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The Impact of Mandatory IFRS Adoption on Audit Fees: Theory and Evidence

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ABSTRACT: This study examines the impact of International Financial Reporting Standards (IFRS) adoption on audit fees. We first build an analytical audit fee model to analyze the impact on audit fees for the change in both audit complexity and financial reporting quality brought about by IFRS adoption. We then test the model's predictions using audit fee data from European Union countries that mandated IFRS adoption in 2005. We find that mandatory IFRS adoption has led to an increase in audit fees. We also find that the IFRS-related audit fee premium increases with the increase in audit complexity brought about by IFRS adoption, and decreases with the improvement in financial reporting quality arising from IFRS adoption. Finally, we find some evidence that the IFRS-related audit fee premium is lower in countries with stronger legal regimes. Our results are robust to a variety of sensitivity checks.

Keywords: *IFRS adoption; audit fees; audit complexity; reporting quality; legal regime.*

Data availability: *Data are available from public sources identified in the paper.*

I. INTRODUCTION

Starting January 1, 2005, the European Parliament (Regulation No. 1606/2002) required companies listed on organized exchanges in European Union (EU) countries to prepare their consolidated financial statements using International Financial Reporting Standards

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(IFRS).[1] Since then, the accounting profession and the academic literature have paid considerable attention to the economic consequences of IFRS adoption. This study adds to the literature by examining whether and how IFRS adoption impacts audit fees.

A number of empirical studies examine whether the quality of financial reporting improves subsequent to IFRS adoption. Using an international sample from 21 countries, Barth et al. (2008) find that firms voluntarily adopting IFRS generally experience less earnings management, more timely loss recognition, and greater value-relevance than do matched sample firms applying local generally accepted accounting principles (GAAP). Chen et al. (2010) examine mandatory IFRS adoption of firms from 15 EU member states and find less earnings management toward a target, a lower magnitude of absolute discretionary accruals, and higher accruals quality after mandatory IFRS adoption. However, these authors and Ahmed et al. (2009) also suggest that firms engage in more earnings smoothing and recognize large losses in a less timely manner in post-IFRS adoption periods. Several other studies that examine the effects of voluntary or mandatory IFRS adoption on accounting quality within a single country provide mixed evidence (e.g., Eccher and Healy 2003; Bartov et al. 2005; Van Tendeloo and Vanstraelen 2005; Hung and Subramanyam 2007; Jeanjean and Stolowy 2008; Paananen and Lin 2009).

In addition to studies on the effect of IFRS adoption on financial reporting quality, another strand of research examines a broader range of economic consequences of IFRS adoption. Evidence indicates that IFRS adoption leads to lower cost of equity capital (Daske et al. 2009; Li 2010), higher market liquidity (Leuz and Verrecchia 2000; Drake et al. 2010), more investment flows through foreign mutual funds (Covrig et al. 2007), more favorable terms in private debt contracting (Kim et al. 2011), greater analyst coverage (Kim and Shi 2012b), and lower stock return synchronicity (Kim and Shi 2012a). Several studies (e.g., Comprix et al. 2003; Christensen et al. 2008; Pae et al. 2008; Armstrong et al. 2010) seek to address whether the benefits of IFRS adoption outweigh the associated costs by examining market reactions to the events leading to IFRS adoption. These studies yield mixed evidence on whether market participants perceive an overall net benefit from IFRS adoption.

The aforementioned studies shed light on the ongoing debate regarding the merits of adopting IFRS. However, very few studies directly examine the costs associated with IFRS adoption. Our study aims to provide systematic evidence on the cost side of mandate IFRS adoption, with a focus on audit costs. Specifically, we investigate whether the EU decision to mandate adoption of IFRS impacts fees paid to auditors for their financial statement audits (henceforth, audit fees). In addition, we examine the channels through which IFRS adoption leads to changes in audit fees.

Since Simunic (1980), many studies have examined cross-sectional determinants of audit fees within a country. These studies find that audit fees are primarily determined by client size, audit task complexity, and potential legal liability or litigation risk (e.g., Craswell et al. 1995; Simunic and Stein 1996). Our study extends the previous single-country studies to an international setting, where mandatory IFRS adoption by EU countries leads to a shift in disclosure regime. This shift implies not only a change in audit task complexity, but also a change in financial reporting quality across countries with different legal regimes. We take advantage of this unique setting to assess how such changes work together to affect audit fees.

To guide our hypothesis development and interpretation of empirical results, we first develop a simple analytical model in which audit task complexity, financial reporting quality, and legal regime play critical roles in the production and pricing of audit services. We then test the model's

[1] The last decade has witnessed a growing trend of IFRS adoption around the world, with more than 100 countries now requiring or permitting IFRS for their domestically listed companies. In 2002, the International Accounting Standards Board and the Financial Accounting Standards Board in the U.S. embarked on a joint program, known as the Norwalk Agreement, to make the U.S. GAAP and IFRS fully compatible.

predictions concerning the relation between IFRS adoption and audit fees. To further understand the audit fee effect of IFRS adoption, we also test the model's predictions of how the relation between IFRS adoption and audit fees varies with a country's institutional factors. In so doing, we consider three types of institutional factors: (1) the increase in audit complexity arising from IFRS adoption, (2) the change in financial reporting quality brought about by IFRS adoption, and (3) the strength of a country's legal regime.

For our empirical tests, we employ a difference-in-differences design to control for the general trend or changes in the economic environment unrelated to IFRS adoption. Specifically, we use as the control sample non-adopter firms from Organization for Economic Co-operation and Development (OECD) countries in which IFRS had not been mandated up to 2008. Our final sample consists of 2,860 firm-years from 11 EU countries in the treatment sample and 9,052 firm-years from three OECD countries (Japan, Canada, and the U.S.) in the control sample for which we have observations during both the pre-IFRS adoption period (hereafter, the pre-IFRS period) and the post-IFRS adoption period (hereafter, the post-IFRS period). Unless otherwise specified, we use the term *pre-IFRS period* to refer to $t-1$ and *post-IFRS period* to refer to $[t+1, t+3]$, where t is the adoption year.[2]

Our empirical results can be summarized as follows. First, we find that audit fees increase from the pre-IFRS period to the post-IFRS period for both the IFRS adopter firms in the treatment sample (EU countries) and the non-adopter firms in the benchmark control sample (non-EU OECD countries), but this fee increase is larger in magnitude for IFRS adopter firms than for non-adopter firms. More importantly, we find that the incremental fee increase for the adopter firms (over and above the audit fee change for the non-adopter firms) is highly significant at the 1 percent level. The above results, taken together, lead us to conclude that IFRS adoption causes a significant increase in audit fees. Second, we find that this audit fee increase for IFRS adopter firms from the pre-IFRS period to the post-IFRS period, which we refer to as the IFRS-related audit fee premium, is positively related to the increase in audit complexity brought about by IFRS adoption. Third, we find that the IFRS-related audit fee premium decreases with the improvement in financial reporting quality brought about by IFRS adoption. Fourth, we find some evidence that the IFRS-related audit fee premium decreases with the strength of a country's legal regime. The above results hold after controlling for the concurrent reforms in corporate governance and enforcement mechanisms. This suggests that the audit fee premium documented in this paper is primarily driven by IFRS adoption *per se*, rather than by concurrent reforms that may also affect audit fees.

This study makes several contributions to the literature. First, it is one of the few studies that directly examine the cost side of IFRS adoption with a focus on audit fees. A study conducted by the Institute of Chartered Accountants in England and Wales (ICAEW 2007) on behalf of the European Commission suggests that EU companies ranked increased audit costs as one of their largest IFRS-related costs. A small number of concurrent academic studies examine the effects of IFRS adoption on audit fees in single country settings (Degeorge et al. 2008; Griffin et al. 2009; Lin and Yen 2010; Vieru and Schadewitz 2010). These studies provide consistent evidence that audit fees increase in the post-IFRS period. Using audit fee data from 11 EU countries and employing a difference-in-differences approach, we provide large-sample evidence on the average magnitude of the audit fee premium associated with IFRS adoption. Specifically, we find that, on average, the

[2] Since our focus is on mandatory IFRS adoption, we exclude firms that started IFRS reporting either prior to the mandatory adoption year ("voluntary adopters") or after the mandatory adoption year ("late adopters"). The EU mandated IFRS adoption for each financial year starting on or after January 1, 2005. Adoption year t in this study is 2005 (2006) for firms with a December (non-December) fiscal year-end. Note that the year to which Worldscope assigns financial data is the year in which the company's fiscal year ended. Section III provides a detailed discussion on our choice of pre- and post-IFRS windows.

audit fee increase is 5.44 percent greater for the adopter firms, compared to that for the non-adopter firms in our control sample. Moreover, our cross-country study sheds light on how the institutional features of different countries, including legal environments and pre-IFRS local GAAP characteristics, affect the audit fee premium associated with IFRS adoption. The findings of this paper should therefore be of substantial interest to regulators and policy makers, including those in countries that have not yet decided to move toward IFRS.

Second, this study contributes to the audit-pricing literature. To the best of our knowledge, our study is the first to provide systematic evidence on the two channels of audit complexity and financial reporting quality through which accounting standards and their changes affect audit fees. More specifically, IFRS adoption involves not only an upward shift in audit complexity, which increases audit fees, but also a simultaneous improvement in financial reporting quality, which reduces audit fees. Our empirical results suggest that both factors play important roles in explaining cross-sectional variations in audit fee changes brought about by IFRS adoption.

The rest of the paper is organized as follows. Section II develops a theoretical audit fee model and formulates empirical hypotheses based on the model's predictions. Section III specifies empirical models for hypothesis testing. Section IV describes our sample and presents descriptive statistics. Section V reports our main empirical results, while Section VI presents additional sensitivity analyses. Section VII concludes.

II. THEORY AND HYPOTHESIS DEVELOPMENT

To gain insight into the effect of IFRS on audit fees, we build an audit fee model that is similar in spirit to the audit fee models in Liu and Simunic (2005) and Choi et al. (2008, 2009). For any given auditor, his or her objective (decision problem) is to choose the audit effort $e \in (0, 1)$ that minimizes total audit cost, which is the sum of the expected legal liability cost and the auditor's effort cost:

$$\underset{e\in(0,\,1)}{\text{Minimize}}\ \text{Total-Audit-Cost} = (1-q)[c(1-e)][r(1-e)]l + ke^2, \tag{1}$$

where:

- $q \in (0, 1)$ denotes the financial reporting quality conditional on a country's reporting regime (GAAP), which is defined as the probability of financial statements containing no misstatement conditional on the reporting regime;
- $c \in (0, 1)$ refers to the complexity of the audit;
- $e \in (0, 1)$ represents the auditor's effort;
- $r \in (0, 1)$ refers to the strength of a country's legal environment in determining the auditor's legal liability conditional on audit failure;
- $l > 0$ refers to the legal payment the auditor makes to the client if the auditor is found liable in court; and
- $k > 0$ is the auditor's effort cost parameter.

To interpret the economic meaning of the audit fee, first note that audit risk refers to the risk that an auditor fails to discover and report a material misstatement in a company's financial report, and is a function of material misstatement and detection risk (IAASB 2009). Consistent with this concept, audit risk in our model corresponds to $(1 - q)[c(1 - e)]$, where $(1 - q)$ represents the risk of material misstatements, defined as the probability of client misreporting (i.e., failure to comply with GAAP), and $c(1 - e)$ represents the detection risk, defined as the probability of the auditor's failure to discover and report misstatements *conditional on* the financial report being misstated. The detection risk is increasing in audit complexity c and decreasing in the auditor's effort e.

Second, note that the auditor's engagement risk represents the overall risk associated with an audit engagement. This engagement risk consists of two components, audit risk and litigation risk,

and is formally represented by $[(1 - q)c(1 - e)][r(1 - e)l]$ in our model. The litigation risk component, $r(1 - e)$, is the probability of the auditor being held liable in court in the event of audit failure, which is increasing in the strength of the country's legal regime r and decreasing in the auditor's effort e. Hence, $[(1 - q)c(1 - e)][r(1 - e)l]$ as a whole represents the auditor's *expected* legal liability associated with an audit engagement. Finally, ke^2 is the auditor's effort cost, which is increasing and convex in effort e.

The auditor's effort is determined by the first-order condition:

$$e^* = (1 - q)crl/[(1 - q)crl + k].$$

Specifically, the auditor's effort is a function of the reporting quality q, audit complexity c, and the strength of the legal regime r.

In a competitive audit market, the audit fee equals the total audit cost in equilibrium; that is:

$$f = (1 - q)rc(1 - e^*)^2 l + ke^{*2}.$$

Since $\partial f/\partial r = (1 - q)c(1 - e^*)^2 l > 0$, $\partial f/\partial c = (1 - q)r(1 - e^*)^2 l > 0$, and $\partial f/\partial q = -rc(1 - e^*)^2 l < 0$, we obtain the following results:

Observation 1: The audit fee is increasing in the strength of the legal regime r and in audit complexity c, but decreasing in financial reporting quality q.

One implication of Observation 1 is that the audit fee decreases with the quality of financial reporting. The intuition behind this result is clear: given GAAP, the higher the quality of a financial report (which means less likelihood of financial misstatements), the lower the audit risk an auditor faces, which leads to a lower audit fee.

To examine how IFRS adoption changes the audit fee, we note that IFRS adoption has two audit-related effects. First, the adoption of IFRS may improve financial reporting quality, that is, reduce financial misstatements conditional on the reporting regime, thereby reducing audit risks. IFRS is generally considered to be superior to former local accounting standards. Proponents of IFRS claim that IFRS adoption leads to increased and higher quality disclosures that better reflect a firm's economic conditions. They argue that, compared with former local GAAP in most countries, IFRS is more principles-based, emphasizing a "true and fair view" in both letter and spirit, and incorporating into financial statements the effects of economic events on firm performance in a timelier manner (Coopers & Lybrand 1993; Dumontier and Raffournier 1998; Alexander and Archer 2001).[3] More specifically, the adoption of IFRS may reduce financial misstatements by improving management's accounting decisions and measurements. To the extent that IFRS fills voids in the local standards and provides comprehensive guidelines on accounting issues, it can lead to better judgments and, thus, fewer misstatements or better compliance with the fair presentation principle of GAAP to reflect the firm's underlying economics.[4] Moreover, accounting choices and judgment are often allowed for an accounting issue. IFRS provides more practical guidelines to limit opportunistic management discretion in determining accounting amounts, thus leading to

[3] Skeptics, on the other hand, argue that IFRS adoption is unlikely to enhance accounting quality unless it is accompanied by a wide range of complementary changes in infrastructure (Ball 2006). In addition, the inherent flexibility in principles-based standards could provide more room for firms to manage earnings. This effect on client misreporting, however, can be mitigated by extensive practical guidelines to help firms comply with such a standard.

[4] In most countries, compliance with GAAP is not narrowly defined in the accounting framework as compliance only with specific accounting provisions. It also includes compliance with the fair presentation principle of GAAP. Managers/auditors cannot avoid litigation simply by blaming GAAP for lacking specific provisions or practical guidelines. Failure to fairly present the firm's economic conditions when judgment is required constitutes misstatements and violation of GAAP, subject to the court's decision.

fewer misstatements or better compliance with accounting standards that require professional judgment (Barth et al. 2008). In summary, the comprehensiveness and quality of IFRS guidelines have positive effects on reporting quality, as they improve management accounting decisions and reduce judgment errors in complying with GAAP, particularly the fair presentation principle. The improved financial reporting quality tends to reduce audit risk and the audit fee.

Second, IFRS adoption increases the complexity of an audit. Since IFRS is comprehensive, fair-value oriented, and principles-based, using IFRS generally requires accountants and auditors to make more complex estimates and to use greater professional judgment (KPMG 2007; Deloitte 2008).[5] As shown in Observation 1, improved financial reporting quality reduces the audit fee, but increased audit complexity increases it. Therefore, the effect of IFRS adoption on audit fees is determined by which of the above two forces is dominant. Our analysis yields the following observation.

Observation 2: IFRS adoption, which increases both financial reporting quality q and audit complexity c, leads to an increase (decrease) in audit fees if the positive effect of the increase in audit complexity dominates (is dominated by) the negative effect of improved financial reporting quality on the audit fee. Specifically, IFRS adoption increases (decreases) the audit fee if $(1-q)\Delta c > c\Delta q$ (if $(1-q)\Delta c < c\Delta q$),where Δ denotes the change brought about by IFRS adoption.

Proof: See Appendix A.

Observation 2 indicates that IFRS adoption can lead to an increase or decrease in audit fees, depending on whether an increase in audit complexity or an increase in financial reporting quality is the dominant factor in determining the audit fee change.[6] Since we cannot specify *a priori* the direction of the impact of IFRS adoption on audit fees, we formulate the following null hypothesis:

H1: IFRS adoption has no impact on audit fees.

To facilitate the discussion below, we now summarize the subsequent results of empirical tests for H1. As reported later in Table 5, these results show that IFRS adoption leads to an increase in audit fees. According to Observation 2, these empirical results suggest that $(1-q)\Delta c > c\Delta q$ holds; that is, the positive effect of increased audit complexity on audit fees dominates the negative effect of improved reporting quality, leading to an IFRS-related increase in the audit fee or audit fee premium.

We next examine how this audit fee premium associated with IFRS adoption varies with a number of institutional factors. First, we examine the effect of increased audit complexity arising from IFRS adoption. We find that:

[5] For a small subset of cross-listed clients, the increase in audit complexity associated with IFRS adoption may be partially offset by a benefit derived from reduced reconciliation to foreign countries' GAAP if the cross-listed foreign country has also adopted IFRS. Out of the 833 firms in our final treatment sample, 45 are identified as being cross-listed in foreign countries that also mandated IFRS before 2008. The untabulated results for our test variables remain qualitatively unchanged after excluding these 45 firms.

[6] While our discussion focuses on the situation in which IFRS leads to an improvement in financial reporting quality q, our analytical results (observations) encompass situations in which q can increase or decrease. If IFRS adoption causes deterioration in financial reporting quality, then the condition $(1-q)\Delta c > c\Delta q$ in Observation 2 always holds, which means that the IFRS-related audit fee change will always be positive and is attributable to both reduced financial reporting quality and increased audit complexity. H3 specifically addresses the relation between the audit fee change and the cross-country variation in the change of reporting quality brought about by IFRS adoption.

$$\partial \Delta f / \partial \Delta c = \partial [f(q_{IFRS}, c_i + \Delta c) - f(q_i, c_i)] / \partial \Delta c > 0,$$

where the subscript i refers to country i. This means that, *ceteris paribus*, the greater the increase in audit complexity (i.e., greater Δc), the greater the IFRS-related audit fee premium. Second, we examine how the IFRS-related audit fee premium varies with the change in financial reporting quality brought about by IFRS adoption. We find that:

$$\partial \Delta f / \partial \Delta q = \partial [f(q_i + \Delta q, c_{IFRS}) - f(q_i, c_i)] / \partial \Delta q < 0,$$

which means that, *ceteris paribus*, the greater the improvement in financial reporting quality brought about by IFRS adoption (i.e., greater Δq), the smaller the audit fee premium. We summarize these results as follows.

Observation 3: The audit fee premium associated with IFRS adoption is increasing with the increase in audit complexity arising from IFRS adoption, and decreasing with the improvement in financial reporting quality brought about by IFRS adoption.

Based upon the predictions in Observation 3, we test the following hypotheses.

H2: *Ceteris paribus*, the audit fee premium associated with IFRS adoption is increasing with the increase in audit complexity brought about by IFRS adoption.

H3: *Ceteris paribus*, the audit fee premium associated with IFRS adoption is decreasing with the improvement in financial reporting quality brought about by IFRS adoption.

Finally, we examine how the audit fee premium associated with IFRS adoption varies with a country's legal regime. In this analysis, we assume that $(1 - q)\Delta c > c\Delta q$, which means that the increase in audit complexity dominates any improvement in financial reporting in determining the audit fee change, since we observe an overall positive audit fee change after IFRS adoption (see the discussion following H1). We derive:

$$\partial df / \partial r = (\partial df / \partial r)|_{e=e*} + (\partial df / \partial e)(\partial e / \partial r).$$

The first component, $(\partial df / \partial r)|_{e=e*} > 0$, represents the direct positive effect of a stronger legal regime on the audit fee premium, *with effort level being fixed*. The intuition for the positive sign on this first component is that, when the auditor's effort is fixed, a stronger legal regime experiences a larger IFRS-related audit fee premium because the auditor faces greater legal liability in a stronger legal regime. The second component, $(\partial df / \partial e)(\partial e / \partial r) < 0$, represents the negative effect of greater auditor effort on the audit fee premium. The economic intuition for the negative sign on the second component is that auditors are induced to expend greater effort in a stronger legal regime, which has a negative effect on the auditor's expected legal liability cost and, thus, reduces the IFRS-related audit fee premium. To summarize, the effect of the legal regime on the IFRS-related audit fee premium, i.e., the sign of $\partial df / \partial r$, depends on which of the two forces mentioned above is dominant. Our analysis yields the following results:

Observation 4: Assume that $(1 - q)\Delta c > c\Delta q$ holds. The audit fee premium associated with IFRS adoption decreases (increases) with the strength of a country's legal regime if the incentive effect of a stronger legal regime on auditor effort is sufficiently large (small). Specifically, $\partial df / \partial r < 0 (\partial df / \partial r > 0)$ when the strength of the legal regime exceeds (falls below) a threshold, that is $r > k / cl(1 - q) (r < k / cl(1 - q))$.

Proof: See Appendix A.

Observation 4 shows that if the legal regime, *r*, is sufficiently strong, then the incentive effect on the auditor's expected liability costs becomes the dominant factor, leading to an overall reduction in the IFRS-related audit fee premium in a stronger legal regime. However, because the condition in Observation 4 is *a priori* unknown, we formulate the following hypothesis in null form:

H4: The audit fee premium associated with IFRS adoption in countries with strong legal regimes is the same as that in countries with weak legal regimes.

III. EMPIRICAL PROCEDURES

Research Design for Testing H1

To assess the overall effect of mandatory IFRS adoption on audit fees (H1) for adopter firms in EU countries, we employ a difference-in-differences design, using non-adopter firms in selective non-EU countries as the benchmark. The difference-in-differences design is used to control for changes unrelated to IFRS adoption in the form of a general trend or concurrent changes in audit fees that may also be experienced by the non-adopter firms in the control sample.

We choose our benchmark control sample of firms from non-EU OECD countries that had not mandated IFRS as of 2008. Non-EU OECD countries have well-developed capital markets and are at a stage of economic development similar to those of EU countries, making them a reasonable control group for our tests. Specifically, we estimate the following regression model:

$$AUDFEE = \beta_0 + \beta_1 POST + \beta_2 POST{*}TREAT + \sum \delta_k FSCONTROL_k + Industry\ Indicators + Country\ Indicators + \varepsilon, \quad (2)$$

where:

AUDFEE = natural log of the audit fee in thousands of euros;
TREAT = 1 for firms in the treatment sample (i.e., mandatory adopter firms in EU countries), and 0 for firms in the benchmark control sample (i.e., non-adopter firms in non-EU OECD countries); and
POST = 1 for the post-IFRS period, and 0 for the pre-IFRS period.

For firms in the control sample, we assign the pseudo-adoption year 2005 (2006) for firms with a December (non-December) fiscal year-end (to be consistent with the IFRS adoption pattern in the treatment firms). The term *FSCONTROL* denotes firm-specific control variables. Our model specification includes country-specific indicators, which fully control for *fixed* differences between treatment and control countries (Low 2009, 478; Bertrand and Mullainathan 2003, 1057). We also include industry fixed effects.

In Equation (2), the coefficient β_1 captures the audit fee change for non-adopter firms in the control sample from the pre-(pseudo)-adoption period to the post-(pseudo)-adoption period. The coefficient of interest is β_2, which captures the *incremental* change in audit fees from the pre-IFRS period to the post-IFRS period in the treatment sample relative to the change in the control sample. H1 in *null* form translates to predicting that $\beta_2 = 0$. Appendix B provides detailed definitions for all variables included in Equation (2).

We include 14 firm-specific controls (*LNTA*, *INVREC*, *NBS*, *NGS*, *MB*, *LOSS*, *LEV*, *QUICK*, *SPECIAL_ITEM*, *QUALIFIED*, *MERGE*, *FINANCE*, *BIG4*, and *CROSS*). The variables *LNTA* and *INVREC* are proxies for client size and client complexity, respectively (Simunic 1980; Francis 1984). Because operationally or geographically diversified firms may require more complex audits, we include the number of business segments (*NBS*) and the number of geographical segments

(*NGS*) as additional proxies for client complexity (Simunic 1980; Choi et al. 2008). Following the audit fee literature (Francis 1984; Seetharaman et al. 2002; Hay et al. 2006), we include *LOSS*, *LEV*, *QUICK*, *SPECIAL_ITEM*, and *QUALIFIED* to measure client-specific litigation risks borne by auditors. Similar to Ashbaugh et al. (2003), we include two indicator variables, *MERGE* and *FINANCE*, to capture the demand for additional audit and consulting services associated with business combinations and financing activities. We expect the coefficients for all the above firm-specific control variables except *QUICK* to be positive, since the literature shows that audit fees are positively related to client size, client complexity, and client-specific risk factors. We expect the coefficient of *QUICK* to be negative, since a low *QUICK* ratio is associated with higher financial risk (Francis 1984). The market-to-book ratio (*MB*) is included, but the relation between *MB* and audit fees is unclear, since it is associated with audit complexity and firm risk, as well as firm performance (Ashbaugh et al. 2003).

We include the Big 4 indicator variable (*BIG4*) to capture a Big 4 auditor fee premium (DeFond et al. 2000; Choi et al. 2008). Choi et al. (2009) find that auditors charge higher fees for firms that are cross-listed in countries with stronger legal regimes than they do for non-cross-listed firms. We therefore control for any cross-listing effect by including an indicator variable, *CROSS*, which equals 1 for cross-listed firms, and 0 otherwise.

To estimate Equation (2), we pool the pre- and post-IFRS data. One problem we face is that most of the firm-specific control variables are accounting-based measures. This means that, for IFRS adopter firms in our treatment sample, these variables are measured following local GAAP in the pre-IFRS period and IFRS in the post-IFRS period. This measurement difference may cause the coefficients on the accounting measures to differ between the pre- and post-IFRS periods. Thus, it could be problematic to pool data from pre- and post-IFRS periods. To address this measurement problem, we restrict our pre-IFRS period to year $t-1$ and use restated numbers under IFRS for accounting-based, firm-specific control variables, where year t is the adoption year. IFRS 1 (*First-Time Adoption of International Financial Reporting Standards*) requires firms to apply IFRS retrospectively to the year prior to IFRS adoption to establish comparative financial statements in year t. This regulatory requirement provides us with one year of data in the pre-IFRS era with accounting measures that are recalibrated by firms following IFRS.[7]

Our post-IFRS period covers three years [$t+1$, $t+3$], excluding the adoption year t. We exclude the adoption year t in our main analysis to alleviate any potential concern that our results are driven by temporary transitional effects.

Research Design for Testing H2, H3, and H4

To test the impact of institutional factors on the audit fee premium associated with IFRS adoption (H2–H4), we estimate the following model:

$$\begin{aligned} AUDFEE = {} & \beta_0 + \beta_1 POST + \beta_2 POST{*}TREAT + \beta_3 POST{*}TREAT{*}\Delta COMPLEXITY \\ & + \beta_4 POST{*}TREAT{*}\Delta QUALITY + \beta_5 POST{*}TREAT{*}Legal\ Regime \\ & + \sum \delta_k FSCONTROL_k + Industry\ Indicators + Country\ Indicators + \varepsilon, \end{aligned} \tag{3}$$

where *TREAT* and *POST* are as defined in Equation (2) and $\Delta COMPLEXITY$ refers to the change (increase) in audit complexity arising from IFRS adoption. To obtain an empirical proxy for

[7] We thank an anonymous referee for bringing this measurement issue to our attention. Another benefit of starting the sample period from $t-1$ is to avoid the effect of SOX-related reforms on the audit fee change in the control sample. The untabulated results suggest a large increase in audit fees from $t-2$ to $t-1$ in the U.S. sample, which is likely due to SOX Section 404(b), which requires auditors to express opinions on client firms' internal controls for fiscal years ending on or after November 15, 2004.

$\Delta COMPLEXITY$, we first measure the extent to which (pre-IFRS) local GAAP deviates from IFRS. Since IFRS is more comprehensive, principles-based, and fair-value-oriented, it involves more complex planning, tests, and judgment on the part of auditors. As such, a large deviation between IFRS and local GAAP implies that IFRS adoption causes a large increase in audit complexity.

Ding et al. (2007) classify and quantify the difference between local GAAP and IFRS along two dimensions, *Absence* and *Divergence*. The *Absence* score is based on the number of accounting rules regarding particular accounting issues that are missing in (pre-IFRS) local GAAP but that are explicitly stipulated in IFRS. The *Divergence* score is based on the number of accounting rules regarding the same accounting issue that differ between IFRS and (pre-IFRS) local GAAP. In this study, $\Delta COMPLEXITY$ is computed as the natural log of the sum of the *Absence* and *Divergence* scores, since both lead to an increase in audit complexity. H2 states that the audit fee premium associated with IFRS adoption is increasing with the change in audit complexity brought about by IFRS adoption, which translates to a positive coefficient for $POST * TREAT * \Delta COMPLEXITY$ (i.e., $\beta_3 > 0$).

The variable $\Delta QUALITY$ refers to the change in financial reporting quality brought about by IFRS adoption. We use three different measures to empirically capture $\Delta QUALITY$. Our first measure is based on the previously described comparison of IFRS versus pre-IFRS local GAAP. Although IFRS deviates from local GAAP along the two dimensions of *Absence* and *Divergence*, for reasons we describe below, our measure of the change in reporting quality focuses only on the *Absence* dimension. Specifically, we use the natural log of $(1 + Absence)$, denoted $\Delta GAAPQ$, to measure the change (improvement) in GAAP quality brought about by IFRS adoption.[8] Since a high *Absence* score implies a less developed pre-IFRS local GAAP, *ceteris paribus*, a higher level of *Absence* in the pre-IFRS period implies a greater improvement in reporting quality in the post-IFRS period.

We do not include *Divergence* when measuring the change in reporting quality associated with IFRS adoption because *Divergence* does not have a clear implication for whether domestic GAAP is superior or inferior to IFRS (Ding et al. 2007).[9] Given the ambiguity in the relation between *Divergence* and reporting quality, we construct two discretionary accrual measures of the change in reporting quality brought about by IFRS adoption. Prior studies (e.g., Jones et al. 2008) identify discretionary accruals as an important red flag for material misstatement and fraud, which are particularly relevant to the duties of an auditor. The first discretionary accrual measure, denoted *DA1*, is the residual from the cross-sectional Jones (1991) model. The second measure, denoted *DA2*, is the residual from the cross-sectional Dechow and Dichev (2002) model augmented by the fundamental variables from the modified Jones models. More specifically, we measure $\Delta QUALITY$ through $\Delta|DA1|$ and $\Delta|DA2|$, that is, the changes in the country's median values of the absolute discretionary accruals from the pre-IFRS period (t−1) to the post-IFRS period ([t+1, t+3]). In constructing these two variables, we use only observations from our final audit fee sample. We multiply $\Delta|DA1|$ and $\Delta|DA2|$ by −1 so that higher values indicate greater improvements in financial reporting quality. Appendix C provides more detail on the construction of *DA1* and *DA2*.

In summary, we measure the reporting quality changes, $\Delta QUALITY$ in Equation (3), using three different proxies: $\Delta GAAPQ = ln(1 + Absence)$, $(-1) * \Delta|DA1|$, and $(-1) * \Delta|DA2|$. H3 predicts that the IFRS-related audit fee premium decreases with the improvement in financial

[8] We use $-ln(1 + Absence)$ to proxy for GAAP quality. Since *Absence* becomes 0 in the post-IFRS period, the change in GAAP quality is captured by $0 - [-ln(1 + Absence)] = ln(1 + Absence)$.

[9] On the one hand, one can argue that the international standard-setting process is intended to design a set of internationally acceptable high-quality financial reporting standards. Hence, IFRS should be generally superior to local standards, and any deviation may be viewed as an indication of low-quality reporting. On the other hand, one can argue that local accounting standards that deviate from IFRS are more customized to the local business practices and legal environment and, hence, provide better information to local stakeholders (Ding et al. 2007).

reporting quality brought about by IFRS adoption, which translates to a negative coefficient for $POST * TREAT * \Delta QUALITY$ (i.e., $\beta_4 < 0$).

Finally, we examine the impact of legal regime on the IFRS-related audit fee premium. The strength of legal regime in Equation (3) is first proxied by *WINGATE*, which is the natural log of the Wingate (1997) litigation index. The Wingate index has been widely used in prior audit fee studies (e.g., Choi et al. 2008, 2009), and is based on surveys of partners in auditing firms regarding auditor litigation risk and, hence, captures those dimensions of a legal environment that are most relevant to auditing practices. However, the Wingate index may not capture recent changes in the legal environment. We therefore employ two additional measures of the strength of legal regimes. We include a more recent measure, *ENFORCE*, which refers to the aggregate public enforcement index from La Porta et al. (2006). In addition, La Porta et al. (1998) document that common law countries generally have stronger legal protection for investors than civil law countries. We therefore include an indicator variable, *LAW*, which equals 1 for countries with a common law legal origin, and 0 otherwise. We consider *LAW* and *ENFORCE* together in our regression analyses to comprehensively capture the legal environment in which managers operate their businesses and auditors perform their professional services.

In summary, legal regime in Equation (3) is measured by two proxies: (1) *WINGATE* and (2) both *LAW* and *ENFORCE*. Our null hypothesis, H4, translates to a prediction that $\beta_4 = 0$.

IV. SAMPLE AND DESCRIPTIVE STATISTICS

We initially obtain from Worldscope a sample of 29,206 firm-years from 14 EU countries over the period 2004–2008. To test our hypotheses, we exclude (1) firm-year observations for which information about the chosen accounting standards is missing, ambiguous, or coded as U.S. GAAP; (2) firms that belong to banking, insurance, or other financial industries (with a Worldscope general industry classification of 04, 05, or 06); (3) firms that adopted IFRS prior to the mandatory adoption year (voluntary adopters); (4) firms that adopted IFRS after the mandatory adoption year (late adopters); (5) firm-year observations with missing audit fee data; (6) firm-year observations lacking the data required to compute other firm-specific control variables; (7) firms without sufficient information to clearly identify their IFRS adoption year; and (8) firm-year observations falling outside our sample period of [t−1, t+3]. Finally, we require each firm to have data in the adoption year t, the pre-adoption year t−1, and at least one observation in the post-IFRS years [t+1, t+3] to minimize the impact of changes in sample composition on our results. The final treatment sample consists of 3,693 (2,860) firm-year observations for 11 EU countries if we include (exclude) the adoption year t.

Next, to construct our control sample, we begin with firm-year observations from non-EU member countries in the OECD that had not mandated IFRS adoption up to 2008. This requirement leads to an initial sample of 73,114 observations over the period 2004–2008 from seven countries (Canada, Chile, Japan, Mexico, South Korea, Turkey, and the U.S.). We follow sample-selection procedures similar to those used for the treatment sample. The final control sample consists of 11,903 (9,052) firm-year observations from three countries (Japan, Canada, and the U.S.) if we include (exclude) the pseudo-adoption year t.[10] Table 1 provides detailed information on our sample selection.

Table 2 reports the pattern of IFRS adoption over the period 2005–2008 across 14 EU countries. These statistics are based on a comprehensive EU sample before we impose the non-missing data requirements for audit fees and firm-specific control variables. We use data field 07536 in Worldscope to identify accounting standards followed by each firm in each year. This data

[10] Seven OECD countries had not mandated IFRS adoption as of 2008. Audit fee information is mostly unavailable for Chile, Mexico, South Korea, and Turkey, which leaves three countries in the final control sample. The relatively small number of observations for Japan is due to limited audit fee data prior to 2007.

TABLE 1

Sample Selection[a,b,c]

	Treatment Sample (EU Countries)	Control Sample (OECD Countries)
Initial sample (firm-year observations) from Worldscope, 2004–2008	29,206	73,114
Subtract:		
Firm-year observations for which information about the chosen accounting standard is missing or ambiguous	(758)	
Firms that belong to banking, insurance, or other financial industries	(6,244)	(10,584)
Firms that started IFRS reporting prior to the mandatory adoption year (voluntary adopters)	(3,332)	(344)
Firms that started IFRS reporting after the mandatory adoption year (late adopters)	(6,360)	
Firm-year observations with missing audit fee data	(5,645)	(31,661)
Firm-year observations lacking data required to compute firm-specific control variables	(793)	(7,170)
Firms without sufficient information to identify their IFRS adoption year t	(488)	
Firm-year observations falling outside our sample period of $[t-1, t+3]$	(336)	(1,303)
Firms that do not have data available in both the pre- and post-adoption periods	(1,557)	(10,149)
Final sample including adoption year t	3,693	11,903
Final sample excluding adoption year t	2,860	9,052

[a] The initial sample consists of 14 EU countries in the treatment group and seven countries in the control group (Canada, Chile, Japan, Mexico, South Korea, Turkey, and the U.S.). The countries in the control group are selected using the following two criteria: (1) the country belongs to the OECD, and (2) the country had not mandated IFRS adoption up to 2008. Further sample-selection procedures result in a final sample of 11 EU member countries and three OECD countries. See Table 3 for details of the final sample composition.

[b] The year to which Worldscope assigns financial data is the year in which the company's fiscal year ended. Thus, the mandatory adoption year for firms with a December (non-December) fiscal year-end is 2005 (2006). We assign the pseudo-adoption year of 2005 (2006) for firms with a December (non-December) fiscal year-end in the control sample.

[c] Since the control sample has not mandated IFRS up to 2008, firms in the control sample are identified as voluntary adopters if they choose IFRS in any year in the sample period.

field includes a total of 23 categories. In the main test, we follow Daske et al. (2009) to use the strict coding for IFRS adoption, which consists of only Worldscope categories 02 ("International Standards") and 23 ("IFRS").[11]

As shown in Table 2, the adoption of IFRS by the end of 2006 is incomplete, with the U.K. having the lowest adoption rate (45 percent), followed by Ireland (63 percent). The reason is that Regulation No. 1606/2002 of the European Parliament allowed the following types of firms to postpone IFRS adoption: (1) firms listed on less-regulated markets (e.g., the Alternative Investment Market in London); (2) firms reporting non-consolidated reports; (3) firms publicly traded in a

[11] The results are qualitatively similar when we use an alternative coding by Jeanjean and Stolowy (2008) or a comprehensive, less strict coding following Daske et al. (2009, Table 1A, Panel A).

TABLE 2

Distribution of IFRS Adoption
2005–2008

	2005		2006		2007		2008	
Country	**# of Firms**	**% of IFRS**	**# of Firms**	**% of IFRS**	**# of Firms**	**% of IFRS**	**# of Firms**	**% of IFRS**
Austria	19	74%	20	75%	19	84%	17	94%
Belgium	77	70%	78	77%	74	80%	52	88%
Denmark	92	59%	101	81%	103	82%	97	87%
Finland	107	93%	105	100%	101	100%	97	100%
France	651	59%	639	74%	574	78%	461	87%
Germany	376	54%	387	66%	369	70%	289	78%
Greece	250	96%	251	100%	244	100%	219	100%
Ireland	58	43%	59	63%	58	88%	44	100%
Italy	203	97%	224	100%	215	100%	200	100%
The Netherlands	114	93%	114	99%	107	98%	90	99%
Portugal	45	84%	44	86%	40	90%	40	93%
Spain	109	85%	110	93%	105	96%	104	95%
Sweden	318	75%	339	85%	346	85%	329	87%
U.K.	1,540	20%	1,642	45%	1,586	69%	1,326	97%

This table reports the percentage of firms that adopt IFRS during the period of 2005–2008 across 14 EU countries. The initial sample obtained from the Worldscope database consists of 29,206 firm-year observations from 2004 to 2008. We delete (1) firm-year observations with accounting standard information missing, ambiguous, or coded as U.S. GAAP, (2) firms that belong to the banking, insurance, or other financial industries (Worldscope general industry classification of 04, 05, or 06), and (3) firms that started IFRS reporting prior to the mandatory adoption year (voluntary adopters). These selection procedures result in 18,872 firm-year observations for the period 2004–2008, of which 15,378 observations fall in 2005–2008.

non-EU country that uses internationally accepted standards; and (4) firms with only publicly traded debt securities. By the end of 2008, almost all EU publicly listed firms had adopted IFRS.

Table 3 provides descriptive statistics of audit fees and firm characteristics. Panel A of Table 3 presents the mean values of the variables included in Equation (2) for each country and the grand means for the treatment and control samples.[12] We also report the mean for the pre- and post-IFRS periods, separately, for the treatment and control samples. The panel shows that the number of observations varies across countries, with only four observations for Germany and 1,524 observations for the U.K.[13] The sub-period statistics reveal that both the treatment and control

[12] We use the 2008 data for the following four variables: the number of business segments (*NBS*), the number of geographical segments (*NGS*), auditor identity (*BIG4*), and cross-listing status (*CROSS*). Worldscope provides only the most recent year (i.e., 2008) information on *BIG4* and *CROSS*. As for *NBS* and *NGS*, Worldscope does not have complete time-series data (with a code of N.A. for at least one firm-year) for 38 percent of our sample firms. More importantly, the over-time variation of the number of segments could be due simply to the change in segment reporting regulations during the 2002–2008 period, rather than actual change in segments. For example, the revised International Accounting Standard 14 on segment reporting adopted by the EU in 2003 is based on the so-called risks and rewards approach, whereas IFRS 8 on segment reporting, adopted by the EU in 2007, is based on the so-called management approach.

[13] Audit fee data are mostly missing prior to 2005 for firms in Germany, which explains the small number of observations from Germany in the final sample after we require firms to have audit fee information both before and after IFRS adoption. Austria, Greece, and Italy drop out of the sample due to missing audit fee data.

TABLE 3

Firm-Level Descriptive Statistics

Panel A: Sample Characteristics by Country

Country	n	*AUD-FEE*	*LNTA*	*INV-REC*	*NBS*	*NGS*	*MB*	*LOSS*	*LEV*	*QUICK*	*SPECIAL_ITEM*	*QUAL-IFIED*	*MERGE*	*FI-NANCE*	*BIG4*	*CROSS*
Treatment Sample																
Belgium	12	4.72	12.21	0.47	0.77	1.13	1.56	0.42	0.66	0.72	0.25	0.00	0.00	0.25	0.33	0.00
Denmark	185	6.12	12.29	0.39	0.95	1.03	3.03	0.17	0.53	1.42	0.08	0.00	0.24	0.15	0.85	0.00
Finland	80	6.12	12.79	0.35	1.25	1.42	2.67	0.10	0.54	1.18	0.09	0.00	0.44	0.14	0.88	0.04
France	261	6.99	13.61	0.35	0.76	0.90	2.44	0.16	0.60	1.15	0.12	0.00	0.22	0.26	0.49	0.08
Germany	4	5.10	11.73	0.43	1.61	1.10	0.90	0.00	0.33	1.50	0.00	0.00	0.00	0.00	0.00	0.00
Ireland	95	6.34	12.96	0.27	0.97	0.99	3.56	0.18	0.51	1.55	0.12	0.11	0.21	0.18	0.89	0.79
The Netherlands	24	8.04	14.56	0.28	1.11	1.52	3.34	0.00	0.60	0.80	0.29	0.00	0.50	0.17	1.00	0.17
Portugal	42	6.31	14.30	0.22	1.12	0.91	2.55	0.10	0.66	0.83	0.07	0.05	0.21	0.24	0.83	0.55
Spain	235	6.61	14.31	0.32	1.26	1.16	3.69	0.09	0.61	0.93	0.03	0.01	0.10	0.31	0.94	0.20
Sweden	398	6.43	12.77	0.36	1.14	1.35	3.00	0.18	0.51	1.46	0.08	0.00	0.36	0.19	0.98	0.10
U.K.	1,524	6.57	12.91	0.30	1.10	1.10	3.07	0.17	0.54	1.35	0.14	0.01	0.34	0.19	0.83	0.07
Mean (total)	2,860	6.54	13.06	0.32	1.08	1.12	3.04	0.16	0.55	1.30	0.11	0.01	0.30	0.20	0.83	0.11
Pre [$t-1$]	833	6.33	12.76	0.33	1.06	1.10	3.23	0.17	0.54	1.40	0.10	0.01	0.32	0.16	0.83	0.11
Post [$t+1$, $t+3$]	2,027	6.63	13.18	0.32	1.08	1.13	2.96	0.16	0.55	1.27	0.12	0.01	0.29	0.22	0.83	0.11
Control Sample																
Canada	723	5.74	11.99	0.18	0.88	0.98	3.21	0.45	0.38	3.47	0.09	0.01	0.21	0.35	0.87	0.22
Japan	113	5.72	12.89	0.31	0.76	0.98	2.51	0.04	0.38	2.01	0.01	0.00	0.01	0.18	0.97	0.20
U.S.	8,216	6.45	12.32	0.26	0.93	0.88	3.67	0.33	0.45	2.39	0.13	0.04	0.23	0.21	0.65	0.01
Mean (total)	9,052	6.38	12.30	0.25	0.93	0.89	3.61	0.33	0.44	2.48	0.13	0.03	0.23	0.22	0.68	0.03
Pre [$t-1$]	2,851	6.22	12.03	0.26	0.92	0.89	4.20	0.32	0.43	2.62	0.13	0.04	0.32	0.20	0.67	0.03
Post [$t+1$, $t+3$]	6,201	6.46	12.42	0.25	0.93	0.89	3.35	0.34	0.45	2.41	0.13	0.03	0.19	0.23	0.68	0.03

(continued on next page)

TABLE 3 (continued)

Panel B: Correlations Matrix

	AUD-FEE	*LNTA*	*INV-REC*	*NBS*	*NGS*	*MB*	*LOSS*	*LEV*	*QUICK*	*SPECIAL_ITEM*	*QUAL-IFIED*	*MERGE*	*FI-NANCE*	*BIG4*
LNTA	**0.83**													
INVREC	0.00	**−0.07**												
NBS	**0.28**	**0.31**	**0.06**											
NGS	**0.35**	**0.32**	**0.09**	**0.18**										
MB	**−0.10**	**−0.17**	**−0.09**	**−0.07**	**−0.03**									
LOSS	**−0.27**	**−0.40**	**−0.15**	**−0.16**	**−0.15**	**0.12**								
LEV	**0.36**	**0.42**	**0.17**	**0.24**	**0.15**	**0.14**	**−0.11**							
QUICK	**−0.28**	**−0.30**	**−0.27**	**−0.16**	**−0.14**	**0.04**	**0.23**	**−0.53**						
SPECIAL_ITEM	**0.20**	**0.18**	**−0.04**	**0.12**	**0.05**	**−0.05**	**−0.01**	**0.11**	**−0.07**					
QUALIFIED	**−0.20**	**−0.24**	**−0.08**	**−0.07**	**−0.07**	**0.17**	**0.18**	−0.02	**0.03**	***−0.02***				
MERGE	**0.22**	**0.21**	0.01	**0.12**	**0.13**	**−0.03**	**−0.14**	**0.09**	**−0.11**	**0.04**	**−0.05**			
FINANCE	**−0.12**	**−0.12**	**−0.08**	**−0.05**	**−0.05**	**0.08**	**0.17**	0.02	**0.05**	**−0.05**	**0.09**	**−0.30**		
BIG4	**0.50**	**0.56**	**−0.07**	**0.13**	**0.21**	**−0.07**	**−0.22**	**0.17**	**−0.12**	**0.07**	**−0.18**	**0.12**	**−0.08**	
CROSS	**0.14**	**0.18**	**−0.03**	**0.07**	**0.09**	−0.01	**−0.05**	**0.05**	**−0.02**	0.01	−0.01	0.02	0.01	**0.10**

Panel A reports the sample mean for each country and the grand means for the treatment and control samples. The final sample consists of 2,860 firm-year observations from 11 EU countries in the treatment group and 9,052 firm-year observations from three OECD countries in the control group. Data from the IFRS adoption year *t* in the treatment sample and the pseudo-adoption year in the control sample are excluded. To avoid the undue influence of outliers, we winsorize all variables (except for variables with natural lower or upper bounds) at the 1st and 99th percentiles.

Panel B reports the Pearson correlations. Correlation coefficients are bold (italic) if they are statistically significant at the 1 percent (5 percent) level.

See Appendix B for variable definitions.

samples experience an increase in audit fees during the sample period, indicating the importance of controlling for the general trend or the concurrent changes in audit fees.[14]

Panel B of Table 3 presents the Pearson correlation coefficients for the audit fee and firm-specific control variables used in our regression analysis. Consistent with prior studies, audit fees (*AUDFEE*) are highly correlated with all variables representing client size, client complexity, and client-specific risk, except for a complexity variable, *INVREC*.

Panel A of Table 4 presents descriptive statistics for our key institutional variables. As shown in the panel, $\Delta COMPLEXITY$ and $\Delta GAAPQ$ vary significantly across our sample countries, providing us with a reasonable cross-country setting in which to assess the impact of these country-level variables on audit fees. The two accrual-based measures of $\Delta QUALITY$, namely $\Delta|DA1|$ and $\Delta|DA2|$, further indicate that the change in financial reporting quality brought about by IFRS adoption is not homogeneous across countries. For example, of the nine countries that have sufficient data to construct $\Delta|DA1|$ measures, only five reveal negative signs on this measure. The negative values of $\Delta|DA1|$ and $\Delta|DA2|$ indicate a decrease in the magnitude of discretionary accruals, reflecting an improvement in financial reporting quality. *WINGATE*, *LAW*, and *ENFORCE* also vary across countries, suggesting that the strength of legal regime differs across EU countries in our treatment sample.

Panel B of Table 4 presents Pearson correlation coefficients between key institutional variables. The variable $\Delta GAAPQ$ is significantly positively correlated with $\Delta COMPLEXITY$. This is not surprising, since both measures contain the *Absence* score, which captures the development of a country's pre-IFRS local GAAP. $\Delta GAAPQ$ is negatively correlated with *WINGATE* and *LAW*, consistent with the view that countries with weak legal regimes tend to have less comprehensive (poorer) pre-IFRS local standards. Since $\Delta|DA1|$ inversely measures the improvement in financial reporting quality, the negative correlations between $\Delta GAAPQ$ and $\Delta|DA1|$, although only suggestive of the underlying relation, indicate that IFRS adoption is associated with a more significant improvement in financial reporting quality in countries with poorer pre-IFRS accounting standards. As expected, the two accrual-based reporting quality change measures, $\Delta|DA1|$ and $\Delta|DA2|$, are significantly and positively correlated with each other. Finally, we note that *LAW* and *ENFORCE* are not significantly correlated with each other, suggesting that they capture different aspects of the strength of legal regime.

V. REGRESSION RESULTS

Test of H1

H1 is concerned with the overall impact of IFRS adoption on audit fees. To test H1, we estimate Equation (2) and report the results in Column (1) of Table 5. Throughout this paper, all reported t-statistics in parentheses are adjusted using robust standard errors corrected for firm-level clustering. All regressions are estimated after removing outliers with absolute studentized residuals greater than 3. As a result, the actual sample size varies slightly across regressions.

As shown in Table 5, Column (1), the coefficient of *POST* is positive and weakly significant at the 10 percent level ($\beta_1 = 0.019$; t = 1.89). This suggests that non-adopter firms in the control

[14] Worldscope auditor fee data also include nonaudit fees paid to auditors. We note that the SOX-induced significant declines in the provision of nonaudit services had occurred before IFRS adoption (during 2002–2004), and surveys of U.S. and U.K. audit fees (including the audit fee trend report from Audit Analytics in the U.S. and the Audit Fees Survey from the *Financial Director* magazine in the U.K.) indicate that in both countries the declining trend continued but at a slower pace after 2004, and that nonaudit fees leveled off in 2007 and 2008. Insofar as the decline in nonaudit services is a global trend, our difference-in-differences design mitigates the potential confounding effect of nonaudit fees. Nonetheless, we acknowledge this data limitation.

TABLE 4

Country-Level Descriptive Statistics[a,b]

Panel A: Descriptions of Country-Level Variables

		ΔQUALITY			Legal Regime		
Country	**ΔCOMPLEXITY**	**ΔGAAPQ**	**Δ|DA1|**	**Δ|DA2|**	**WINGATE**	**LAW**	**ENFORCE**
Belgium	3.99	3.14	NA	NA	1.57	0	0.15
Denmark	3.95	3.47	−0.037	−0.024	1.57	0	0.37
Finland	3.97	3.14	−0.005	−0.010	1.28	0	0.32
France	4.01	3.09	−0.007	−0.023	1.83	0	0.77
Germany	4.03	2.94	−0.028	NA	1.83	0	0.22
Ireland	3.53	0.00	0.027	0.030	1.83	1	0.37
The Netherlands	3.56	2.40	0.018	0.011	1.83	0	0.47
Portugal	3.93	3.40	NA	NA	1.28	0	0.58
Spain	4.04	3.37	0.003	0.013	1.57	0	0.33
Sweden	3.58	2.40	−0.004	0.001	1.57	0	0.50
U.K.	3.56	0.00	0.000	−0.001	2.30	1	0.68

Panel B: Correlations Matrix

	ΔCOMPLEXITY	**ΔGAAPQ**	**Δ|DA1|**	**Δ|DA2|**	**WINGATE**	**LAW**
ΔGAAPQ	0.80***					
Δ|DA1|	−0.65*	−0.59*				
Δ|DA2|	−0.59	−0.57	0.87**			
WINGATE	−0.51	−0.72**	0.21	0.19		
LAW	−0.65**	−0.96***	0.49	0.50	0.66**	
ENFORCE	−0.32	−0.26	0.19	−0.36	0.36	0.24

*, **, *** Indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
[a] Refer to Appendix B for variable definitions, and Appendix C for details of the construction of Δ|*DA1*| and Δ|*DA2*|.
[b] "NA" indicates a missing value due to insufficient data to construct the measure.

sample experienced an average 1.92 percent increase in audit fees from year $t-1$ to years $[t+1, t+3]$. The coefficient of *POST* ∗ *TREAT*, which captures the incremental fee-increasing effect associated with IFRS adoption in the treatment sample, is significantly positive ($\beta_2 = 0.052$; t = 2.61). These results suggest that a representative firm in countries that mandated IFRS adoption experienced an average 7.36 percent increase in audit fees during the post-IFRS period;[15] this fee increase is 5.44 percent greater than the fee increase that an average non-adopter firm in the benchmark control sample experienced over the same period. These results lead us to reject the null hypothesis of no audit fee impact (H1) in favor of a significant increase in audit fees in the post-IFRS period.

The coefficients of firm-specific control variables are mostly significant with expected signs at the 1 percent level (except *LEV*, *QUALIFIED*, and *FINANCE*). These results are consistent with the findings in prior literature that audit fees are positively associated with client size (*LNTA*), client complexity (*INVREC*, *NBS*, and *NGS*), and client-specific risks (*LOSS*, the inverse of *QUICK*, and

[15] The percentage change in audit fees from the pre-IFRS period to the post-IFRS period in the treatment group (7.36 percent) can be obtained by applying exp $(\beta_1 + \beta_2) - 1$.

TABLE 5

Results of Multivariate Regressions for Testing H1[a,b]

Panel A: Test Variables

Variables (Pred. Sign)	(1) $t-1$ versus $[t+1, t+3]$	(2) $t-1$ versus $[t, t+3]$
POST (β_1)	0.019*	0.019*
	(1.89)	(1.82)
POST $*$ *TREAT* (β_2)	0.052***	0.052***
	(2.61)	(2.63)
ADOPT (β_3)		−0.009
		(−1.06)
ADOPT $*$ *TREAT* (β_4)		0.073***
		(4.34)

Panel B: Firm-Specific Control Variables (*FSCONTROL*)

Variables (Pred. Sign)	(1) $t-1$ versus $[t+1, t+3]$	(2) $t-1$ versus $[t, t+3]$
LNTA (+)	0.563***	0.565***
	(86.89)	(88.58)
INVREC (+)	0.215***	0.220***
	(4.07)	(4.20)
NBS (+)	0.078***	0.074***
	(4.39)	(4.19)
NGS (+)	0.237***	0.238***
	(13.09)	(13.24)
MB (?)	0.011***	0.011***
	(6.27)	(6.62)
LOSS (+)	0.244***	0.242***
	(14.28)	(14.51)
LEV (+)	0.061	0.057
	(1.19)	(1.13)
QUICK (−)	−0.020***	−0.020***
	(−5.89)	(−6.23)
SPECIAL_ITEM (+)	0.164***	0.168***
	(8.31)	(8.97)
QUALIFIED (+)	0.061	0.053
	(1.25)	(1.06)
MERGE (+)	0.085***	0.080***
	(5.58)	(5.74)
FINANCE (+)	−0.018	−0.008
	(−1.16)	(−0.58)
BIG4 (+)	0.266***	0.261***
	(10.82)	(10.72)

(continued on next page)

TABLE 5 (continued)

Variables (Pred. Sign)	(1) $t-1$ versus $[t+1, t+3]$	(2) $t-1$ versus $[t, t+3]$
CROSS (+)	0.335***	0.325***
	(6.27)	(6.11)
Intercept	−2.878***	−2.837***
	(−9.44)	(−9.03)
Country dummies	Included	Included
Industry dummies	Included	Included
F-statistic for testing $\beta_1 + \beta_2 = 0$	16.82	
	($p < 0.01$)	
F-statistic for testing $\beta_2 = \beta_4$		1.78
		($p = 0.18$)
Observations	11,825	15,484
Adjusted R^2	0.85	0.85

*, **, *** Indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, using a two-tailed test.

[a] Observations in year *t* are excluded in Column (1) and included in Column (2), where *t* is the IFRS adoption year for the treatment sample and a pseudo-adoption year for the control sample, and *ADOPT* equals 1 for the adoption year, and 0 otherwise. Refer to Appendix B for the definitions of the other variables.

[b] Observations with absolute studentized residuals greater than 3 are deleted. The reported t-statistics are based on standard errors clustering on the firm dimension.

SPECIAL_ITEM). We find that the market-to-book ratio (*MB*) is positively associated with audit fees, consistent with the notion that firms with high *MB* values are associated with greater audit complexity or high client-specific risk. We also find that *MERGE* is positively associated with audit fees, suggesting that mergers create demand for additional audit services. Finally, there exist audit fee premiums for Big 4 client firms and cross-listed companies, which is consistent with evidence reported in Choi et al. (2008, 2009).

To focus on the permanent effect of IFRS adoption on audit fees, we have excluded the initial IFRS adoption year *t* in the main test, since the initial adoption year may experience a temporary audit fee spike. Specifically, it takes time and effort for auditors to learn about new IFRS rules, but this learning effect is likely to become insignificant after the initial year of IFRS adoption. Besides, in the initial adoption year, firms are required to apply IFRS retrospectively to one year prior to IFRS adoption for the purpose of establishing comparative financial statements (IFRS 1). If auditors are required to review the restated data, then this can also cause a temporary increase in audit costs.

To obtain further insight into the temporary transitional audit fee increase in the initial IFRS adoption year, we include in Column (2) of Table 5 the observations from the adoption year and test whether audit firms charge a significantly higher fee in the year of adoption relative to post-adoption years. Specifically, we add *ADOPT* and *ADOPT* ∗ *TREAT* to Equation (2), where *ADOPT* equals 1 if it is the IFRS (pseudo-) adoption year for the treatment (control) sample, and 0 otherwise. The *ADOPT* ∗ *TREAT* (*POST* ∗ *TREAT*) term captures the incremental audit fee increases in the adoption year (subsequent post-IFRS years) brought about by IFRS adoption in the treatment sample over and beyond the general trend in audit fees. As shown in Column (2) of Table 5, the coefficient of *ADOPT* ∗ *TREAT* (β_4) is 0.073 (t = 4.34), which is greater than the coefficient of *POST* ∗ *TREAT* ($\beta_2 = 0.052$; t = 2.63). However, as shown in the third to last row of Table 5, the difference in magnitude between β_2 and β_4 is not statistically significant (F = 1.78; p = 0.18). One

possible explanation for this insignificant difference is that audit firms may have spread the temporary transitional costs incurred in the initial year of IFRS adoption to subsequent years by charging higher fees in later periods.

The results reported in Table 5, taken together, suggest that IFRS adoption increases the audit fee to a higher level both in the year of adoption and in subsequent years. Stated another way, IFRS adoption results in a positive audit fee premium. This implies that the audit fee-increasing effect of the increased complexity arising from IFRS adoption dominates the associated audit fee-decreasing effect of the improved financial reporting quality.

Tests of H2, H3, and H4

H2, H3, and H4 are concerned with whether the IFRS-related audit fee premium differs systematically, depending on the increase in audit complexity associated with IFRS adoption (H2), the improvement in reporting quality brought about by IFRS adoption (H3), and the strength of a country's legal regime (H4). To test H2 through H4, we estimate Equation (3) and report the results in Table 6.

In Columns (1) to (3) of Table 6, we measure the strength of legal regime using the natural log of the Wingate index (*WINGATE*), the change in audit complexity ($\Delta COMPLEXITY$) using the natural log of the sum of *Absence* and *Divergence*, and the change in reporting quality ($\Delta QUALITY$) using three alternative measures, that is, $\Delta GAAPQ = ln(1 + Absence)$, $(-1) * \Delta|DA1|$, and $(-1) * \Delta|DA1|$.

As shown in Columns (1) to (3) of Table 6, the coefficient of $POST * TREAT * \Delta COMPLEXITY$ is significantly positive at less than the 5 percent level across all three columns. This is consistent with H2, suggesting that the audit fee premium associated with IFRS adoption is positively associated with the increase in audit complexity brought about by IFRS adoption in a particular country. We also find that the coefficient of $POST * TREAT * \Delta QUALITY$ is significantly negative, at less than the 5 percent level, across all three columns. This result is consistent with H3 and indicates that, *ceteris paribus*, the greater the improvement in financial reporting quality brought about by IFRS adoption, the lower the audit fee premium associated with IFRS adoption.

Finally, we find mixed results with respect to the impact of legal regime on the IFRS-related audit fee premium. In Column (1) of Table 6, where $\Delta QUALITY$ is proxied by $\Delta GAAPQ = ln(1 + Absence)$, the coefficient of $POST * TREAT * WINGATE$ is negative and significant at the 10 percent level. This result indicates that the adoption of IFRS results in a smaller IFRS-related audit fee premium in countries with a strong legal regime than in countries with a weak legal regime. According to Observation 4, this result suggests that the greater audit effort induced by a stronger legal regime has a stronger effect on reducing auditors' expected legal liability cost and, hence, reducing audit fee premium, than does the direct impact of stronger legal regime on increasing audit fee premium.[16] However, in Columns (2) and (3) of Table 6, where $\Delta QUALITY$ is proxied by two alternative measures of discretionary accruals, namely $(-1) * |DA1|$ or $(-1) * |DA2|$, we find that the coefficient of $POST * TREAT * WINGATE$ is insignificant.[17]

In Columns (4) to (6) of Table 6, we repeat the analysis using alternative legal regime measures. Specifically, in lieu of *WINGATE*, we use both *LAW* and *ENFORCE* to capture

[16] We note that while a stronger legal regime increases the *level* of audit fees (e.g., Choi et al. 2008, 2009), the stronger legal regime does not necessarily translate to a greater *change* in audit fees. For example, Choi et al. (2008) predict and find that as a legal regime becomes stronger, the audit quality and audit fee differences between big and small auditors become smaller or insignificant. In this regard, our finding of a smaller IFRS-related audit fee premium in a stronger legal regime is consistent with their finding of a smaller Big 4 audit fee premium in a stronger legal regime.

[17] Multicollinearity could be a potential reason for the insignificant result for legal regime proxies in the alternative model specifications in Columns (2), (3), (5), (6) of Table 6 because the Variance Inflation Factors for the test variables exceed a threshold value of 10 in the regressions.

TABLE 6

Results of Multivariate Regressions for Testing H2, H3, and H4[a,b,c]

Panel A: Test Variables

	Dependent Variable = *AUDFEE*					
	Wingate Litigation Index as Legal Regime Proxy (*WINGATE*)			Alternative Legal Regime Proxies (*LAW* and *ENFORCE*)		
Variables (Pred. Sign)	**(1)** *ΔGAAPQ*	**(2)** *ΔQUALITY* = (−1) * Δ|*DA1*|	**(3)** (−1) * Δ|*DA2*|	**(4)** *ΔGAAPQ*	**(5)** *ΔQUALITY* = (−1) * Δ|*DA1*|	**(6)** (−1) * Δ|*DA2*|
POST	0.019*	0.019*	0.019*	0.019*	0.019*	0.019*
	(1.88)	(1.90)	(1.90)	(1.88)	(1.90)	(1.90)
*POST * TREAT*	−1.304**	−1.060**	−1.417**	−2.688***	−1.109**	−1.429***
	(−2.34)	(−2.10)	(−2.52)	(−2.59)	(−2.29)	(−2.65)
*POST * TREAT * ΔCOMPLEXITY* (+)	0.533***	0.287**	0.352***	1.057**	0.326***	0.381***
	(2.72)	(2.43)	(2.72)	(2.51)	(2.59)	(2.80)
*POST * TREAT * ΔQUALITY* (−)	−0.104**	−4.913***	−4.644***	−0.383**	−4.449***	−4.734**
	(−2.19)	(−3.54)	(−2.88)	(−2.00)	(−3.19)	(−2.54)
*POST * TREAT * WINGATE* (?)	−0.238*	0.034	0.091			
	(−1.66)	(0.55)	(1.44)			
*POST * TREAT * LAW* (?)				−0.765*	0.068	0.055
				(−1.76)	(1.26)	(0.99)
*POST * TREAT * ENFORCE* (?)				−0.387**	−0.120	0.095
				(−2.16)	(−0.89)	(0.57)

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TABLE 6 (continued)

Panel B: Firm-Specific Control Variables (*FSCONTROL*)

	Dependent Variable = *AUDFEE*					
	Wingate Litigation Index as Legal Regime Proxy (*WINGATE*)			Alternative Legal Regime Proxies (*LAW* and *ENFORCE*)		
Variables (Pred. Sign)	(1) $\Delta GAAPQ$	(2) $\Delta QUALITY = (-1) * \Delta\lvert DA1\rvert$	(3) $(-1) * \Delta\lvert DA2\rvert$	(4) $\Delta GAAPQ$	(5) $\Delta QUALITY = (-1) * \Delta\lvert DA1\rvert$	(6) $(-1) * \Delta\lvert DA2\rvert$
LNTA (+)	0.563***	0.563***	0.563***	0.563***	0.563***	0.563***
	(86.89)	(86.75)	(86.76)	(86.90)	(86.75)	(86.75)
INVREC (+)	0.216***	0.216***	0.216***	0.215***	0.216***	0.216***
	(4.07)	(4.07)	(4.07)	(4.07)	(4.07)	(4.07)
NBS (+)	0.078***	0.075***	0.075***	0.078***	0.075***	0.075***
	(4.39)	(4.19)	(4.19)	(4.40)	(4.19)	(4.19)
NGS (+)	0.237***	0.233***	0.233***	0.237***	0.233***	0.233***
	(13.09)	(12.80)	(12.80)	(13.09)	(12.80)	(12.80)
MB (?)	0.011***	0.011***	0.011***	0.011***	0.011***	0.011***
	(6.28)	(6.26)	(6.26)	(6.28)	(6.26)	(6.26)
LOSS (+)	0.245***	0.245***	0.245***	0.245***	0.245***	0.245***
	(14.29)	(14.27)	(14.28)	(14.30)	(14.28)	(14.28)
LEV (+)	0.061	0.062	0.061	0.061	0.062	0.061
	(1.18)	(1.20)	(1.19)	(1.18)	(1.20)	(1.19)
QUICK (−)	−0.020***	−0.020***	−0.020***	−0.020***	−0.020***	−0.020***
	(−5.89)	(−5.95)	(−5.96)	(−5.89)	(−5.95)	(−5.95)
SPECIAL_ITEM (+)	0.165***	0.168***	0.168***	0.164***	0.168***	0.168***
	(8.33)	(8.57)	(8.56)	(8.34)	(8.57)	(8.56)
QUALIFIED (+)	0.061	0.062	0.062	0.060	0.062	0.062
	(1.25)	(1.26)	(1.27)	(1.23)	(1.26)	(1.27)
MERGE (+)	0.084***	0.085***	0.086***	0.084***	0.086***	0.086***
	(5.57)	(5.63)	(5.67)	(5.55)	(5.64)	(5.66)
FINANCE (+)	−0.018	−0.018	−0.018	−0.018	−0.018	−0.018
	(−1.18)	(−1.15)	(−1.16)	(−1.20)	(−1.15)	(−1.16)

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TABLE 6 (continued)

	Dependent Variable = *AUDFEE*					
	Wingate Litigation Index as Legal Regime Proxy (*WINGATE*)			Alternative Legal Regime Proxies (*LAW* and *ENFORCE*)		
Variables (Pred. Sign)	**(1)** $\Delta GAAPQ$	**(2)** $\Delta QUALITY = (-1) * \Delta\lvert DA1\rvert$	**(3)** $(-1) * \Delta\lvert DA2\rvert$	**(4)** $\Delta GAAPQ$	**(5)** $\Delta QUALITY = (-1) * \Delta\lvert DA1\rvert$	**(6)** $(-1) * \Delta\lvert DA2\rvert$
BIG4 (+)	0.266***	0.267***	0.267***	0.266***	0.267***	0.267***
	(10.82)	(10.93)	(10.93)	(10.82)	(10.93)	(10.93)
CROSS (+)	0.335***	0.356***	0.356***	0.335***	0.356***	0.356***
	(6.27)	(6.59)	(6.60)	(6.27)	(6.60)	(6.60)
Intercept	−2.929***	−0.979***	−0.939***	−3.043***	−0.955***	−0.917***
	(−9.50)	(−3.57)	(−3.43)	(−9.26)	(−3.46)	(−3.33)
Country dummies	Included	Included	Included	Included	Included	Included
Industry dummies	Included	Included	Included	Included	Included	Included
Observations	11,825	11,771	11,767	11,825	11,771	11,767
Adjusted R^2	0.85	0.85	0.85	0.85	0.85	0.85

*, **, *** Indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, using a two-tailed test.

[a] The final sample consists of 2,860 firm-year observations from 11 EU countries in the treatment group and 9,052 firm-year observations from three OECD countries in the control group. The final sample includes observations in the pre-IFRS period (i.e., $t-1$), and the post-IFRS period (i.e., $[t+1, t+3]$), where t is the IFRS adoption year for the treatment sample or the assigned pseudo-adoption year for the control sample.

[b] Refer to Appendix B for variable definitions.

[c] Observations with absolute studentized residuals greater than 3 are deleted. The reported t-statistics (in parentheses) are based on standard errors clustering on the firm dimension.

differences in a country's legal environment. The results are qualitatively similar to those reported in Columns (1) to (3) of Table 6,[18] suggesting that our results are robust to the use of alternative proxies for a country's litigation environment.

VI. FURTHER ANALYSIS

Concurrent Reforms in the EU

Along with the introduction of mandatory IFRS reporting, the EU also made concurrent efforts to harmonize accounting and auditing practices and to enhance enforcement and governance mechanisms. For example, in 2003, the Committee of European Securities Regulators released its first standard (Standard No. 1) to develop and implement a common approach to the enforcement of IFRS throughout the EU. In addition, various efforts have been made to harmonize and improve EU auditing practices since 2002.[19] In the areas of company law and corporate governance, on May 25, 2003, the European Commission issued a communication to the European Parliament entitled *Modernizing Company Law and Enhancing Corporate Governance in the European Union—A Plan to Move Forward*, which sets up agendas for changes in various areas of corporate governance, such as the role of independent directors and shareholder rights. In short, the last decade has seen gradual changes in governance and enforcement mechanisms in the EU, along with implementation of IFRS reporting.

These concurrent changes pose an important challenge to our efforts to separate the audit fee effect of mandatory IFRS adoption *per se* from the effect associated with concurrent governance and enforcement reforms, as well as concurrent changes in accounting and auditing practices, which, for convenience, we refer to as *concurrent reforms*. In an attempt to isolate the IFRS adoption effect from the concurrent reform effect, we include in Equation (3) an additional variable, $POST * TREAT * REFORM$. For this additional test, we obtain information about country-level efforts on concurrent reforms from the Annual Executive Opinion Survey conducted by the Institute for Management Development. This survey is designed to quantify issues of competitiveness that are not easily measured, such as management practices, labor relations, and corruption. Among other questions, the survey asks respondents to evaluate the extent to which auditing and accounting practices are implemented in their firms adequately and the extent to which corporate boards supervise company management effectively. We then construct our measure of concurrent reform, denoted *REFORM*, by taking the arithmetic mean of (1) the change in corporate governance effectiveness, measured as the average of corporate governance effectiveness scores between 2006 and 2008 minus the score in 2004, and (2) the change in accounting and audit practices, measured as the average of the accounting and audit practices scores between 2006 and 2008 minus the score in 2005.[20]

We estimate Equation (3) with $POST * TREAT * REFORM$ being added. The untabulated results show that the coefficient of this additional variable is insignificant. More importantly, with the exception that the coefficient of $POST * TREAT * LAW$ becomes insignificant, the results for

[18] The term "qualitatively similar" or "qualitatively unchanged" in this paper means that both the signs and the statistical significance for the variables of interest remain unaltered.

[19] After the Enron scandal in the U.S., a meeting of EU Finance Ministers in May 2002 called on the Commission to adopt Recommendation 2002/590/EC, *Statutory Auditors' Independence: A Set of Fundamental Principles*. In September 2003, the Commission published *Communication on Reinforcing the Statutory Audit in the EU* (2003/236/02). In April 2006, the EU Council adopted the *Statutory Audit Directive* (2006/43/EC), also known as E-SOX, with a deadline of June 2008 for all member states to ensure that all local laws are in compliance with this directive.

[20] We use the 2005 score as an approximation for the pre-IFRS measure because the survey data related to auditing and accounting practices were not available until 2005.

our test variables remain qualitatively similar to those reported in Table 6, suggesting that our main results are unlikely to be driven by concurrent reforms. Admittedly, our measure of concurrent reform and the difference-in-differences design may not sufficiently control for the effect of concurrent changes on our test results. As in other studies (Barth et al. 2008; Daske et al. 2008), we therefore cannot completely rule out the possibility that the audit fee-increasing effect of IFRS adoption reported in this study reflects the combined effects associated with IFRS adoption and other concurrent reforms.

Change Analyses

Our main analyses have thus far used pooled cross-sectional regressions of audit fees on our test variables, firm-specific controls, and country indicators. In an attempt to mitigate concern about potential problems of correlated omitted variables, we also conduct change analyses. We examine whether the audit fee change from the pre-IFRS to the post-IFRS periods, denoted $\Delta AUDFEE$, is associated with our test variable *TREAT*, and how this association varies with $\Delta COMPLEXITY$, $\Delta QUALITY$, and the strength of legal regime. For this purpose, we estimate the following regression:

$$\begin{aligned}\Delta AUDFEE = {} & \gamma_0 + \gamma_1 TREAT + \gamma_2 TREAT{*}\Delta COMPLEXITY + \gamma_3 TREAT{*}\Delta QUALITY \\ & + \gamma_4 TREAT{*}Legal\ Regime + \gamma_5 TREAT{*}REFORM + \Sigma\delta_k \Delta FSCONTROL_k + \varepsilon,\end{aligned} \tag{4}$$

where all variables are as defined earlier. In each of the post-IFRS years (t+1, t+2, t+3), we calculate $\Delta FSCONTROL_k$ relative to the pre-IFRS year (t−1). We use the same set of firm-specific controls as in Equation (3), except that we exclude *NBS*, *NGS*, *BIG4*, and *CROSS* because, as explained in footnote 12, all these variables are treated as static variables to be measured as of 2008. To address the change in the *LOSS* indicator in Equation (3), following Ghosh and Pawlewicz (2009), we create two indicator variables: (1) *Noloss-to-Loss* is an indicator variable that equals 1 for firms that report no loss in the pre-IFRS period but report a loss in the post-IFRS period, and 0 otherwise; (2) *Loss-to-Noloss* is an indicator variable that equals 1 for firms that report a loss in the pre-IFRS period but report no loss in the post-IFRS period, and 0 otherwise. For other indicator variables included in Equation (3), that is, *SPECIAL_ITEM*, *QUALIFIED*, *MERGE*, and *FINANCE*, we again create separate indicator variables in a similar manner.

Column (0) of Table 7 reports the results of our baseline change regression, in which the test variable is *TREAT*. Consistent with results in Table 5, we find that the coefficient of *TREAT* is significantly positive (0.042; t = 2.25). This leads us to reject null H1, suggesting that the audit fee increases associated with IFRS adoption are greater for adopter firms in the treatment sample than for non-adopter firms in the control sample.

Columns (1)–(6) of Table 7 report the results of the impact of the institutional factors on the IFRS-related audit fee premium across countries. Similar to our main research design using level-based analyses, in Columns (1) to (3), the strength of the legal regime is proxied by *WINGATE*, while in Columns (4) to (6), it is proxied jointly by *LAW* and *ENFORCE*. We find that, except for the insignificant coefficient of $TREAT * LAW$, all of the results for our test variables are consistent with our main finding as reported in Tables 6. The corroborating results alleviate concerns about potential problems of correlated omitted variables.

Cross-Country Variation in Sample Size

As shown in Table 2, our sample size varies across countries. To address concerns that our results may be unduly influenced by the unequal distribution of sample firms across countries, we conduct two additional analyses. First, since U.K. firms represent a large portion of our sample, we

TABLE 7

Change Analysis for Testing H1, H2, H3, and H4[a,b,c]

Panel A: Test Variables

	Dependent Variable = Δ*AUDFEE*						
		Wingate as Legal Regime Proxy (*WINGATE*)			Alternative Legal Regime Proxies (*LAW* and *ENFORCE*)		
Variable (Pred. Sign)	**(0)**	**(1) Δ*GAAPQ***	**(2) Δ*QUALITY* = (−1) ∗ Δ|*DA1*|**	**(3) (−1) ∗ Δ|*DA2*|**	**(4) Δ*GAAPQ***	**(5) Δ*QUALITY* = (−1) ∗ Δ|*DA1*|**	**(6) (−1) ∗ Δ|*DA2*|**
TREAT	0.042**	−2.193***	−0.949*	−1.362**	−2.727***	−1.138*	−1.261**
	(2.25)	(−3.15)	(−1.68)	(−2.25)	(−2.73)	(−1.81)	(−2.03)
TREAT ∗ Δ*COMPLEXITY* (+)		0.864***	0.268**	0.345**	1.012**	0.338**	0.332**
		(3.77)	(2.14)	(2.55)	(2.46)	(2.12)	(2.08)
TREAT ∗ Δ*QUALITY* (−)		−0.175***	−5.551***	−5.838***	−0.320	−4.666***	−7.709***
		(−3.67)	(−3.79)	(−3.52)	(−1.59)	(−2.87)	(−2.84)
TREAT ∗ *WINGATE* (?)		−0.389***	0.021	0.088			
		(−2.86)	(0.32)	(1.34)			
TREAT ∗ *LAW* (?)					−0.583	0.081	−0.011
					(−1.23)	(1.10)	(−0.12)
TREAT ∗ *ENFORCE* (?)					−0.397**	−0.164	0.266
					(−2.27)	(−1.22)	(1.26)

(continued on next page)

TABLE 7 (continued)

Panel B: Concurrent Reform Control Variable

	Dependent Variable = Δ*AUDFEE*						
		Wingate as Legal Regime Proxy (*WINGATE*)			Alternative Legal Regime Proxies (*LAW* and *ENFORCE*)		
Variable (Pred. Sign)	**(0)**	**(1) Δ*GAAPQ***	**(2) Δ*QUALITY* = (−1) ∗ Δ|*DA1*|**	**(3) (−1) ∗ Δ|*DA2*|**	**(4) Δ*GAAPQ***	**(5) Δ*QUALITY* = (−1) ∗ Δ|*DA1*|**	**(6) (−1) ∗ Δ|*DA2*|**
TREAT ∗ REFORM (?)		0.191	−0.094	−0.118	0.061	−0.017	−0.201
		(1.50)	(−0.73)	(−0.93)	(0.42)	(−0.10)	(−0.98)
Observations	8,137	8,136	8,097	8,094	8,136	8,097	8,094
Adjusted R^2	0.25	0.26	0.26	0.26	0.26	0.26	0.26

*, **, *** Indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, using a two-tailed test.

[a] The final sample consists of 2,027 firm-year observations from 11 EU countries in the treatment group and 6,201 firm-year observations from three OECD countries in the control group. The intercept and firm-specific control variables are not reported for parsimony, but the reported coefficients stem from estimating the full model of Equation (4).

[b] The dependent variable is the change in audit fees (Δ*AUDFEE*). Here Δ is a change operator defined as the difference between the number in each of the post-IFRS years (t+1, t+2, t+3), and that in the pre-IFRS year (t−1). See Appendix B for variable definitions.

[c] Observations with absolute studentized residuals greater than 3 are deleted. The reported t-statistics (in parentheses) are based on standard errors clustering on the firm dimension.

repeat our main analyses after deleting the U.K. observations. Untabulated results show that all our findings remain qualitatively unchanged, except that the negative coefficient of *POST* ∗ *TREAT* ∗ *WINGATE* becomes insignificant. Our explanation is that removing the U.K. significantly reduces the cross-country variation in legal regime. Second, following Daske et al. (2008), we randomly select up to 150 firms in each country and re-estimate all the regressions. The untabulated results for our test variables using this approach remain qualitatively similar to those reported in Tables 5 to 7.

Auditor Switches

As mentioned earlier, Worldscope only provides the auditor identity data for the most recent year, 2008. One concern is that auditor switches during the sample period may confound our empirical analysis of the IFRS-related fee change, as the switch from non-Big 4 to Big 4 auditors may lead to an audit fee increase for the switching clients.

To address this potential confounding effect, we obtained the 2005 version of Worldscope that includes the auditor identity data as of 2004, the first year of our sample period. To identify auditor changes, we compare auditors as of 2004 with auditors as of 2008. Our final treatment sample consists of 833 firms, of which information on auditor change is available for 802 firms. Among these, 34 firms (4.24 percent) switched from non-Big 4 to Big 4 auditors, and 35 firms (4.36 percent) switched from Big 4 to non-Big 4 auditors. This relatively small rate of auditor switches suggests that auditor switches are unlikely to cause systematic biases to our results. Moreover, the untabulated results after excluding firms with auditor changes remain qualitatively unchanged, suggesting that the IFRS-related audit fee premium observed in our main analyses is unlikely to be driven by auditor changes that occurred during our sample period.

VII. SUMMARY AND CONCLUDING REMARKS

We investigate the impact of IFRS on audit fees using audit fee data from EU countries that mandated IFRS adoption in 2005. Our theoretical analysis suggests that IFRS adoption has two opposite effects on audit fees. On the one hand, the increase in audit task complexity arising from IFRS adoption increases audit fees, but on the other hand, the improvement in financial reporting quality leads to a decrease in audit fees. Our empirical tests show that mandatory IFRS adoption leads to an increase in audit fees, which suggests that the increase in audit task complexity is the driving force behind the IFRS-related audit fee increase. Further, we find that the IFRS-related audit fee premium increases with the extent of accounting differences between a country's former local GAAP and IFRS, and decreases with improvements in financial reporting quality brought about by IFRS adoption. We also find some evidence that the IFRS-related audit fee premium decreases with the strength of a country's legal regime.

Our study provides a theory and supporting evidence for understanding the impact of accounting standards, and their changes, on audit pricing. In particular, our results provide useful insights into the channels of audit complexity and financial reporting quality through which the adoption of new accounting standards influences audit pricing. To further understand the impact of IFRS on the auditing profession, we recommend that future research examine the audit fee effect of IFRS adoption on client companies with different characteristics, as well as how IFRS affects the interactions between real activities manipulation and accrual-based earnings management.

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APPENDIX A

Proof of Observation 2

$$\Delta f \approx df = \frac{\partial f}{\partial q}\Delta q + \frac{\partial f}{\partial c}\Delta c = (1-e^*)^2 rl[(1-q)\Delta c - c\Delta q].$$

Thus, $df > 0$ ($df < 0$) if $(1-q)\Delta c > c\Delta q$ (if$(1-q)\Delta c < c\Delta q$), where Δc and Δq denote the changes in audit complexity and financial reporting quality that are brought about by IFRS adoption. ■

Proof of Observation 4

$$\frac{\partial df}{\partial r} = \frac{\partial df}{\partial r}\Big|_{e=e^*} + \frac{\partial df}{\partial e}\frac{\partial e}{\partial r}$$
$$= (1-e)l[(1-q)\Delta c - c\Delta q][k-(1-q)rcl].$$

Hence, given $(1-q)\Delta c > c\Delta q$, we know from the above derivation that $\frac{\partial df}{\partial r} < 0 \left(\frac{\partial df}{\partial r} > 0\right)$ when $r > \frac{k}{cl(1-q)} \left(r < \frac{k}{cl(1-q)}\right)$. ■

APPENDIX B

EMPIRICAL DEFINITIONS OF VARIABLES

Variable		Empirical Definition	Data Source
The Dependent Variable and Country-Specific Variables			
AUDFEE	=	natural log of audit fees in thousands of euros;	Worldscope
TREAT	=	1 for firms in the treatment sample (i.e., mandatory adopter firms in EU countries) and 0 for firms in the benchmark control sample (i.e., non-adopter firms in non-EU OECD countries);	Worldscope
POST	=	1 for the post-IFRS period and 0 for the pre-IFRS period. For firms in the control sample, we assign the pseudo-adoption year 2005 (2006) for firms with a December (non-December) fiscal year-end;	Worldscope
$\Delta COMPLEXITY$	=	change in audit complexity, measured by the natural log of the sum of the *Absence* score and the *Divergence* score. The *Absence* score captures the number of absent items in local GAAP compared with IFRS. The *Divergence* score captures the number of accounting rules regarding the same accounting issue that differ between IFRS and local GAAP;	Ding et al. (2007)
$\Delta GAAPQ$	=	change in accounting standard quality, measured by the natural log of 1 plus the *Absence* score, where the *Absence* score captures the number of absent items in local GAAP compared to IFRS;	Ding et al. (2007)
$\Delta\lvert DA1\rvert$	=	country's median value of the absolute value of discretionary accruals in the post-IFRS period (i.e., [$t+1$, $t+3$]) minus the median value in the pre-IFRS period (i.e., $t-1$), where discretionary accruals are the residuals from the cross-sectional Jones (1991) model. Refer to Appendix C for more details;	Worldscope
$\Delta\lvert DA2\rvert$	=	country's median value of the absolute value of discretionary accruals in the post-IFRS period (i.e., [$t+1$, $t+3$]) minus the median value in the pre-IFRS period (i.e., $t-1$), where discretionary accruals are the residuals from the augmented cross-sectional Dechow-Dichev model. Refer to Appendix C for more details;	Worldscope
WINGATE	=	strength of a country's legal regime, measured by the natural log of the Wingate (1997) litigation index;	Wingate (1997)
LAW	=	1 for countries with a common law legal tradition and 0 for countries with a civil law tradition;	La Porta et al. (1998)
ENFORCE	=	aggregate measure of public enforcement, equal to the arithmetic mean of (1) the supervisor characteristics index, (2) the rule-making power index, (3) the investigative powers index, (4) the orders index, and (5) the criminal index; and	La Porta et al. (2006)

(continued on next page)

APPENDIX B (continued)

Variable		Empirical Definition	Data Source
REFORM	=	aggregate measure of the effect of concurrent reforms, equal to the arithmetic mean of (1) the average score of corporate board effectiveness between 2006 and 2008 minus the score in 2004 and (2) the average score of auditing and accounting practices between 2006 and 2008 minus the score in 2005.	IMD (2010) World Competitiveness Yearbook
Firm-Specific Control Variables (*FSCONTROL*)			
LNTA	=	natural log of year-end total assets in thousands of euros;	Worldscope
INVREC	=	sum of inventories and receivables divided by total assets;	Worldscope
NBS	=	natural log of 1 plus the number of business segments;	Worldscope
NGS	=	natural log of 1 plus the number of geographical segments.	Worldscope
MB	=	year-end market-to-book ratio, defined as firm market value divided by the common shareholder equity;	Worldscope
LOSS	=	1 when a firm reports a net loss, and 0 otherwise;	Worldscope
LEV	=	ratio of year-end total liabilities to total assets;	Worldscope
QUICK	=	quick ratio, equal to quick assets divided by current liabilities;	Worldscope
SPECIAL_ITEM	=	1 if the firm reports special items, and 0 otherwise;	Worldscope
QUALIFIED	=	1 if the firm receives qualified opinions, and 0 otherwise;	Worldscope
MERGE	=	1 if the firm is engaged in a merger or acquisition, and 0 otherwise;	Worldscope
FINANCE	=	1 if *MERGE* is not equal to 1 and either of the following conditions applies: long-term debt increased by 20 percent or more, or the number of shares outstanding increased by 10 percent or more after controlling for stock splits;	Worldscope
BIG4	=	1 when a firm uses one of the Big 4 auditors, and 0 otherwise; and	Worldscope
CROSS	=	1 when a firm is cross-listed in a foreign country, and 0 otherwise.	Worldscope

APPENDIX C
CONSTRUCTION OF DISCRETIONARY ACCRUALS

Following prior literature, we adopt two widely used models to estimate the normal accruals with residuals from the models as measures of discretionary accruals (denoted *DA1* and *DA2*). The first model, the cross-sectional Jones (1991) model, is specified as:

$$TA_t = \beta_0 + \beta_1 \Delta REV_t + \beta_2 PPE_t + \varepsilon_t, \quad \text{(C1)}$$

where TA_t is total accruals in year t, that is, income before extraordinary items minus operating cash flows; ΔREV_t is change in net revenues from year $t-1$ to year t; and PPE_t is net property, plant, and equipment. The second model, the augmented cross-sectional Dechow and Dichev (2002) model, follows Francis et al. (2005) and is specified as:

$$TCA_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \beta_4 \Delta REV_t + \beta_5 PPE_t + \varepsilon_t, \quad \text{(C2)}$$

where TCA_t is total current accruals in year t, calculated as ΔCA_t (change in current assets) $- \Delta CL_t$ (change in current liability) $- \Delta Cash_t + \Delta STDEBT_t$ (change in debt in current liabilities); CFO_t, CFO_{t-1}, and CFO_{t+1} are cash flow from operations in year t, $t-1$, and $t+1$, respectively; ΔREV_t is

change in net revenues from year $t-1$ to year t; and PPE_t is net property, plant, and equipment. All variables are scaled by total assets at the beginning of the period, and subscripts for firm i and country j are suppressed.

Both models are estimated cross-sectionally for each industry-year within each country, with industry definition based on the Fama and French (1997) ten-industry classification. Industry-year combinations with fewer than seven observations are deleted. To run the regression, we use all observations with data available for the estimation, except firms that adopted IFRS voluntarily and those in the banking, insurance, and other financial industries. For the pre-IFRS period, the measures are based on data reported under domestic GAAP, and for the post-IFRS period the measures are based on data reported under IFRS. It would be inappropriate here to use restated financial data (following IFRS) in the pre-IFRS period, since the restated financial data would omit the change in financial reporting quality associated with different accounting systems. Note that we use semi-annual data for our analysis instead of annual data. Semi-annual data are not subject to the auditing process and, hence, better capture the pre-audit financial reporting quality in our theoretical model. Since some firms provide quarterly disclosures while others provide semi-annual disclosures, we standardize the data by aggregating quarterly data into semi-annual data.