet, with fair value changes recognized in net income) and a cost model with fair value disclosure (recognition of property assets at depreciated cost with *mandatory* disclosure of fair values in the footnotes).

Third, we can exploit heterogeneity in firms' property portfolios and reporting choices. Specifically, firms vary in their exposure to assets reported at fair value, owing to non-real estate assets. In addition, the complexity of the fair value measurement varies due, in large part, to differences in property portfolios, particularly across sectors such as retail, office, industrial, and residential. Further, firms vary in their use of a key alternative external monitor to derive fair value estimates: the external property appraiser.

Finally, whereas other settings have significant fair value reporting (notably the financial services industry), they also exhibit substantial regulatory restrictions beyond financial reporting requirements. These regulations can vary by country and complicate implementation and interpretation of empirical analyses.

2.3 Hypothesis development

We first examine the effect of reporting model on observed audit fees, contrasting fair value versus depreciated cost. Our focus on the real estate industry allows us to partition firms into those reporting their primary operating asset under either of

[2] Component depreciation can involve: depreciation of separable components of an investment property asset individually over their respective useful lives (e.g., Italy and Spain), separate capitalization and depreciation of significant replacements or enhancements (e.g., Germany), or provisioning for future maintenance and overhauls, which creates depreciation-like expense patterns (e.g., Germany).

[3] Several exceptions from the above classification are noteworthy. In Switzerland, firms may use the cost or fair value models, where the latter requires that fair value changes be reported in net income. In Finland, France and Sweden, while the cost model is the industry practice, *ad hoc* application of the revaluation model is permitted under certain circumstances.

these two models. The effect of reporting assets at fair value relative to depreciated cost upon audit effort, as well as assessed reputation and litigation risk, is unclear a priori. Critics maintain that fair value reporting introduces substantial discretion into management estimates (e.g., Watts 2006; Ramanna and Watts 2010). This increased discretion can compound agency costs, leading auditors to increase their assessment of reputation risk, litigation risk, or both and, consequently, their efforts to verify fair value estimates. This risk may be greater in contexts, such as real estate, where market prices for identical assets are generally unavailable. Interviews with real estate audit partners confirm that fair values for real estate assets are viewed as either level 2 (with market values available for similar, but not identical, properties) or level 3 values (with simplistic discounted cash flow analysis).

Alternatively, fair values may reduce auditor reliance on management estimates and litigation risk (e.g., to the extent these values are derived from observable inputs). For example, commonly available rent rolls for properties rented out under multi-year leases allow auditors to more clearly identify and support management forecasts of future cash flows and thus to more easily ascertain property value. In addition, under fair value reporting, firms must establish a routine process of valuation. Once this valuation process is established, the audit process then focuses on updating assumptions and inputs underlying the valuation estimate to reflect upward or downward changes in property values.

In contrast, depreciated cost-based reporting has two features that introduce potential complexity and uncertainty into the auditing process in the real estate industry: component depreciation and impairment testing. Under component depreciation, a property is depreciated based on the lives of its separable elements. For example, for a building, electrical/plumbing components can be assigned a 20-year life, the roof a 15-year life, and the foundation/structure a 50-year life. This can increase audit costs; such costs do not arise for firms reporting under fair value, where depreciation is not recorded. Second, impairment testing requirements under depreciated cost can lead to higher audit costs. In contrast to the valuation process that must be established under fair value reporting, if a property value decline implies potential impairment, the auditor must assess both the firm's valuation process and estimates in a nonroutine (and likely contentious) setting. Further, this process can differ from an assessment of fair value as impairments anchor on the notion of recoverable amount. Recoverable amount reflects the higher of fair value less costs to sell and firm-specific value in use, where the latter may substantially deviate from the former and involve higher discretion by management. Thus potential impairments can lead to substantial frictions, and thus higher audit fees, for firms reporting under depreciated cost.

Taken together, this reasoning leads to our first two hypotheses (in alternative form):

H_{1A} Audit fees differ for firms applying depreciated cost versus fair value reporting to their primary operating assets.

H_{1B} Impairments lead to higher audit fees for firms reporting their primary operating assets under depreciated cost.

We next examine four attributes of fair value implementation likely to affect auditor efforts and thus audit fees: the firm's exposure to fair value reporting, the complexity of the fair value measurements, the recognition versus disclosure of fair values, and the use of non-auditor external monitors in the fair value measurement process.

First, we examine the firm's exposure to fair value reporting. Firms with greater proportions of their operating assets reported at fair value may require additional audit efforts, owing to incremental procedures necessary to confirm fair values. Alternatively, firms with greater proportions of their operating assets reported at fair value may require lower effort, owing to a lack of component depreciation and impairment testing, or since economies of scale arise when the fair value *process* (versus particular fair value estimates) is audited. This leads to the following hypothesis:

H_{2A} Audit fees differ for firms reporting a higher proportion versus a lower proportion of their primary operating assets at fair value.

Second, we assess the role of complexity in fair value measurement. This reflects challenges inherent in the estimation process, such as estimation using a long time series of cash flows or the availability of benchmarks to approximate fair value. Both notions are considered in applicable US standards and IFRS regarding fair value measurement. Consistent with this framework, we expect that audit effort will be higher for fair values requiring more complex estimation procedures (e.g., Hackenbrack and Knechel 1997), such as property portfolios spanning multiple sectors or lacking market-derived valuation inputs. This leads to our second hypothesis:

H_{2B} Audit fees are higher for firms with more difficult-to-measure fair values.

Third, we assess the role of recognition versus disclosure, exploiting the option under IAS 40 for firms to recognize or disclose property fair values. Following prior research (Libby et al. 2006), we predict that audit fees are higher for fair values that are recognized versus disclosed, consistent with auditors expending more effort to validate information recognized in the primary financial statements. This leads to our third hypothesis:

H_{2C} Audit fees are higher for firms reporting assets at fair value that are recognized on the balance sheet relative to firms disclosing them in the footnotes.

Finally, the real estate industry is unique due to the role of other external monitors in the fair value measurement process: external appraisers. Auditing standards recognize the role of such experts: International Standard on Auditing 500: *Audit Evidence* (International Federation of Accountants 2010) states that auditors may accept the findings of a specialist hired by management as appropriate audit evidence. This suggests a substitution role: that is, specialists may provide expertise and insights, which may reduce necessary efforts by the auditor to achieve a particular level of audit risk. Consistent with this notion, prior research documents lower information asymmetry for property firms employing external (versus internal) appraisers (Cotter and Richardson 2002; Muller and Riedl 2002).

Accordingly, we predict lower audit fees for firms employing external monitors as part of the fair value reporting process, reflecting potential substitution of efforts:

H_{2D} Audit fees are lower for firms reporting assets at fair value derived using (non-auditor) external monitors relative to firms that do not use such monitors.

3 Research design and empirical analyses

3.1 The effect of reporting model on audit fees: evidence using European real estate firms upon mandatory IFRS adoption

We first examine whether audit fees change when European real estate firms switch from depreciated cost to fair value, using mandatory IFRS adoption in Europe as a natural experiment to conduct a difference-in-differences analysis. We compare changes in audit fees for two sets of European real estate firms: those domiciled in countries requiring that property assets be reported at depreciated cost under pre-IFRS domestic standards (treatment group) and those requiring that property assets be reported at fair value under pre-IFRS domestic standards or early IFRS adoption (control group). If audit fees vary with the firms' primary reporting model (H_{1A}), we should find a significantly larger change in audit fees for the treatment group (which transitions from a cost-based model to a fair value-based model) compared to the control group (which remains on a fair value-based model). We then examine whether impairment testing (which occurs only for firms reporting under depreciated cost) leads to higher audit fees (H_{1B}).

We implement our difference-in-differences analysis using the following model:

$$LogFees_{it} = \alpha_0 + \sum_{k=1}^{12} \alpha_k CONTROL_{it}^{k} + \alpha_{13} HC_{it} + \alpha_{14} IFRS_{it} + \alpha_{15} HC_{it} \times IFRS_{it} + \alpha_{16} Impair\_D_{it} + \omega_{it} \quad (1)$$

All variables are defined in Appendix 2. Our dependent variable is *LogFees*, the log of total auditor fees.[4] Consistent with prior research, we express the dependent variable in log form to mitigate the effects of nonlinear relations (see Hay et al. 2006).

Following prior research, we include a vector *CONTROL* capturing two sets of firm-level control variables: characteristics of the audit client and those of the audit firm. Regarding audit client characteristics, we first include the log of total assets

[4] As in prior research, *LogFees* is based on the Thomson Reuters Worldscope data item 01801, *Auditor Fees*, which comprises fees paid to the auditor for both the statutory audit of the financial statements as well as fees for other services. However, our hypotheses pertain to statutory audit fees only. Accordingly, we explore use of audit fee data from Bureau van Dijk's Financial Analysis Made Easy (FAME) database: this provides more precise fees data that can be disaggregated into statutory and non-audit fees; however, it is available for a very limited set of firms. We note that the Pearson correlation between our *LogFees* and the FAME statutory fees is 0.94, suggesting very similar constructs. We further find inferences are unchanged when we use the FAME data to replicate the analyses on UK investment trusts of Sect. 4.2, which have the greatest representation of FAME data among our samples of firms.

(*LogTA*); as audit effort is expected to increase in the scale of the client, the predicted sign is positive (Simunic 1980). Given the asset-intensive nature of the real estate industry, this variable appears particularly relevant. To capture audit complexity, we include the percentage of international assets (*Foreign*) and the number of operating segments (*NSegm*). As audit effort is expected to be higher for real estate firms with more international or complex operations, the expected sign on both coefficients is positive. Next, we include control variables to capture firm risk, which has been documented to have a positive association with audit fees (e.g., Stice 1991). We include two income statement-based measures of firm performance: a continuous variable, return on assets (*ROA*), and a distress indicator variable capturing negative net income (*Loss*), with predicted negative and positive signs, respectively. We also include two balance sheet-based constructs. Because real estate firms maintain moderate amounts of receivables, reflecting amounts due from tenants, we include the percentage of receivables (*Receiv*); as these may be subject to higher risk of error, the predicted sign is positive. Because real estate firms typically employ substantial leverage, we also include the leverage ratio (*Lev*); as more leveraged firms face greater financing constraints, the predicted sign is positive. Next, we include two measures of extreme negative performance: negative book value of equity (*Distress*) and the incidence of a qualified audit opinion (*Qualified*). As firms with negative equity or qualified audit opinions are more likely in distress, the predicted signs for both variables are positive. Finally, we include the standard deviation of monthly stock returns as a market-based measure of risk (*Volatility*); as more volatile stock returns reflect riskier firms, the predicted sign is again positive.[5]

The second group of variables includes audit characteristics, which would affect audit pricing for real estate firms. We include *BigN* to capture perceived higher quality or reputational effects of larger audit firms (i.e., the "large audit firm premium"; see Francis 1984); the predicted sign is positive. We also include *Yearend* to capture the higher fees charged when audits occur during periods of constrained auditor resources (i.e., during the audit busy season; see Ireland and Lennox 2002); the predicted sign is positive.

We now turn to our experimental variables of *HC*, *IFRS*, the interaction of *HC* × *IFRS*, and *Impair_D*. *HC*, *IFRS*, and *Impair_D* are dichotomous variables indicating, respectively, that for year t firm i is reporting property assets at depreciated cost under pre-IFRS domestic standards, that firm i is reporting under IFRS (and thus recognizing or disclosing property asset fair values), or that firm

[5] Several other control variables for client characteristics warrant discussion. First, while prior literature suggests audit fees increase around IFRS adoption, we do not include a related control variable as we exclude firm-years of first-time IFRS adoption (as well as the immediately preceding firm-years) to avoid capturing the increased audit effort due to the implementation of a new accounting framework. Nonetheless, inferences are unchanged to including these transition years and an IFRS adoption control variable in the analysis. Second, we do not include a control variable for cross-listing, as only one sample firm cross-lists in the US. Third, we do not include inventory as another risk control variable, as real estate firms do not typically hold material amounts of inventory; however, including this variable leaves inferences unchanged. Finally, we note the results are unchanged to including two additional controls to capture fundamental performance: the market-to-book ratio and an indicator variable for negative stock returns.

i reports impairment charges. The coefficient on *HC* captures the difference in audit fees for treatment firms (applying depreciated cost) relative to control firms (applying fair value) before IFRS adoption. The coefficient on *IFRS* captures the effect on audit fees of switching to IFRS for the control firms (i.e., for firms applying fair value accounting before IFRS adoption). The coefficient on *HC* × *IFRS* captures the incremental effect on audit fees for treatment firms of moving from depreciated cost under domestic standards to reporting fair value under IFRS (either through recognition or disclosure); this is our primary variable of interest, with α_{15} testing H_{1A}. Consistent with audit fees increasing in exceptional items (e.g., Hay et al. 2006) and impairment write-offs being a major component of special/exceptional items (e.g., Riedl and Srinivasan 2010), the coefficient on *Impair_D* captures the effect of increased audit effort associated with reporting impairment charges on audit fees, with α_{16} testing H_{1B}.

We note two beneficial aspects of our difference-in-differences design. First, it captures a changes analysis (see Wooldridge 2009, p. 451) by assessing the relative change in audit fees across the control and treatment firms, where the latter change from no fair value reporting under domestic standards pre-IFRS to fair value reporting required post-IFRS. Second, this design controls for concurrent changes in institutional structures surrounding IFRS adoption, assuming these are similar across the treatment and control firms. This latter assumption seems reasonable, as (1) most other relevant regulation is likely to be EU-wide regulation, and (2) reporting effects of mandatory IFRS adoption unrelated to fair value are likely minimal given this industry's asset structure.[6]

Table 1 presents the sample selection, with the final sample including real estate firms domiciled in the European Economic Area with the necessary data for the period 2001–2008. We delete the 1st and 99th percentiles of our dependent variable (*LogFees*),[7] as well as observations from the IFRS adoption year and the preceding year, leading to a final sample of 480 firm-years representing 172 unique firms. Columns (1) and (2) of Table 2 present means and medians for this sample, revealing (on average) 1.7 % foreign revenues, 1.9 segments, 24 % reporting losses, a leverage ratio of 1.6, and 56.9 % using Big N auditors.

Table 3 presents the empirical results, which are based on robust standard errors clustered by firm (Petersen 2009; Gow et al. 2010). Referring to the base model in Column (1), among the control variables we find that audit fees are increasing in total assets (0.551, t stat = 16.25), number of segments (0.123, t stat = 2.62), receivables (1.763, t stat = 2.72), volatility (1.742, t stat = 2.08), and audit occurring within the busy season (0.263, t stat = 1.90) and decreasing in *ROA* (−0.472, t stat = 1.95).

Introducing our first set of experimental variables in Column (2), the coefficient for *HC* is insignificant (0.043, t stat = 0.16), consistent with no difference in audit

[6] Results also are robust to random-effects estimation, which is similar to a changes analysis by capturing deviations of the firm from its own time-series mean as well as from the sample mean.

[7] Our treatment of outliers is consistent with prior literature on audit fees (see Srinidhi and Gul 2006; Francis and Wang 2008; Kim et al. 2011). Inferences are unchanged using all available observations or winsorizing at the 1st and 99th percentiles of *LogFees* (see Simunic 1980; Kim et al. 2011).

Table 1 Sample selection

	Firm-years				Unique firms			
	European real estate	UK real estate	US real estate	UK investment trusts	European real estate	UK real estate	US real estate	UK investment trusts
Initial sample	2,717	725	2,001	3,719	519	186	336	576
Remaining after deleting:								
Missing data for test variables	1,157	637	1,492	3,408	310	173	320	538
Year of first-time IFRS adoption and preceding year	490				175			
Outliers (1st and 99th percentiles of *LogFees*)	480	623	1,461	3,305	172	172	315	531
Table 3 sample: European real estate firms	480				172			
Table 4 sample: European real estate firms after mandatory IFRS adoption (with available hand-collected data)	159				96			
Table 5 sample: matched UK and US real estate firms		623	616			172	152	
Table 6 sample: UK investment trusts with available hand-collected data				236				28

This table presents the sample selection for the analyses of Tables 3, 4, 5 and 6. The Table 3 sample includes publicly traded European real estate firms (SIC = 65xx, 6798); the sample period is 2001–2008 and excludes the firm's first year of IFRS adoption and the immediately preceding year

The Table 4 sample includes European real estate firms reporting under IFRS over the period 2005–2008 with available hand-collected data

The Table 5 sample includes publicly traded real estate firms domiciled in the UK (which report property assets at fair value) during the period 2001–2008, matched by year using propensity scores with publicly traded real estate firms domiciled in the US (which report property assets at depreciated cost)

The Table 6 sample includes UK investment trusts (SIC = 6726) over the period 1993–2008 with available hand-collected data. *LogFees*, our main dependent variable, is the log of total auditor fees

Table 2 Descriptive statistics

	Table 3		Table 4		Table 5				Table 6	
	European real estate firms ($N = 480$)		European real estate firms ($N = 159$)		UK real estate firms ($N = 623$)		US real estate firms ($N = 616$)		UK investment trusts ($N = 236$)	
	Mean (1)	Median (2)	Mean (3)	Median (4)	Mean (5)	Median (6)	Mean (7)	Median (8)	Mean (9)	Median (10)
Dependent variable										
LogFees	4.915	4.836	6.220	5.999	4.871	4.836	5.638	5.684	3.478	3.219
Control variables										
LogTA	12.065	11.955	14.248	14.165	11.881	11.819	12.201	12.317	13.233	13.489
Foreign	0.017	0.000	0.097	0.000	0.043	0.000	0.011	0.000	0.010	0.000
NSegm	1.923	1.000	2.717	3.000	1.799	1.000	1.854	1.000	1.792	1.000
ROA	−0.011	0.023	0.064	0.058	−0.052	0.019	−0.086	0.014	0.020	0.019
Loss	0.240	0.000	0.107	0.000	0.327	0.000	0.339	0.000	0.030	0.000
Receiv	0.059	0.020	0.037	0.017	0.061	0.020	0.041	0.014	0.009	0.005
Lev	1.632	0.822	1.034	0.741	1.541	0.712	2.842	0.788	0.165	0.139
Distress	0.038	0.000	#	#	0.037	0.000	0.054	0.000	#	#
Qualified	0.010	0.000	#	#	0.024	0.000	0.037	0.000	#	#
Volatility	0.091	0.070	0.078	0.067	0.103	0.077	0.163	0.076	0.056	0.048
BigN	0.569	1.000	0.792	1.000	0.562	1.000	0.580	1.000	0.826	1.000
Yearend	0.771	1.000	0.887	1.000	0.708	1.000	0.820	1.000	0.606	1.000
MCap	1.136	1.279	1.132	1.090	1.251	1.322	1.246	1.349		
Bdn_Proof	0.557	0.660	0.456	0.660	#	#	#	#		

Table 2 continued

	Table 3		Table 4		Table 5				Table 6	
	European real estate firms ($N = 480$)		European real estate firms ($N = 159$)		UK real estate firms ($N = 623$)		US real estate firms ($N = 616$)		UK investment trusts ($N = 236$)	
	Mean (1)	Median (2)	Mean (3)	Median (4)	Mean (5)	Median (6)	Mean (7)	Median (8)	Mean (9)	Median (10)
Experimental variables										
Impair_D	0.181	0.000			#	#	0.213	0.000		
FV_Exposure			0.723	0.823						
Complex			1.631	1.577						
Recog			0.811	1.000						
External			0.887	1.000						
FV_TA_IT									0.906	0.950
FV_INV									0.962	1.000
FV2/3									0.085	0.005

This table reports descriptive statistics. All variables are defined in Appendix 2. The descriptive statistics for the variables *FV_Exposure*, *Complex*, *FV_TA_IT*, *FV_INV*, and *FV2/3* are reported for the raw values, before applying a binary coding as described in Appendix 2. # indicates insufficient variation within the indicated sample. Therefore the variable is excluded from multivariate tests, and no descriptive statistics are provided

Columns (1)–(2) present statistics for the sample used in Table 3. The sample includes publicly traded European real estate firms (SIC = 65xx, 6798); the sample period is 2001–2008 and excludes the firm's first year of IFRS adoption and the immediately preceding year

Columns (3)–(4) present statistics for the sample used in Table 4. The sample includes European real estate firms reporting under IFRS over the period 2005–2008 with available hand-collected data

Columns (5)–(8) present statistics for the sample used in Table 5. The sample includes publicly traded real estate firms domiciled in the UK (which report property assets at fair value) during the period 2001–2008, matched using propensity scores with publicly traded real estate firms domiciled in the US (which report property assets at historical cost)

Columns (9)–(10) present statistics for the sample used in Table 6. The sample includes UK investment trusts (SIC = 6726) over the period 1993–2008 with available hand-collected data

Table 3 The effect of reporting model on audit fees: evidence using European real estate firms upon mandatory IFRS adoption

Variable	Predicted sign	Base model Coeff (*t* stat) (1)	Effect of IFRS adoption Coeff (*t* stat) (2)	Effect of impairments Coeff (*t* stat) (3)	Controlling for institutional differences Coeff (*t* stat) (4)
Intercept	+/−	−2.633*** (7.95)	−2.693*** (8.45)	−2.630*** (8.36)	−2.352*** (3.46)
LogTA	+	0.551*** (16.25)	0.555*** (17.39)	0.549*** (17.34)	0.544*** (16.92)
Foreign	+	0.089 (0.21)	0.097 (0.23)	0.136 (0.33)	0.125 (0.29)
NSegm	+	0.123*** (2.62)	0.108** (2.35)	0.101** (2.19)	0.102** (2.25)
ROA	−	−0.472* (1.95)	−0.362* (1.84)	−0.395* (1.91)	−0.398* (1.94)
Loss	+	0.157 (1.03)	0.159 (1.17)	0.095 (0.66)	0.092 (0.63)
Receiv	+	1.763*** (2.72)	1.797** (2.60)	1.800*** (2.64)	1.794*** (2.64)
Lev	+	0.004 (0.62)	0.001 (0.13)	−0.002 (0.23)	−0.002 (0.22)
Distress	+	0.181 (0.77)	0.281 (1.48)	0.265 (1.35)	0.255 (1.30)
Qualified	+	−0.311 (1.56)	−0.432 (2.08)	−0.466 (2.18)	−0.468 (2.04)
Volatility	+	1.742** (2.08)	1.939** (2.58)	1.956*** (2.71)	1.942*** (2.66)
BigN	+	0.253 (1.54)	0.272* (1.80)	0.270* (1.80)	0.267* (1.78)
Yearend	+	0.263* (1.90)	0.358** (2.50)	0.364*** (2.56)	0.352** (2.44)
MCap	+				−0.110 (0.38)
Bdn_Proof	+				−0.118 (0.19)
Experimental variables					
HC	+/−		0.043 (0.16)	0.006 (0.02)	−0.115 (0.33)
IFRS	+/−		0.066 (0.57)	0.079 (0.68)	0.077 (0.68)
HC × *IFRS*	+/−		−0.759** (2.20)	−0.756** (2.17)	−0.742** (2.11)
Impair_D	+			0.259** (2.12)	0.256** (2.04)
Adj-R^2		72.8 %	74.6 %	74.9 %	74.8 %

Table 3 continued

This table examines the effect of the firm's reporting model for its primary operating asset on observed audit fees, using mandatory adoption of IFRS in Europe. The sample includes publicly traded European real estate firms (SIC = 65xx, 6798); the sample period is 2001–2008 and excludes the firm's first year of IFRS adoption and the immediately preceding year. Across all columns, $N = 480$

The dependent variable is *LogFees*. All variables are defined in Appendix 2. The coefficient on $HC \times IFRS$ tests H_{1A}; the coefficient on *Impair_D* tests H_{1B}

***, **, * Significance at the 1, 5, and 10 % levels for the indicated one- or two-tailed tests. We do not report asterisks when the coefficient sign is opposite from the predicted sign. *t* statistics are based on standard errors clustered by firm and are reported in parentheses

fees between treatment firms and control firms before IFRS adoption.[8] Likewise, the coefficient for *IFRS*, which captures the effect on audit fees of switching to IFRS for the control firms that used fair value accounting before IFRS, is also insignificant (0.066, t stat = 0.57). However, the coefficient on the interaction $HC \times IFRS$ is significantly negative (−0.759, t stat = 2.20), indicating that, relative to control firms, treatment firms exhibit relatively larger reductions in audit fees upon switching to IFRS. That is, firms previously reporting under depreciated cost experience a significant decrease in audit fees when switching to fair value, providing support for H_{1A}.[9] We then further include the effect of impairments in Column (3); the coefficient on *Impair_D* is significantly positive (0.259, t stat = 2.12). This indicates that firm-year observations in which impairment losses occur are associated with higher audit fees (i.e., that the risk and effort associated with impairment testing procedures likely contribute to the results for H_{1A} above) and provides support for H_{1B}.[10]

3.2 The effect of fair value characteristics on audit fees: evidence using European real estate firms after mandatory IFRS adoption

To test our second set of hypotheses, we use European real estate firms in the post-IFRS adoption period (2005–2008). This setting is beneficial as all sample firms must report property asset fair values, while exhibiting variation across each of the four fair value attributes we wish to examine: exposure, complexity, recognition versus disclosure, and use of an alternative external monitor. Accordingly, we use the following model:

$$LogFees_{it} = \beta_0 + \sum_{k=1}^{11} \beta_k CONTROL_{it}^{k} + \beta_{12} FV\_Exposure_{it} + \beta_{13} Complex_{it} + \beta_{14} Recog_{it} + \beta_{15} External_{it} + \emptyset_{it} \quad (2)$$

LogFees and the control variables (*CONTROL*) are as previously defined. Relative to Model (1), we exclude the control variable *Distress* due to a lack of variation in this sample.

The four experimental variables correspond to H_{2A} through H_{2D}. First, we include *FV_Exposure*, an indicator variable capturing firms' above-average exposure to property assets recognized or disclosed at fair value. If higher exposure to fair value

[8] Note that we do not predict the sign on the coefficient for *HC*, which could be positive (if depreciated cost leads to additional audit efforts) or negative (if institutional differences not captured by our control variables lead to higher audit fees in countries requiring fair value). However, untabulated univariate analyses are consistent with the former, revealing higher average audit fees for firms domiciled in countries requiring depreciated cost (t stat = 2.44).

[9] This is unlikely to reflect a decrease in audit fees due to lower enforcement of IFRS in code law countries, as untabulated results are unchanged to adding the interaction of *HC* with a code law indicator variable.

[10] We note that introduction of *Impair_D* has a minimal effect on the coefficient of $HC \times IFRS$, which becomes only slightly less negative (from –0.759 to –0.756, with the 0.003 difference insignificant). This is consistent with *Impair_D* capturing *reported* (i.e., *ex post*) impairments, which likely understates the additional audit procedures associated with *potential* (i.e., *ex ante*) impairments, and thus biases against H_{1B}.

reporting for assets requires additional effort by the auditor (e.g., to validate the fair values), the predicted sign is positive: that is, audit fees will be higher for firms having greater exposure to assets reported at fair value. Alternatively, if higher exposure reduces audit effort (e.g., by simplifying procedures necessary to validate the fair values or by reducing costly audit procedures for assets carried at cost), the predicted sign is negative. Accordingly, the sign is not predicted, and β_{12} is our test of H_{2A}. Next, we include *Complex*, which captures the complexity of the fair value measurement through the heterogeneity of the firm's property portfolio across 11 different real estate sectors. If greater complexity leads to additional audit effort, the predicted sign is positive, and β_{13} is our test of H_{2B}. We then include *Recog*, which captures the recognition of fair values (fair value changes) on the balance sheet (income statement). If recognition leads to incremental audit effort, the predicted sign is positive, and β_{14} is our test of H_{2C}. Finally, we include *External*, which captures differences in audit fees due to firms employing external appraisers to provide fair value estimates of their property assets. If the use of this alternative monitor reduces auditor effort through a substitution effect, the predicted sign is negative, and β_{15} is our test of H_{2D}.

Table 1 reveals that the sample of firms having the necessary hand-collected data includes 159 firm-year observations representing 96 unique firms. Columns (3) and (4) of Table 2 present means and medians for this sample. On average, property assets represent 72.3 % of total assets, 81.1 % of observations reflect recognition (versus disclosure only) of property fair values, and 88.7 % employ external appraisers. Among the control variables, 9.7 % of assets are international, firms average 2.7 segments, and 79.2 % use large auditors.

Table 4 presents the empirical results. We use robust standard errors, as most firms have only one observation during the sample period, mitigating concerns of serial correlation. Column (1) presents results including only the control variables, with Column (2) incorporating the experimental variables. Focusing on Column (2), among the control variables, we find, as predicted, that audit fees are increasing in total assets (0.635, t stat = 13.38), receivables (2.853, t stat = 2.29), leverage (0.158, t stat = 3.07), volatility (2.248, t stat = 2.12), use of Big N auditor (0.322, t stat = 1.90), and whether the audit occurs during the busy season (0.522, t stat = 2.81). The remaining control variables are insignificant.[11]

Among the four experimental variables, we first find that the coefficient on *FV_Exposure* is significantly negative (−0.413, t stat = 2.28). This supports H_{2A} and is consistent with lower audit fees for firms reporting higher proportions of property assets at fair value relative to those reporting lower proportions. Second, *Complex* is significantly positive (0.247, t stat = 2.24). This supports H_{2B} and is consistent with higher fees for firms having more difficult-to-value (i.e., more complex) property portfolios. Third, *Recog* is significantly positive (0.383, t stat = 2.18). This supports H_{2C} and is consistent with higher audit fees for fair values that are recognized on the primary financial statements versus disclosed only in the footnotes. Finally, *External* is insignificant (0.025, t stat = 0.14); thus, we fail to find support for H_{2D} that use of

[11] The variance inflation factors (VIF) across all of our specifications do not exceed four, suggesting multicollinearity is not an issue (Neter et al. 1985).

Table 4 The effect of fair value characteristics on audit fees: evidence using European real estate firms after mandatory IFRS adoption

Variable	Predicted sign	Base model Coeff (*t* stat) (1)	With experimental variables Coeff (*t* stat) (2)	Controlling for institutional differences Coeff (*t* stat) (3)
Intercept	+/−	−4.100*** (7.21)	−4.130*** (7.54)	−3.976*** (7.12)
LogTA	+	0.636*** (16.01)	0.635*** (13.38)	0.629*** (13.21)
Foreign	+	0.206 (0.89)	0.236 (1.08)	0.262 (1.18)
NSegm	+	0.036 (0.83)	0.013 (0.27)	0.017 (0.36)
ROA	−	−1.141 (0.75)	−1.104 (0.76)	−1.011 (0.70)
Loss	+	−0.396 (1.46)	−0.419 (1.73)	−0.386 (1.53)
Receiv	+	4.037*** (3.67)	2.853** (2.29)	2.780** (2.17)
Lev	+	0.121** (2.17)	0.158*** (3.07)	0.140** (2.54)
Qualified	+	0.094 (0.40)	−0.265 (1.14)	−0.220 (0.93)
Volatility	+	3.291*** (3.01)	2.248** (2.12)	2.233** (2.11)
BigN	+	0.442** (2.52)	0.322* (1.90)	0.380** (2.22)
Yearend	+	0.428** (2.25)	0.522*** (2.81)	0.489** (2.49)
MCap	+			−0.346 (1.37)
Bdn_Proof	+			−0.014 (0.11)
Experimental variables				
FV_Exposure	+/−		−0.413** (2.28)	−0.392** (2.17)
Complex	+		0.247** (2.24)	0.228* (1.94)
Recog	+		0.383** (2.18)	0.493*** (2.67)
External	−		0.025 (0.14)	0.033 (0.18)
Adj-R^2		72.7 %	75.1 %	75.1 %

This table examines the effect of fair value characteristics on audit fees. The sample includes European real estate firms reporting under IFRS over the period 2005–2008 with available hand-collected data. Across all columns, $N = 159$

The dependent variable is *LogFees*. All variables are defined in Appendix 2. The coefficients on *FV_Exposure*, *Complex*, *Recog*, and *External* test H_{2A}, H_{2B}, H_{2C}, and H_{2D}, respectively

***, **, * Significance at the 1, 5, and 10 % levels for the indicated one- or two-tailed tests. We do not report asterisks when the coefficient sign is opposite from the predicted sign. *t* statistics are based on robust standard errors and are reported in parentheses

an alternative external monitor reduces audit fees. Overall, the results are consistent with audit fees decreasing in the firm's proportion of total assets reported at fair value, increasing in the difficulty to measure the fair values, and increasing if the fair value is recognized (versus only disclosed). The net effect on total audit fees will, of course, depend on the firm's weighting across each of these attributes.

4 Alternative settings

In this section, we reassess the results of our primary analyses by examining two alternative settings to test our predictions. We first compare UK versus US real

estate firms to reassess H_{1A} and H_{1B}. We then use UK investment trusts to reassess H_{2A} and H_{2B}.

4.1 The effect of reporting model on audit fees: evidence using UK and US real estate firms

We compare audit fees for UK versus US real estate firms over the period 2001–2008, which provides an advantageous alternative setting. First, as another within-industry setting, it maintains the nature of the assets being examined. Second, the UK and US both have highly developed real estate industries, reflected in a large number of publicly traded real estate firms within each country. Third, cross-country institutional differences are likely to be less important relative to the more diverse European setting. Thus, this setting exploits the primary difference between the UK and US real estate industries: the financial reporting model. Specifically, UK real estate firms report property assets on the balance sheet at fair value, either as required under UK domestic standards prior to mandatory IFRS adoption or under IAS 40. In contrast, US real estate firms report property assets on the balance sheet at depreciated cost, as US standards prohibit reporting tangible assets (including real estate) at fair value. Further, voluntary disclosure of real estate fair values is extremely rare (Kibel and Kozyr 2007; Liang and Riedl 2011). However, this setting has one major disadvantage: the US is generally held to have a more litigious audit environment than most other countries, including the UK. Nonetheless, prior research fails to designate the real estate industry as a high-risk setting (see, for example, Hogan and Jeter 1998; Shu 2000; Brown et al. 2005), suggesting that litigation differences are an unlikely (primary) source of audit pricing differences across the US and UK for this sector.[12]

To reexamine the effect of fair value on audit fees, we re-state Model (1) as:

$$LogFees_{it} = \gamma_0 + \sum_{k=1}^{13} \gamma_k CONTROL_{it}^{k} + \gamma_{14} FV\_UK_{it} + \gamma_{15} Impair\_D_{it} + \chi_{it} \quad (3)$$

The dependent and control variables are as previously defined. However, the vector of control variables (*CONTROL*) now includes *IFRS_Adopt*, an indicator variable equal to 1 for the first two fiscal years of first-time IFRS adoption, as this analysis includes UK observations from the IFRS transition years. The experimental variables in this analysis are *FV_UK*, a dichotomous variable indicating that firm *i* reports real estate assets on the balance sheet at fair value (i.e., is domiciled in the UK), and *Impair_D*, an indicator variable capturing the reporting of an impairment loss by US firm *i*. Following the findings of Table 3, if reporting real estate assets at fair value (as done in the UK) reduces audit effort, then the predicted sign on the coefficient for *FV_UK* is negative, and γ_{14} is an alternative test of H_{1A}. Further, if impairments lead to incremental audit effort for depreciated cost firms, then the

[12] However, we note that audit firms may assess a litigation premium across all clients within the US, due to the more litigious environment (e.g., Seetharaman et al. 2002). Thus US litigation premiums may occur, even though the particular industry does not, in itself, reflect high litigation risk.

predicted sign on the coefficient for *Impair_D* is positive, and γ_{15} is an alternative test of H_{1B}.

To facilitate the estimation, we select UK and US firms with a propensity-score match, which uses predicted values from a probit regression of a country indicator variable on all control variables in Model (3). This maximizes the similarity of matched pairs in terms of our control variables, resulting in two sub-samples similar on all non-fair value dimensions shown to affect audit fees. To the extent that Model (3) captures all major factors affecting audit pricing, propensity-score matching is expected to mitigate the influence of country-specific characteristics, which are unrelated to the research question.

Table 1 reveals that the matching procedure leads to a final sample of 623 UK and 616 US firm-years, representing 172 unique UK and 152 unique US firms. Columns (5)–(8) of Table 2 present descriptive statistics. Untabulated univariate comparisons reveal that, relative to the UK firms, the US firms are significantly larger, have fewer foreign assets, lower receivables, and are more likely to conduct the audit during the busy season.

Table 5 presents the empirical results. Focusing on Column (2), which incorporates the experimental variables, results for the control variables are consistent with previous tables. Regarding the experimental variables, the coefficient on *FV_UK* is significantly negative (−0.613, *t* stat = 10.83), and that for *Impair_D* is significantly positive (0.279, *t* stat = 4.45). Untabulated results, alternatively matching on year and total assets, or estimating a fully-interacted model, leave inferences unchanged. Overall, the results suggest that, controlling for other determinants of audit fees, UK real estate firms, which report property assets at fair value, exhibit lower average audit fees than US firms, which report property assets at depreciated cost, consistent with our previous support for H_{1A}.[13] Further, impairment tests increase audit fees for depreciated cost firms, additionally supporting H_{1B}.

4.2 The effect of fair value characteristics on audit fees: evidence using UK investment trusts

We now use a sample of UK investment trusts to reassess how exposure to fair value (H_{2A}) and complexity in fair value measurement (H_{2B}) affect audit fees.[14] This setting offers several advantages. First, limiting the sample to UK firms mitigates variation in audit fees that can arise in cross-country settings due to differing

[13] To mitigate possible alternative explanations, we note the following. First, the (generally) more litigious nature of the US could bias in favor of higher audit fees. However, prior research documents litigation premiums in the range of 18–30 % (see Seetharaman et al. 2002); these appear substantially lower than the effects documented in Table 5. Second, the lower fees for UK firms could reflect institutional changes coinciding with mandatory IFRS adoption, rather than benefits from fair value reporting. However, annual regressions reveal that the coefficient on *FV_UK* remains significant in all sample years, including those preceding IFRS adoption. Similar results obtain when we pool the pre- and post-IFRS observations. These additional findings suggest that the Table 5 results are unlikely driven by differences in litigation risk or by changes in the institutional setting coinciding with mandatory IFRS adoption that are unrelated to fair value reporting.

[14] We cannot examine disclosure versus recognition (i.e., H_{2C}) or use of alternative external monitor (i.e., H_{2D}) in this setting due to a lack of available data.

Table 5 Alternative setting for the effect of reporting model on audit fees: evidence using UK and US real estate firms

Variable	Predicted sign	Base model Coeff (*t* stat) (1)	With experimental variables Coeff (*t* stat) (2)	Controlling for institutional differences Coeff (*t* stat) (3)
Intercept	+/−	−1.199*** (5.47)	−0.695*** (3.39)	−0.990*** (4.37)
LogTA	+	0.468*** (24.41)	0.451*** (24.90)	0.453*** (25.16)
IFRS_Adopt	+	−0.190 (2.97)	0.164*** (2.63)	0.139** (2.25)
Foreign	+	0.382 (1.46)	0.694*** (2.80)	0.731*** (3.02)
NSegm	+	0.047** (2.13)	0.036* (1.73)	0.037* (1.77)
ROA	−	−0.085* (1.84)	−0.074 (1.43)	−0.074 (1.48)
Loss	+	0.365*** (5.52)	0.351*** (5.46)	0.378*** (5.63)
Receiv	+	1.830*** (4.12)	2.037*** (4.76)	2.058*** (4.84)
Lev	+	−0.000 (0.18)	−0.001 (0.64)	−0.001 (0.72)
Distress	+	0.206 (1.24)	0.148 (0.91)	0.138 (0.85)
Qualified	+	0.146 (0.50)	0.109 (0.39)	0.128 (0.45)
Volatility	+	0.017 (0.67)	−0.003 (0.13)	0.001 (0.02)
BigN	+	0.442*** (5.40)	0.466*** (5.87)	0.465*** (5.86)
Yearend	+	0.332*** (5.41)	0.260*** (5.18)	0.260*** (5.18)
MCap	+			0.202* (1.96)
Experimental variables				
FV_UK	−		−0.613*** (10.83)	−0.606*** (10.79)
Impair_D	+		0.279*** (4.45)	0.295*** (4.57)
Adj-R^2		61.1 %	66.2 %	66.3 %

This table examines an alternative setting to assess the effect of the firm's reporting model for its primary operating asset on observed audit fees. The sample includes publicly traded real estate firms domiciled in the UK (which report property assets at fair value) during the period 2001–2008, matched by year using propensity scores with publicly traded real estate firms domiciled in the US (which report property assets at historical cost). Across all columns, $N = 1{,}239$

The dependent variable is *LogFees*. All variables are defined in Appendix 2. The coefficient on *FV_UK* is used as an alternative test of H_{1A}; the coefficient on *Impair_D* is used as an alternative test of H_{1B}

***, **, * Significance at the 1, 5, and 10 % levels for the indicated one- or two-tailed tests. We do not report asterisks when the coefficient sign is opposite from the predicted sign. *t* statistics (in parentheses) are based on standard errors clustered by firm

institutional features versus the fair value attributes we seek to examine. Second, this industry potentially offers a strong setting to examine the attribute of complexity in deriving fair value, by allowing for a cleaner separation of fair values reflecting observable inputs (analogous to level 1 fair values) versus those based on less reliable valuation inputs (analogous to level 2 and 3 fair value).[15]

[15] In the US, SFAS 157: *Fair Value Measurement* (FASB 2006) distinguishes between fair values reported under three designations: level 1, which reflect observable market values; level 2, which reflect similar, but not identical, market values used as inputs into the fair value estimation; and level 3, which reflect unobservable (i.e., model-based) inputs to derive fair value. Similar guidance has been developed under IFRS (see IASB 2011).

Accordingly, we reexamine the effect of fair value characteristics on audit fees using:

$$LogFees_{it} = \delta_0 + \sum_{k=1}^{11} \delta_k CONTROL_{it}^{k} + \delta_{12} FV\_TA\_IT_{it} (+\delta_{12} FV\_INV_{it}) + \delta_{13} FV2/3_{it} + \upsilon_{it} \quad (4)$$

FV_TA_IT (*FV_INV*, an alternative proxy) proxies for fair value exposure of investment trusts' total assets (investment assets), and *FV2/3* proxies for exposure to assets having more complex fair value measurement. If audit fees are lower for firms having greater exposure to assets reported at fair value due to costly audit procedures unique to assets reported at cost, then we predict negative coefficients for *FV_TA_IT* as well as *FV_INV*, and δ_{12} is an alternative test of H_{2A}. Similarly, if audit fees are higher for firms with more complex fair value measurements (i.e., greater exposure to assets reported at level 2 or 3 fair values), then we predict a positive coefficient for *FV2/3*, and δ_{13} is an alternative test of H_{2B}. All other variables are as previously defined. Relative to Model (1), we exclude *Distress* and *Qualified* from the vector of control variables (*CONTROL*), as neither exhibits variation in this sample.

Table 1 presents the sample. Due to hand-collection costs, we include only UK investment trusts having 10 or more available observations during 1993–2008, which leads to a sample of 236 firm-years. Investment trusts reporting consolidated accounts apply UK standards and then switch to IFRS in 2005; those issuing only unconsolidated accounts apply UK standards throughout the sample period.[16] Columns (9) and (10) of Table 2 reveal that the firms average 90.6 % of total assets at fair value, 96.2 % of investments at fair value, and 8.5 % of fair-value investments using level 2 or 3 inputs.

Table 6 presents the multivariate results. Results using only the control variables in Column (1) are consistent with our previous tables. Focusing on the experimental variables in Column (2), we find that *FV_TA_IT* is significantly negative (−0.316, *t* stat = 2.14). This suggests that firms having above-average exposure to assets reported at fair value experience lower audit fees, providing additional support for H_{2A}. In addition, we find that *FV2/3* is significantly positive (1.109, *t* stat = 3.35). This suggests that firms with greater exposure to more difficult-to-value investments (i.e., those for which market prices are unavailable) experience higher audit fees and provides additional support for H_{2B}. Results remain consistent when we replace *FV_TA_IT* with *FV_INV* in Column (3). *FV_INV* refines the proxy for exposure to assets reported at fair value by holding the asset type constant as investments.[17] Overall, the results are consistent with our previous findings.

[16] To capture any potential mean differences relative to firms filing consolidated reports, we additionally estimate the Table 6 analysis including an indicator variable equal to one for the 14 firms filing only parent-level reports. Results are unchanged.

[17] We include in Model (4) control variables to capture, among other firm characteristics, complexity. However, the variables *FV_TA_IT*, and *FV_INV* could capture other differences between firms (such as complexity or risk of investments) versus the intended exposure to fair value reporting. To mitigate this possibility, we include two additional firm-level variables: *HC_Volatil* (the standard deviation of changes in value of depreciated cost-based financial instruments) and *FV_Volatil* (the standard deviation of changes in value of fair value-based financial instruments). Inferences are unchanged.

5 Sensitivity tests

5.1 Additional controls for institutional differences and country differences

Owing to our cross-country research designs in Tables 3, 4, and 5, we examine the robustness of our results to explicit controls for institutional differences between countries. Previous research indicates that cross-country differences in audit quality depend on institutional characteristics such as demand for audit services and the level of liability standards (Francis and Wang 2008; André et al. 2011). We use aggregate stock market capitalization (*MCap*) to capture demand for audit services and the burden-of-proof index (*Bdn_Proof*) from La Porta et al. (2006) to proxy for the liability standard (i.e., the procedural difficulty in recovering funds from liable stakeholders). Table 3 Column (4) reveals that inferences for both control and experimental variables are unchanged when including *MCap* and *Bdn_Proof* in our analysis of European real estate firms. Similarly, Table 4 Column (3) reveals consistent inferences when including both variables in our analysis of European real estate firms post-IFRS adoption. Finally, Table 5 Column (3) reveals consistent inferences when including *MCap* in our analysis of UK versus US real estate firms. (We cannot include *Bdn_Proof*, which is available only for a single year and is highly correlated with the *FV_UK* indicator variable.) Overall, inferences are unchanged to these additional controls for institutional differences across countries.

We also examine the robustness of our primary analyses of Tables 3 and 4 to controlling for further institutional differences not captured by our main tests. We conduct the following five alternative sensitivity analyses. First, we include the anti-self-dealing index from Djankov et al. (2008) to capture the level of legal protection. Second, we include a measure of country-level volatility of returns to control for the relative riskiness and composition of investment portfolios. Third, we include country indicator variables to capture mean differences in institutional characteristics across countries. Fourth, since France has different audit pricing than other countries due to national audit market regulation (André et al. 2011), we replicate our tests excluding firms domiciled in France. Finally, we exclude UK observations from the analyses due to potential concerns about differences in the implementation of International Accounting Standard 39 (IASB 1999) between the UK and other EU countries. Inferences are unchanged across each of these sensitivity analyses.

5.2 Endogeneity with respect to auditor type

Chaney et al. (2004) document that auditor choice is related to firm characteristics, and that failure to control for auditor selection may affect estimates of the determinants of audit fees. Accordingly, we perform two sensitivity analyses. First, we estimate Models (1)–(4) excluding the variable *BigN*. Second, we estimate a two-stage treatment effect model to control for self-selection bias, with choice of auditor type as the dependent variable in the first stage, with audit fees as the dependent variable in the second stage, and with the inverse Mills ratio from the first stage as a control for self-selection bias in the second stage. Untabulated results from both analyses are substantially unchanged from those reported.

Table 6 Alternative setting for the effect of fair value characteristics on audit fees: evidence using UK investment trusts

Variable	Predicted sign	Base model Coeff (*t* stat) (1)	With experimental variables Coeff (*t* stat) (2)	Different set of experimental variables Coeff (*t* stat) (3)
Intercept	+/−	−1.725 (1.61)	−1.626** (2.53)	−1.374** (2.50)
LogTA	+	0.340*** (4.35)	0.361*** (6.53)	0.366*** (6.79)
IFRS_Adopt	+	0.492*** (3.08)	0.530*** (3.65)	0.521*** (3.27)
Foreign	+	8.074*** (7.38)	4.491*** (3.52)	3.048* (1.99)
NSegm	+	0.105 (1.32)	0.051 (0.82)	0.031 (0.47)
ROA	−	8.712 (1.54)	4.705 (1.12)	3.432 (1.08)
Loss	+	1.740*** (4.20)	0.795* (1.91)	0.690** (2.06)
Receiv	+	6.553 (1.31)	0.989 (0.21)	1.763 (0.42)
Lev	+	0.811* (1.93)	0.541* (1.92)	0.654** (2.22)
Volatility	+	4.138** (2.34)	2.290* (1.92)	2.506** (2.59)
BigN	+	−0.238 (0.75)	−0.062 (0.25)	0.108 (0.44)
Yearend	+	−0.096 (0.42)	−0.132 (0.62)	−0.212 (0.96)
Experimental variables				
FV_TA_IT	−		−0.316** (2.14)	
FV_INV	−			−0.681** (2.18)
FV2/3	+		1.109*** (3.35)	1.127*** (4.09)
Adj-R^2		56.9 %	64.6 %	65.3 %

This table presents an alternative setting to examine the effect of fair value characteristics on audit fees. The sample includes UK investment trusts over the period 1993–2008 with available hand-collected data. Across all columns, $N = 236$

The dependent variable is *LogFees*. All variables are defined in Appendix 2. The coefficients on *FV_TA_IT* and *FV_INV* test H_{2A}; the coefficient on *FV2/3* tests H_{2B}

***, **, * Significance at the 1, 5, and 10 % levels for the indicated one- or two-tailed tests. We do not report asterisks when the coefficient sign is opposite from the predicted sign. *t* statistics are based on standard errors clustered by firm and are reported in parentheses

5.3 Conditioning on fair value exposure

To further strengthen our inferences, we test whether differences in audit fees across the fair value firms and depreciated-cost firms in the Tables 3 and 5 analyses are more pronounced where exposure to fair value measurement is higher.[18] Such a

[18] Note that we cannot directly assess the relative importance of exposure versus complexity within Table 3, as data for several constructs (e.g., complexity) is unavailable. However, as a preliminary analysis of this issue, we conduct the following. (1) We take all Table 3 firm-year observations relating to firms that report under historical cost pre-IFRS ($N = 78$). (2) We partition these observations into *NSegm_High* versus *NSegm_Low* using mean values of *NSegm*, the number of operating segments, to capture differences in complexity. We use this variable, as it has both a high correlation with our other measure of complexity and high availability among our pre-IFRS historical cost observations. (3) We then estimate $LogFees = \beta_0 + \beta_1 IFRS + \beta_2 NSegm\_High + \beta_3 IFRS \times NSegm\_High + \varepsilon$, finding *IFRS* (−1.580, *t* stat = −4.57); *NSegm_High* (0.807, *t* stat = 1.28); and *IFRS* × *NSegm_High* (1.899, *t* stat = 2.27). These results suggest that, consistent with H_{1A}, audit fees are reduced following IFRS adoption for low-

relation would provide further support for H_{1A} by indicating that the observed differences in audit fees are indeed driven by the different reporting models, rather than other factors. To proxy for a firm's exposure to investment property assets that would be reported at fair value, we use the firm's property, plant, and equipment (PP&E) as a percentage of total assets (*PPE_Exposure*). This is intuitive, as investment property is both the primary asset (median = 82.3 % of total assets) and the primary PP&E asset (median = 98.3 % of PP&E) for our sample of real estate firms. Furthermore, there is a high correlation between *PPE_Exposure* and our hand-collected data on the proportion of total assets measured at fair value (Spearman correlation = 0.88). Critically, use of *PPE_Exposure* allows for a broad inclusion of observations for which data on several partitioning variables capturing fair value characteristics is lacking and thus permits us to perform the following (untabulated) replications of Tables 3 and 5.

In our replication of Table 3, we compare sub-samples in the lowest and highest quartiles of *PPE_Exposure*. We find that the reduced audit fees are confined to those firms in the highest quartile of *PPE_Exposure*. Specifically, the coefficient on the interaction of *HC* × *IFRS* (which captures the benefits of moving to IFRS for firms that previously reported under historical cost) is −1.062 (t stat = 2.17) for firms with the *highest* exposure to PP&E assets and 0.241 (t stat = 0.53) for firms with the *lowest* exposure, with the −1.302 difference significant (t stat = 2.11). That is, the decrease in audit fees for fair value firms is concentrated in the sub-sample of observations with the highest exposure to (potential) fair value measurements, consistent with the Table 4 findings for *FV_Exposure*.

In the replication of Table 5, we similarly compare sub-samples of UK and US firms in the lowest versus highest quartiles of *PPE_Exposure*. Specifically, we replace the original variable *FV_UK* (which acts as an indicator variable for firms domiciled in the UK) with *FV_High* and *FV_Low* (which are indicator variables capturing UK firms in the highest and lowest quartiles of exposure to PP&E, respectively). This allows the coefficient reflecting fair value reporting to vary between firms with different levels of exposure to fair value measurements. Both coefficients are significantly negative (*FV_High* = −0.591 with t stat = 7.18, and *FV_Low* = −0.256 with t stat = 2.97), consistent with UK firms (all of which report fair value) generally exhibiting lower audit fees relative to US firms (all of which report only historical cost). Again, the difference of −0.335 is significantly negative (t stat = 3.22), suggesting relatively lower audit fees for those UK firms having the *greatest exposure* to property assets reported at fair value.

5.4 Reporting model under IAS 40

The significant coefficient on *Recog* obtained in Table 4 (see Sect. 3.2) indicates that audit fees differ with the reporting model applied under IAS 40 (fair value

Footnote 18 continued
complexity firms (evidenced in the significantly negative coefficient for *IFRS*, which captures the effect of moving to fair value reporting on IFRS adoption for the low-complexity firms). However, the results also suggest that any reduction in audit fee is largely eliminated for more complex firms (evidenced through the significantly positive *IFRS* × *NSegm_High*, as well as the insignificance of $\beta_1 + \beta_3$).

model versus cost model with disclosure) in the post-IFRS adoption period. To mitigate concerns that the significantly negative coefficient on *HC* × *IFRS* found in Table 3 (see Sect. 3.1) is driven by the reporting model used under IAS 40, rather than by fair value reporting under IFRS per se, we control for factors that prior research shows to be correlated with firms' use of the fair value model (Quagli and Avallone 2010). Our main tests already use a proxy for financial market development (*MCap*). To capture reporting incentives, we additionally include *Smooth* (measured as firm *i*'s standard deviation of earnings scaled by lagged total assets; obtained from Thomson Reuters Worldscope). Results (untabulated) under this specification lead to inferences that are unchanged relative to those from the Table 3 analyses.

5.5 Excluding the financial crisis year of 2008

Our primary sample is comprised of real estate firms over the period 2001–2008. Similar to most firms, the real estate industry was affected by the global financial crisis, which was most severe during the years of 2008 and 2009. To assess the robustness of our results to the inclusion of a sample year potentially affected by the crisis, we estimate Models (1)–(4) after excluding the firm-year observations for the year 2008 from the samples. Untabulated results of these replications remain consistent with our primary analyses.

5.6 Interviews with real estate audit partners

To validate our expectations, we conduct phone interviews with several audit partners specializing in the real estate industry. The interviewees represent each of the Big 4 accounting firms and a regional European audit firm. All audit partners are based in Europe. The interviews confirm that, while their initial expectations were that fair value would lead to increased audit fees, experience suggests otherwise. The two primary contributors to higher audit fees under depreciated cost for real estate firms appear to be impairment testing and component depreciation. The interviews further confirm our predictions regarding complexity leading to more audit effort, fair value recognition leading to more audit effort relative to disclosure, and use of external appraiser leading to lower audit effort (where the appraiser's work is of high quality).

6 Conclusion

This paper builds on the literatures examining the determinants of audit fees and the effects of fair value reporting by investigating whether fair value reporting affects observed audit fees. We examine both the effect of the reporting model (fair value versus depreciated cost) applied to the firm's primary operating assets, as well as four characteristics of fair value implementation: exposure to assets recognized or disclosed at fair value, the complexity of the fair value measurement, whether the

fair value is recognized versus disclosed, and the use of non-auditor external monitors to derive the fair value estimates.

Using the European real estate industry as our primary setting, we provide evidence that audit fees are lower for firms reporting property assets using fair value, compared to those reporting property assets at depreciated cost. We additionally find that impairments appear to be a major driver of higher audit fees observed for firms using depreciated cost. We then document that audit fees are decreasing in firms' exposure to fair values and increasing both in the complexity of measuring fair value and if fair values are recognized (versus only disclosed in the footnotes). These results are corroborated in two alternative settings. First, we find that audit fees are lower for UK real estate firms (which report property assets at fair value) relative to a matched sample of US real estate firms (which report property assets at historical cost), with impairments again appearing to be a major contributor to higher audit fees for depreciated cost firms. Second, we find using UK investment trusts that audit fees are lower for firms with higher exposure to investment assets reported at fair value and higher for firms with investments reflecting more complex measurement (i.e., level 2 and 3 versus level 1 inputs).

Overall, the results suggest that greater exposure to assets reported at fair value can lower monitoring costs, such as audit fees. However, the findings also highlight that salient characteristics of the fair value reporting—the complexity of deriving the fair values and whether they are recognized in the primary financial statements—can attenuate or even dominate the benefits. These results may assist standard setters in their deliberations about the role of fair value reporting in general-purpose financial statements, as they suggest that fair value reporting can enhance both the decision and contracting usefulness of financial statements and thus potentially foster both objectives of financial reporting. They also may provide insights to US standard setters in the current deliberations to require real estate firms to report property assets at fair value.

Although we use several different settings to enhance the validity of our findings on the association of fair value reporting with audit fees, we note that our results may not generalize, especially where fair value reporting is of second-order importance for firms and their auditors, and where cross-sectional differences in fair value measurement characteristics are weak. We also note that, although audit fees represent a major monitoring and thus contracting cost, this study does not address other non-audit contracting implications. The effect of fair value accounting on the contracting role of financial reporting therefore remains a fruitful area for future inquiry.

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Appendix 1

Pre-IFRS domestic accounting standards for investment property (IP)

Country	Cost model	Revaluation model	IP treated as PP&E	Notes
Austria	Required	Not allowed	Yes	Similar to German GAAP (see below)
Belgium	Permitted	Permitted	Yes	Revaluation is permitted, with surpluses credited to an equity reserve. Revaluation can be ad hoc and can relate to a single asset or class of assets
Denmark	Not allowed	Required	No	Revaluation is required (only) if IP is the firm's main activity
Finland	Required (most cases)	Permitted for some IP	Yes	Only nondepreciable assets may be revalued, on an individual and ad hoc basis
France	Required (most cases)	Permitted (rarely)	Yes	Revaluation permitted only when all long-term financial instruments and PP&E are revalued; surplus credited to an equity reserve. Revaluation surpluses are taxed
Germany	Required	Not allowed	Yes	Revaluation not allowed. Component depreciation permitted under certain conditions
Italy	Required	Not allowed	Yes	Fair value is not permitted. Component depreciation requirements similar to IFRS
Netherlands	Permitted	Permitted	No	Like IFRS, disclosure of the IP fair value is required
Norway	Required	Not allowed	Yes	Similar to German GAAP (see above)
Poland	Permitted	Permitted	No	Similar to Belgian GAAP (see above)
Spain	Required	Not allowed	Yes	No revaluation to fair value is permitted
Sweden	Required (most cases)	Permitted (rarely)	Yes	IP may be revalued on an ad hoc basis; disclosure of IP fair values is required
Switzerland	Permitted	Permitted	No	IP is measured at historical cost or market value
UK	Not allowed	Required	No	IP is recognized at fair value. Revaluation surpluses are credited to an equity reserve

This table summarizes the requirements relevant to our sample firms' accounting for investment property (IP) under domestic GAAP prior to IFRS adoption. We take the relevant information from practitioner sources including the Big 4 audit firms' IFRS versus domestic GAAP comparison brochures as well as academic papers. The individual sources are available from the authors upon request. IP is investment property, and PP&E is property, plant, and equipment

The table indicates that two primary reporting models for IP were common under pre-IFRS domestic GAAP: depreciated cost and revaluation. Several countries required depreciated cost reporting (usually by subsuming IP as a part of PP&E); several mandated revaluations to fair value at least for specialized IP entities; and several permitted that firms choose either method

Appendix 2

Variable definitions

Dependent variable	
$LogFees_{it}$	The log of total auditor fees paid by firm i for year t
Control variables	
$LogTA_{it}$	The log of firm i's total assets at the end of year t
$Foreign_{it}$	International assets divided by total assets for firm i for year t
$NSegm_{it}$	Number of firm i's operating segments for year t
ROA_{it}	Firm i's net income, net of impairment losses, divided by total assets, both measured for year t
$Loss_{it}$	An indicator variable equal to 1 if firm i reports negative net income for year t and 0 otherwise
$Receiv_{it}$	Firm i's receivables divided by total assets, both measured for year t
Lev_{it}	Firm i's total debt divided by market value of equity for year t
$Distress_{it}$	An indicator variable equal to 1 if firm i reports negative book value of equity for year t and 0 otherwise
$Qualified_{it}$	An indicator variable equal to 1 if firm i receives a qualified audit opinion for year t or $t-1$ and 0 otherwise
$Volatility_{it}$	The standard deviation of monthly stock returns for firm i over year t
$BigN_{it}$	An indicator variable equal to 1 if firm i uses a large auditor (i.e., Big 4 or Big 6) during year t and 0 otherwise
$Yearend_{it}$	An indicator variable equal to 1 if firm i has a fiscal year-end between December and March (corresponding with the audit busy season) for year t and 0 otherwise
$IFRS\_Adopt_{it}$	An indicator variable equal to 1 for the first fiscal year t, and immediately preceding fiscal year $t-1$, of first-time IFRS adoption for firm i and 0 otherwise
$MCap_{it}$	The ratio of aggregate stock market capitalization to GDP of country where firm i is domiciled during year t; obtained from the World Bank
Bdn_Proof_{it}	The burden-of-proof index of country where firm i is domiciled; obtained from La Porta et al. (2006) and captures (1) liability standard for the issuer and its directors; (2) liability standard for underwriters; and (3) liability standard for accountants
Experimental variables	
Table 3	
HC_{it}	An indicator variable equal to 1 if firm i is domiciled in a country that required property assets to be reported at depreciated cost under pre-IFRS domestic standards and 0 otherwise (i.e., is domiciled in a country that required or permitted property assets to be reported at fair value under pre-IFRS domestic standards or under early IFRS adoption). Countries requiring depreciated cost include Austria, Finland, France, Germany, Italy, Norway, and Spain
$IFRS_{it}$	An indicator variable equal to 1 for the years after mandatory IFRS adoption (that is, years 2005–2008) and 0 otherwise (that is, years 2001–2004)
$Impair\_D_{it}$	An indicator variable equal to 1 if firm i reports impairment charges during year t and 0 otherwise

Appendix 2 continued

Table 4 (all calculated using hand-collected data)	
$FV\_Exposure_{it}$	The firm's exposure to assets measured at fair value, calculated in two steps. First, we calculate the proportion of firm *i*'s total assets measured at fair value. For firms reporting property assets on the balance sheet at fair value, it is the ratio of property fair values to total assets; for firms reporting property on the balance sheet under depreciated cost, it is the ratio of disclosed property fair values to the sum of total assets less recognized property at depreciated cost plus disclosed fair value of property. Second, *FV_Exposure* equals 1 if this proportion is higher than the sample mean (indicating higher exposure to assets reported at fair value) and 0 otherwise (indicating lower exposure to assets reported at fair value)
$Complex_{it}$	The complexity of firm *i*'s property portfolio in year *t*, calculated in two steps. First, we sum the square roots of the percentages of property for firm *i* within each of 11 sectors: land, residential, office, retail, parking, industrial, gastronomy, healthcare, education, leisure, and other. Thus higher values reflect more complex portfolios by reflecting diversity across these sectors. Second, *Complex* equals 1 if this measure is above the sample mean for firm *i* in year *t* (indicating higher portfolio complexity) and 0 otherwise (indicating lower portfolio complexity)
$Recog_{it}$	An indicator variable equal to 1 if firm *i* recognizes property fair values on the balance sheet in year *t* and 0 otherwise (that is, only discloses property fair values in the footnotes)
$External_{it}$	An indicator variable equal to 1 if firm *i* uses an external appraiser to provide investment property fair values in year *t* and 0 otherwise
Table 5	
FV_UK_{it}	The firm's exposure to assets measured at fair value. *FV_UK* equals 1 if firm *i* reports its assets on the balance sheet principally at fair value in year *t* (i.e., is domiciled in the UK, where property assets are reported at fair value) and 0 otherwise (i.e., domiciled in the US, where property assets are reported at historical cost)
$Impair\_D_{it}$	An indicator variable equal to 1 if a US firm *i* reports impairment charges in year *t* and 0 otherwise
Table 6 (all calculated using hand-collected data)	
$FV\_TA\_IT_{it}$	The proportion of firm *i*'s total assets measured at fair value. Multivariate tests use indicator variables equaling to 1 if firm *i*'s fair value exposure is higher than the sample mean
FV_INV_{it}	The proportion of firm *i*'s investment portfolio measured at fair value. Multivariate tests use indicator variables equaling to 1 if firm *i*'s fair value exposure is higher than the sample mean
$FV2/3_t$	The proportion of firm *i*'s fair-valued investments measured using level 2 and 3 inputs. Multivariate tests use indicator variables equaling to 1 if firm *i*'s fair value exposure is higher than the sample mean

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