

Audit firm tenure and audit quality: A cross-European study

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1. INTRODUCTION

Directive 2014/56/EU and Regulation (EU) No 537/2014 of the European Parliament and of the Council on specific requirements regarding statutory audit of public interest entities (hereinafter “2014 EU Regulation”) came into effect in June 2016. The new regulation is expected to have a deep impact on the configuration of the audit market within the EU and, not surprisingly, has caused a deep concern in the audit profession. One of the most controversial stipulations of the regulation was the limitation of audit firm tenure to a maximum of 10 years as the general rule. However, member states may adopt a rotation term of <10 years, extend the rotation period to 20 years in the case of tendering,

or choose up to 24 years in the case of joint auditing. These requirements were effective from June 2016 onwards and apply to public interest entities (PIEs).¹ The regulation also establishes a cooling-off period of 4 years before the audit firm can re-audit the client and maintains the maximum tenure of 7 years for lead audit partners, as imposed by the 2006 Directive (EC, 2010). The process that finally led to the approval of the 2014 EU Regulation had an important antecedent in 2010, when a green paper on audit quality was published by the European Commission (hereinafter “Green Paper”). The Green Paper explicitly mentioned the potentially serious implications of the familiarity between auditors and clients resulting from long audit engagements considering the effective independence of external auditors. Moreover, it encouraged further research to further develop the analysis of current auditing practices in the EU.

The debate on the need to limit the maximum tenure between auditors and clients and on the convenience of establishing a mandatory audit firm rotation rule has not been limited to negotiations solely within the EU. Hence, in the United States, even though the Government Accounting Office (GAO) concluded that there was no evidence supporting that the potential benefits of such a rule would outweigh its costs (GAO, 2008), the 2011 Concept Release on Auditor Independence and Audit Firm Rotation by the Public Company Accounting Oversight Board (PCAOB) explicitly encouraged a debate on the advantages and disadvantages of imposing a mandatory rotation of audit firms (PCAOB, 2011). Nevertheless, in July 2013, the US House of Representatives settled the debate by voting against the implementation of a mandatory firm rotation rule.

However, the concerns of regulators and policy makers about the potentially negative impact of long tenures with audit firms on overall quality of auditing practices have not generally been supported by or within the literature on the subject (Gul, Jaggi, & Krishnan, 2007; Johnson, Khurana, & Reynolds, 2002; Myers, Myers, & Omer, 2003). Although evidence is strongly concentrated and regionally focused on the US audit market, comparatively, there are far fewer studies for European countries, which also fails to provide sound and consistent support for an EU-mandated firm rotation rule (e.g., Piot & Janin, 2007 for France; Vanstraelen, 2002 and Knechel & Vanstraelen, 2007 for Belgium; and Monterrey & Sánchez, 2007 for Spain). Moreover, as posed by Garcia-Blandon, Argiles-Bosch, Castillo-Merino, and Martinez-Blasco (2017), most of the evidence for the European case was obtained when the rotation of engagement audit partners was purely voluntary. Hence, once partner rotation was made a mandatory practice in the EU in 2008,² the potentially negative implications of long tenures with the audit firm for audit quality should have been even less serious. Supporting this view, the evidence reported by Cameran, Prencipe, and Trombetta (2016) for Italy and by Garcia-Blandon and Argiles-Bosch (2017) and Garcia-Blandon et al. (2017) for Spain does not suggest that long tenures with the audit firm compromise audit quality.

This study investigates whether long audit firm tenures effectively represent a threat to audit quality within the EU, as the mandatory firm rotation rule established by the 2014 EU Regulation undertakes. In this respect, we extend the preliminary findings of Garcia-Blandon et al. (2017) for Spain to the whole EU. Although single country studies might provide useful insights to assess the likely impact of the 2014 EU Regulation on audit quality, given that this regulation applies to all EU member states, it seems natural to investigate the issue at the whole EU level. Bedard (2012) explicitly warned of the difficulties in generalizing evidence reported by single country studies on audit quality due to the perceived importance of the institutional context (i.e., quality control policies of audit firms,

regulatory inspections and interaction with client personnel in charge of governance) and the level of accountability for auditors. In the same vein, as the 2014 EU Regulation became effective in 2016, to anticipate its potential future consequences, it is necessary to update the evidence and provide a thorough investigation of its potentialities. With this aim, we conduct an empirical analysis with a sample formed by the constituents of the Standard & Poor's Europe 350 index (hereinafter "S&P350"), covering the period between 2009 and 2016. The motivation of this study is to contribute to the debate on the convenience of limiting the duration of auditor-client relationships, which has increased in intensity after the approval of the 2014 EU Regulation. The need for further research was also stressed by both the PCAOB (PCAOB, 2011) and the European Commission (EC, 2010).

This paper provides, to the best of our knowledge, the first cross-country European study on the impact of long audit firm tenures on audit quality. Moreover, the characteristics of our sample allow us to conduct segmented studies by group of countries classified according to the level of litigation risk for the audit firm. Thus, the evidence reported is expected to contribute to the academic debate about the advantages and disadvantages of limiting the length of the audit engagement with the audit firm and, more specifically, to provide insights about the likely impact of the enactment of the 2014 EU Regulation on audit quality in the EU. Additionally, because DeFond and Zhang (2014) noted the difficulties associated with the measurement of audit quality and the lack of consensus about the best proxy, the study incorporates three different sets of proxies for audit quality: discretionary accruals, firms just meeting or missing earnings benchmarks, and accounting restatements.

In anticipation of our results, we discard the fact that long audit firm tenures represent a serious threat to the quality of audits. This main result seems rather robust, as it holds in all the analyses conducted with the different sets of proxies for audit quality used in the study. Moreover, we report some (weak) evidence that audit quality might in fact be positively associated with tenure. Therefore, firms with tenures longer than 10 years or 20 years (maximum tenure in the case of tendering) do not present lower audit quality. According to these results, there seems to be no need to establish a maximum tenure for the auditor-client relationship.

The remainder of the article is organized as follows: The next section reviews the literature on the relationship between audit firm tenure and audit quality and develops the hypothesis to be tested later in the study. In section three, we present the design of the research and describe the dataset. We discuss results and findings in section four, and in the last section, we document the conclusions, implications, and limitations of the study.

2 | BACKGROUND AND HYPOTHESIS

The view of EU policy makers is that long-term engagements between audit firms and their clients represent a serious threat to the quality of audit work. This view, openly expressed in the Green Paper, inspires the mandatory rotation rule established by the 2014 EU Regulation. However, according to the classical definition of audit quality as the joint probability that the auditor will both detect and report accounting misstatements (DeAngelo, 1981), the negative implications of long audit firm tenures are less than obvious. On the one hand, the ability to detect a client's accounting misstatement is expected to be stronger when the auditor has deep knowledge of the client (Johnson et al., 2002; Knapp, 1991), and obviously, this knowledge increases with tenure. On the other hand, long audit firm tenures would likely create a bond between auditors and clients that might impair the independence and critical skepticism of the auditor. As Shockely (1981, p. 789) stated, "(...) complacency, lack of innovation, less rigorous audit procedures, and a developed confidence in the client may arise after a long association with the client". Therefore, the final impact of tenure on audit quality will depend on

which one of these two opposite effects prevails. Although the enactment of the 2014 EU Regulation indicates that EU regulators considered that the loss of independence associated with tenure more than offset the positive impact on audit quality of stronger client knowledge by the auditor, this view is not shared by most regulators worldwide (and in particular, US regulators), as the mandatory rotation of audit firms is very exceptional outside the EU area.

The Green Paper explicitly pinpointed avenues of future research in the accounting field to further investigate the implications of long-lasting auditor-client relationships for the independence of auditors. However, despite this call, few studies have been published from 2010 onwards investigating the issue within the EU context. Next, we present the evidence reported by prior related studies, with particular attention to studies conducted with updated samples of EU companies. This decision is justified by the importance of role of the institutional context for the level of accountability of auditors (Bedard, 2012), which is the fundamental issue explaining the enactment of the 2014 EU Regulation. Because the regulation is applied within the EU, the most valuable source of evidence to assess its likely impact is updated evidence reported at the EU level.

In a recent study investigating the Spanish audit market between 2005 and 2013, Garcia-Blandon et al. (2017) did not observe significantly different levels of discretionary accruals for firms under more or <10 years of audit tenure. Thus, they concluded that the mandatory rotation of the audit firm would not likely have a positive impact on the quality of audits in Spain. This main conclusion is also reached by Ruiz-Barbadillo, Gomez Aguilar, and Carrera (2006), who compared audit quality in Spain under mandatory (between 1991 and 1994) and non-mandatory (1995-2000) rotation and did not find that a mandatory rotation requirement was associated with higher audit quality (as measured by the likelihood of going-concern modified opinions in the audit report). Cameran et al. (2016) investigated the relationship between audit firm tenure and audit quality (as measured by abnormal working capital accruals) with a sample of Italian companies between 1985 and 2004. Italy is one of the few countries in the world with a mandatory rotation rule established before the approval of the 2014 EU Regulation. The authors observed that audit quality in fact seemed to increase in the last period of engagement with the audit firm. This result, however, is only partially informative for the debate on the advantages and disadvantages of the mandatory rotation of audit firms established by the 2014 EU Regulation as this rule has been in effect in Italy since the mid-1980s. Although the aforementioned papers do not provide support for the mandatory rotation of audit firms, Rickett, Maggina, and Alam (2016) investigated the Greek audit market between 1998 and 2011 and observed a decrease in audit quality (as measured by accounting conservatism) as the auditor-client relationship lengthened. The authors concluded that the mandatory rotation rule might in fact improve audit quality in countries such as Greece, which is characterized by poor accounting quality. For the Belgian audit market, both Vanstraelen (2002) and Knechel and Vanstraelen (2007) found no significant effects of tenure on audit quality (as measured by the likelihood of going-concern opinions to financially distressed firms). The results of Piot and Janin (2007) with a sample of French firms provide in fact some weak support for an increase in audit quality (as measured by discretionary accruals) with tenure. This support is consistent with Dattin (2017), who follows a historical approach to understanding the implementation of mandatory rotation and concluded that in the specific context of the French audit market, which was already strongly regulated before the enactment of the 2014 EU Regulation, the mandatory rotation of audit firms would not likely enhance audit quality.

Some other researchers have focused on perceived audit quality. Hohenfels (2016) observed a non-linear relationship between auditor tenure and investors' perception of audit quality in Germany. The results suggest that investors perceive earnings quality as lower during the early and later years of an auditor-client relationship, and earnings quality is perceived as highest when auditor tenure is between 8 and 9 years. Although this study provides some support for a mandatory rotation rule, not

all studies agree. With a sample of Austrian investors, Aschauer and Quick (2018) concluded that although investment consultants view both mandatory firm rotation and the prohibition that auditors provide tax services to audit clients as beneficial, the joint implementation of both measures leads to no additional benefits in terms of the appearance of independence or perceived audit quality. In the same vein, Horton, Tsipouridou, and Wood (2018) reported that even though European investors react positively to the proposals of mandatory audit firm rotation, prohibition of non-audit services and a cap on total fees charged by the audit firm, these benefits arise from the prohibition of non-audit services and the placing of a cap but not from the mandatory rotation rule.

The available evidence for the United States also does not provide support for the mandatory rotation of audit firms. Reid and Carcello (2016) investigated how investors reacted to the events related to the potential adoption by the PCAOB of mandatory audit firm rotation in the United States that occurred between 2011 and 2013 and reported a negative (positive) market reaction to events that increased (decreased) the likelihood of rotation. Singer and Zhang (2018) examined the association between audit tenure and audit quality (as measured by the timeliness of misstatement discovery) using the non-voluntary auditor change following the demise of Arthur Andersen in 2002 as a natural experiment. They found that a longer tenure leads to less timely discovery and correction of misstatements, which is consistent with a negative effect of long auditor tenure on audit quality. However, their results do not support the mandatory rotation rule established by the 2014 EU Regulation, as the negative association between tenure and timely discovery of misstatements is mainly present in the first 10 years of an audit engagement. In fact, many studies have reported a positive relationship between audit firm tenure and audit quality. Hence, long tenures are associated with fewer material misstatements (Carcello & Nagy, 2004; St. Pierre & Anderson, 1984); higher likelihood of going-concern opinions to financially distressed firms (Geiger & Raghunandan, 2002; Louwers, 1998); lower likelihood of earnings restatements (Stanley & DeZoort, 2007); and higher levels of accounting conservatism (Jenkins & Velury, 2008) and auditor's response to fraud risk (Cassell, Myers, Myers, & Seidel, 2014).

Kwon, Lim, and Simnett (2014) studied the impact of imposing mandatory audit firm rotation in South Korea, where rotation was required between 2006 and 2010. They concluded that where audit firms were mandatorily rotated, no significant changes in audit quality (as measured by discretionary accruals) were observed compared either to pre-2006 long-tenure audit situations or to voluntary post-rotation situations.

Based on the review of related studies, two main conclusions help motivate the current study. First, there is a lack of cross-country European studies examining the potential impact of the mandatory rotation rule established by the 2014 EU Regulation, and most studies (either for EU countries or for other countries) do not provide support for a mandatory rotation rule. In this respect, we agree with claims made by Hottegindre, Belze, and Loison (2016) that academic contributions have only had a limited effect on the development of the recent European audit reform. According to the discussion as laid out in this section, we do not expect different levels of audit quality for firms with more than 10 (or 20) years of tenure with the audit firm compared with other firms. We therefore pose the hypotheses of this study in the null form as follows:

Hypothesis #1: Firms with more than 10 years of tenure with the audit firm will not show significantly different levels of audit quality than will other firms.

Hypothesis #2: Firms with more than 20 years of tenure with the audit firm will not show significantly different levels of audit quality than will other firms.

3. DESIGN OF THE STUDY AND SAMPLE SELECTION

3.1. Design of the study

Because audit quality is difficult to measure (DeFond & Zhang, 2014), the idea is to use the widest possible set of proxies. Within the present study, the empirical analysis incorporates three different sets of proxies for audit quality: discretionary accruals, firms just beating or missing earnings benchmarks, and accounting restatements. The following subsections discuss each specific analysis in further detail.

3.2. Discretionary accruals

Similar to Carey and Simnett (2006) and Cameran et al. (2016), among others, in this first analysis, we utilize the proxy measure of abnormal working capital accruals (*AWCA*) developed by DeFond and Park (2001). Following Francis and Wang (2008), we prefer this measure of accruals over the Jones-type models (Dechow, Sloan, & Sweeney, 1995; Jones, 1991; Kothari, Leone, & Wasley, 2005) due to the generally low number of observations per year, industry and country contained in our sample, and also because of the cross-country nature of our study (Peek, Meuwissen, Moers, & Vanstraelen, 2013). Accordingly, we define *AWCA* as the difference between actual working capital and the required working capital to support the current level of sales, where a historic relation of working capital to sales captures expected working capital (Carey & Simnett, 2006). Hence, we computed *AWCA* as follows:

$$AWCA_t = WC_t - [(WC_{t-1} / S_{t-1}) \times S_t] \quad (1)$$

where, WC_t : non-cash working capital in current year computed as (current assets – cash and short-term investments) – (current liabilities – short-term debt); WC_{t-1} : non-cash working capital in previous year; S_t : sales in current year; S_{t-1} : sales in previous year. *AWCA* is scaled by total assets.

Following Carey and Simnett (2006), we use both the absolute and raw values of *AWCA* as our proxies for audit quality. Furthermore, as a robustness check, we also utilize the absolute and raw value of current accruals (*CURACC*), as proposed by Myers et al. (2003) and later also used by Carey and Simnett (2006):

$$CURACC = ((\Delta Curr_Ass - \Delta Cash) - (\Delta Curr_Liab - \Delta STD)) \quad (2)$$

where, $\Delta Curr_Ass$: change in current assets; $\Delta Cash$: change in cash and equivalents; $\Delta Curr_Liab$: change in current liabilities; ΔSTD : change in short-term debt and current portion of long-term debt. *CURACC* is scaled by total assets.

Next, we conduct a multivariate analysis with discretionary accruals as the dependent variable and the variable of interest (*LONGTENURE*) and the standard control variables in the discretionary accruals literature (Carey & Simnett, 2006; Myers et al., 2003) as independent variables. Hence, we propose the model given by Equation (3).

$$ACCRUALS_{i,t} = \beta_0 + \beta_1 LONGTENURE_{i,t} + \beta_2 Z\text{-SCORE}_{i,t} + \beta_3 OPINION_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 AGE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 LOSS_{i,t} + \beta_8 CFFO_{i,t} + \beta_9 GROWTH_{i,t} + \beta_{10} PERFORMANCE_{i,t} + \beta_{11} AUDFIRM_{i,t} + fixedeffects_{i,t} \quad (3)$$

Dependent variable: *ACCRUALS*: the absolute (*ABSAWCA*) and raw (*AWCA*) value of discretionary accruals as computed from Equation (1). In the additional analyses, we also use the absolute (*ABSCURACC*) and raw (*CURACC*) value of current accruals.

Variable of interest: *LONGTENURE* (long audit firm tenure). We utilize two variables to define long audit firm tenure: *TENURE > 10* (1 when audit firm tenure is longer than 10 years, and 0 otherwise) and *TENURE > 20* (1 if tenure is longer than 20 years, and 0 otherwise).

Control variables: *Z-SCORE*: probability of bankruptcy as measured by Altman's Z-score indicator; *OPINION*: a dummy variable with value of 1 if the audit report is qualified, and 0 otherwise³; *SIZE*: natural logarithm of total assets of the company; *AGE*: natural logarithm of the number of years since the company was founded; *LEV*: total liabilities divided by total assets; *LLOSS*: a dummy variable with value of 1 if the client reported a loss for the previous year, and 0 otherwise; *CFFO*: ratio of cash flow from operations to total assets; *GROWTH*: change in assets from prior year; *PERFORM*: earnings before tax over total assets; and *AUDFIRM*: a dummy variable with value of 1 if the company is audited by a Big 4 auditor, and 0 otherwise. Year, industry, and country dummy variables are also included as fixed effects.

Next, we discuss the control variables in Equation (3). *Z-SCORE*, *LEV*, and *LLOSS* intend to capture the financial situation of the company. Similar to prior related studies (Carey & Simnett, 2006; Francis & Wang, 2008), we also expect that firms in poorer financial conditions show higher levels of discretionary accruals. We therefore predict a negative coefficient for *Z-SCORE* and positive coefficients for *LEV*⁴ and *LLOSS*. Similar to Carey and Simnett (2006), with *OPINION* (positive expected coefficient), we aim to control for the expected higher levels of accruals for firms with qualified audit reports. As large companies are expected to show higher levels of audit quality (Watts & Zimmerman, 1986), we expect a negative coefficient for *SIZE*. *AGE* (negative expected coefficient) is included because accruals differ across the firm's life cycle (Anthony & Ramesh, 1992; Healy, 1996; Myers et al., 2003). The well-documented negative relationship between cash flows from operations and accruals (Dechow, 1994; Francis & Wang, 2008; Myers et al., 2003; Sloan, 1996) advocates the inclusion of *CFFO* (negative expected coefficient) in the model. We include *GROWTH* (positive expected coefficient) because accruals are positively related to growth opportunities (Johnson et al., 2002). Following Carey and Simnett (2006), we include *PERFORM* (sign of the coefficient not predicted) to control for the nondiscretionary component of accruals not extracted by the accruals model. Finally, with *AUDFIRM* (negative expected coefficient), we intend to control for the stronger accounting conservatism of large audit firms (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Francis, Maydew, & Sparks, 1999).

3.3 | Firms just beating or missing earnings benchmarks

The extent to which the reported earnings just beat or miss certain thresholds is also a standard proxy for audit quality (Carey & Simnett, 2006; Holland & Ramsay, 2003; Menon & Williams, 2004). According to Carey and Simnet (2006), earnings benchmark studies have found that (a) firms avoid reporting losses; (b) an unusually low percentage of firms show small decreases in the earnings of the year compared with the prior year, whereas an unusually high percentage of firms present small increases in earnings; and (c) an unusually high percentage of firms reach or surpass earnings forecasts made by financial analysts. Therefore, positive though close to zero earnings, small increases in profits compared with the prior year or earnings just beating analysts' forecasts are usually regarded as indicators of earnings management and, thus, of poor audit quality. Conversely, negative though close to zero earnings, small decreases in profits or earnings just missing analysts' forecasts are considered indicators of good audit quality.

In this analysis, we utilize all three earnings benchmarks. For the first benchmark, following Carey and Simnett (2006), we define two dichotomous variables based on the "Earnings/Total Assets" ratio. Hence, *BEATBE* (beats breakeven) = 1 when the profit is <2% of total assets, and 0 otherwise;

MISSBE (misses breakeven) = 1 when the loss is <2% of total assets, and 0 otherwise. For the second benchmark, we define the variables *BEATLYEAR* (beats last year) = 1 when the increase in profits (decrease of loss) over last year's profits (losses) is 2% or less, and 0 otherwise; *MISSLYEAR* (misses last year) = 1 when the decrease of profits (increase in loss) is <2% and 0 otherwise. Unlike Carey and Simnett (2006), we also employ just beating or missing analysts' forecasts as the third benchmark and define the variables *BEATANALYSTS* (beats analysts) = 1 when the reported net income is higher than the net income of the consensus of analysts' forecasts by 2%, and 0 otherwise. *MISSANALYSTS* (misses analysts) = 1 when the reported net income is lower by 2% or less than the consensus.

We adapt the model suggested by Menon and Williams (2004) and Carey and Simnett (2006) to our specific research question and therefore propose the multivariate logistic regression model displayed in Equation (4).

$$\text{BENCHMARK}_{i,t} = \beta_0 + \beta_1 \text{LONGTENURE}_{i,t} + \beta_2 \text{Z-SCORE}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{AGE}_{i,t} + \beta_5 \text{MKTVAL}_{i,t} + \beta_6 \text{AUDFIRM}_{i,t} + \text{fixed effects}_{i,t} + \epsilon_{i,t} \quad (4)$$

where, Dependent variable: *BENCHMARK* is alternatively defined as $\Pr(\text{BEATBE} = 1)$, $\Pr(\text{MISSBE} = 1)$, $\Pr(\text{BEATLYEAR} = 1)$, $\Pr(\text{MISSLYEAR} = 1)$, $\Pr(\text{BEATANALYSTS} = 1)$, or $\Pr(\text{MISSANALYSTS} = 1)$. Considering that we have six dependent variables measuring earnings quality and two variables ($\text{TENURE} > 10$ and $\text{TENURE} > 20$) for *LONGTENURE*, we finally conduct 12 estimations of Equation (4).

The variable of interest (*LONGTENURE*) and most of the control variables (*Z-SCORE*, *SIZE*, *AGE*, and *AUDFIRM*) were used in the former analysis using discretionary accruals as the dependent variable. In this analysis, we also include *MKTVAL* (market value), defined as the natural logarithm of the market value of equity.

Following Menon and Williams (2004) and Carey and Simnett (2006), Equation (4) controls for the age (*AGE*) and size (*SIZE* and *MKTVAL*) of the client. However, following Carey and Simnett (2006), we also include *AUDFIRM*, as we expect Big 4 auditors to constrain the management of earnings more, and *Z-SCORE* because earnings management is expected to be directly associated with the firms' financial condition.

3.4 | Accounting restatements

According to DeFond and Zhang (2014), accounting restatements that correct misstatements in previously issued financial statements constitute a usual output-based audit quality measure. They noted two major advantages of restatements compared with the other usual proxies for audit quality: the relatively high consensus on their measurement and that restatements usually provide strong evidence of poor audit quality. We use Standard and Poor's Capital IQ database to identify firms that restated financial reports originally filed for fiscal years 2009 through 2015. Consistent with prior studies measuring audit quality by restatements (Kinney, Palmrose, & Scholz, 2004; Paterson & Valencia, 2011), our main focus is on restatements in which results are fundamentally different from originally reported (categorized as "RS" in Capital IQ). Hence, we define the restatement variable *REST* = 1 when the firm restated financial statements for the given year, and 0 otherwise. However, we also perform an additional analysis in which we include both restatements and reclassifications (categorized as "RC" in Capital IQ⁵). For this analysis, we define the variable *RESTORCL* (restatement or reclassification) = 1 when the firm restated or reclassified financial statements for the given year, and 0 otherwise. Following prior studies on restatements (Kinney et al., 2004; Paterson & Valencia, 2011;

Richardson, Tuna, & Wu, 2002), we propose the multivariate logistic regression model displayed in Equation (5).

$$\begin{aligned}
\text{RESTATEMENT}_{i,t} = & \beta_0 + \beta_1 \text{LONGTENURE}_{i,t} + \beta_2 \text{ACQUIS}_{i,t} + \beta_3 \text{MKTVAL}_{i,t} \\
& + \beta_4 \text{LEV}_{i,t} + \beta_5 \text{FIN}_{i,t} + \beta_6 \text{LOSS}_{i,t} + \beta_7 \text{EBITDAEV}_{i,t} \\
& + \beta_8 \text{AUDFIRM}_{i,t} + \text{fixed effects}_{i,t} + e_{i,t}
\end{aligned} \tag{5}$$

where, Dependent variable: *RESTATEMENT* is defined as $\text{Pr}(\text{REST} = 1)$ in the main analysis and as $\text{Pr}(\text{RESTORCL} = 1)$ in the additional analysis.

The variable of interest (*LONGTENURE*) and *MKTVAL*, *LEV*, and *AUDFIRM* are mentioned previously in the paper. However, in this analysis, we also include *ACQUIS* (acquisitions), a dummy variable indicating mergers and acquisitions, defined as 1 if the company acquired another firm during the fiscal year, and 0 otherwise; *FIN* (finance raised), computed as the sum of the cash raised from the issuance of common and preferred stock and long-term debt, deflated by average total assets; *LOSS* (losses), a dummy variable indicating losses in the current year; and *EBITDAEV*, computed as the inverse of the economic value of the company on an EBITDA multiple.

The control variables included in Equation (5) are intended to capture those characteristics of the firm (beyond the tenure with the audit firm) that might affect the likelihood of a restatement. Thus, restatements are positively associated with (a) having made acquisitions due to difficult or contentious accounting issues and possible business integration problems (Kinney et al., 2004); (b) poor financial conditions (*LEV* and *LOSS*; Paterson & Valencia, 2011; Romanus, Maher, & Fleming, 2008) (c) having accessed external capital markets for fund raising purposes (Richardson et al., 2002); and (d)

shares traded at higher multiples (lower *EBITDAEV* values), as these companies are under increasing pressure to maintain earnings momentum (Barth, Elliott, & Finn, 1999; Myers, Myers, & Skinner, 2007). Conversely, larger companies, due to closer scrutiny by the investment and analyst community (Gompers & Metrick, 2001), and clients of Big 4 auditors (*AUDIFIRM*), are expected to show a lower likelihood of restatements.

3.5 | Sample

The empirical analysis is conducted utilizing a sample of firms based on the S&P350 market index. This index is formed of leading blue chip companies from major developed European markets and is rebalanced quarterly, after the close of the third Friday in March, June, September, and December. We construct our sample with the companies that were included in the index as of September 15, 2017. Table 1 provides information about the industry and country composition of the index. Firms from the UK clearly dominate the index, followed at a great distance by France and Germany, while Portugal and Austria are the countries least represented in the index. With respect to sector composition, consumer goods, industry, and finance are the most widely represented sectors in the index. The research period covers the years between 2009 and 2016. Nevertheless, in the analysis conducted with accounting restatements, we were unable to include the observations of the year 2016 because, as of September 2017, it was not possible to determine whether 2016 financial statements will be restated. We use Standard and Poor's Capital IQ database to obtain information for the construction of the variables in the empirical analysis.

Table 2 summarizes the sample selection process. Our sample initially comprised the 350 constituents of the S&P350, and given the 8-year research period, we started with a sample of 2,800 firm-year observations. However, following the standard procedure in the literature, we removed financial companies (63 firms representing 504 firm-year observations). We also removed firms headquartered in Italy (12 non-financial firms representing 96 firm-year observations), as a mandatory rotation rule establishing a maximum tenure of 9 years with the audit firm was already effective in Italy during the

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research period.⁶ For most of the firms in the sample, Capital IQ provides the name of the auditing company from the year 1998 onwards. Therefore, in those cases where the auditor did not change during the whole period of available information, the exact number of years of audit tenure is unknown. In most of these cases, although without knowing the exact tenure, we were able to determine

whether it was greater or <10 years. Nevertheless, the 391 firm-year observations for which it was not possible to determine whether audit firm tenure was longer than 10 years are missing values in the variable $TENURE > 10$ and were thus excluded from the sample. Concerning the construction of variable $TENURE > 20$, in all cases where the same audit firm has audited the client company during the whole available period of the data, we assume that tenure was longer than 20 years. We acknowledge this assumption as a limitation of the empirical study and as a potential measurement error in the construction of the variable $TENURE > 20$.

Table 3 displays some descriptive statistics for our sample. The most interesting aspect is the average value of our variables of interest $TENURE > 10$ (0.56) and $TENURE > 20$ (0.45), indicating that almost 60% of the companies presented tenures longer than 10 years during our research period, and more than 40% showed tenures longer than 20 years. Accordingly, more than half of large European companies exceed the threshold established by the 2014 EU Regulation. We should, therefore, expect a strong impact from the new Regulation on the EU audit market. A second interesting point is the extreme level of concentration (more than 95%) of the EU audit market for large companies with Big 4 audit firms. Finally, 18% of the audit reports presented by the companies in our sample during the research period had a modified opinion.

The correlation matrix (untabulated) shows relatively low Pearson correlation coefficients for each pair of independent variables included in Equations (3)-(5). The highest coefficient is 0.32 between $SIZE$ and $PERFORM$. Therefore, we do not expect serious multicollinearity problems in the dataset.

4 | RESULTS

4.1 | Discretionary accruals

Before the multivariate analysis, we conducted a preliminary univariate analysis of the differences of means and medians of discretionary accruals across tenure groups of firms. The t test and the Mann-Whitney test were used to assess the statistical significance of mean and median accruals, respectively. As Table 4 shows, there are no significant differences in mean or median accruals (either in raw or absolute values) associated with the number of years of tenure. Hence, firms with tenures longer than 10 years (or 20 years) do not show significantly different levels of discretionary accruals from the other firms. Therefore, the main conclusion to draw from this univariate analysis is that long tenures do not seem to represent any threat to audit quality.

After this preliminary analysis, the next step consists of estimating Equation (3). To avoid the negative effects of outlier observations, estimations were performed with variables winsorized at the top and bottom 1% level. In accordance with the panel structure of the dataset, all estimations were performed with panel data models. Moreover, as we detected heteroscedasticity and autocorrelation in the dataset, we utilized Prais-Winsten regression with heteroscedastic panel corrected errors. Table 5 displays the estimates of Equation (3). All eight estimations⁷ are globally significant at the usual levels (p -value < 0.05), with higher R -squared values than in the analysis of Carey and Simnett (2006).⁸ Although Pearson correlation coefficients did not suggest multicollinearity problems, after the estimations, we calculate variance inflation factors (untabulated) to further assess potential multicollinearity problems. $SIZE$ and $PERFORM$ were the variables with the highest correlations (1.28 and 3.83, respectively). Therefore, we do not expect serious multicollinearity problems in our estimations. The most interesting result in Table 5 is the significantly negative coefficient of $TENURE > 10$ (p -value < 0.1) in the estimation conducted with absolute discretionary accruals ($ABSAWCA$) as the

dependent variable and the non-significant coefficient in the estimation with raw discretionary accruals (*AWCA*). These results indicate that tenures of more than 10 years are significantly negatively associated with accruals in absolute values, but there is no significant association between tenure

and raw accruals. Therefore, audit quality might in fact be higher when audit firm tenure exceeds the 10-year threshold. Although this interpretation has to be taken cautiously, as significance is reported at marginal statistical levels and only for the estimation with accruals in absolute values, our results do not indicate that long tenures might represent a serious threat for audit quality. The 2014 EU Regulation also establishes that audit firm tenure might be extended up to 20 years in the case of tendering. Thus, we estimated the model given by Equation (3), but with *TENURE* > 20 instead of *TENURE* > 10 as the variable of interest. In neither of the two new estimations (with either *ABSAWCA* or *AWCA*) did we observe any significant results for *TENURE* > 20. Thus, audit quality does not seem to be different among firms under more or <20 years of audit firm tenure. These results are consistent with the evidence reported by Garcia-Blandon et al. (2017) for the Spanish audit market.

Following Carey and Simnett (2006), we re-estimated Equation (3) with current accruals instead of discretionary accruals as the dependent variable. The results of the new estimations, displayed in the last four columns of Table 5, are consistent with the results reported with discretionary accruals. Hence, *TENURE* > 10 shows a significantly negative coefficient (*p-value* < 0.05) in the estimation with accruals in absolute values and a non-significant coefficient in the estimation conducted with raw accruals. Additionally, results for *TENURE* > 20 are non-significant in both estimations. Accordingly, the conclusions, drawn with discretionary accruals that firms with more than 10 years of tenure show similar or even higher levels of audit quality than do the rest and that firms with more than 20 years of tenure do not present different levels of audit quality, are robust to an alternative definition of accruals.

4.2 | Firms just beating or missing earnings benchmarks

In this analysis, we proxy audit quality by the difference between the reported earnings and the most usual earning benchmarks. Table 6 displays the results of the estimation of Equation (4) for “just beating benchmarks.” The estimations were conducted with pooled logistic regression with robust errors clustered by firm. All the estimations are globally significant at the usual levels (*p-value* < 0.01), with *Pseudo R-squared* consistent with that of Carey and Simnett (2006). The main result in Table 6 is the non-significant coefficients for both *TENURE* > 10 and *TENURE* > 20 in all the estimations performed. This result indicates that firms with more than 10 or 20 years of tenure with their auditors are not more likely than other firms to engage in earnings management activities with the aim of meeting benchmarks. Accordingly, these results do not support a loss of audit quality associated with long audit firm tenures.

Next, Table 7 shows the results of the estimation of Equation (4) for “just missing benchmarks.” Consistent with previous estimations, we utilized multivariate logistic regression with robust errors clustered by firm. *Pseudo R-squared* are clearly higher than in Carey and Simnett (2006).⁹ If we focus on firms with more than 10 years of tenure, we do not observe any significant coefficient for *TENURE* > 10 in any of the three estimations. Therefore, these firms do not show a different likelihood of missing any of the three benchmarks compared with the other firms. Concerning firms with more than 20 years of tenure, we report non-significant results for *TENURE* > 20 with regard to the two first benchmarks and significant results with a positive sign in the estimation examining the likelihood of just missing analysts' forecasts. These results suggest that long tenures with audit firms do not significantly impact audit quality. In fact, the impact might even be positive, as the likelihood of missing analysts' forecasts (an indicator of high earnings and audit quality) is higher for firms under more than 20 years of tenure.

4.3 | Accounting restatements

Table 8 displays the results of the estimations of Equation (5), which utilized restatements and reclassifications as an indicator of poor audit quality. Consistent with the previous analysis with earnings benchmarks, estimations were conducted with pooled logistic regression with robust errors clustered by firm. All the estimations are globally significant at the usual levels ($p\text{-value} < 0.01$). The first two columns of the table show the results of the main analysis based on the estimation conducted with the restatements as the dependent variable. The main result is the lack of a significant relationship between audit firm tenure and the likelihood of restatements, as neither $TENURE < 10$ nor $TENURE < 20$ present significantly associated coefficients. Accordingly, firms with more than 10 or 20 years of tenure do not show a significantly higher likelihood of restating accounting statements than the other firms. We should conclude, therefore, that long tenures do not seem to be associated with different levels of audit quality.

The last two columns of Table 8 present the estimates of Equation (5) using a wider definition of restatement that includes not only restatements but also reclassifications and thus utilizes *RESTORCL* (restatement or reclassification) as the dependent variable in the estimation. As before, estimations were conducted with pooled logistic regression with robust errors clustered by firm. Although estimations are globally significant at the usual levels ($p\text{-value} < 0.01$), *Pseudo R-squared* are clearly lower than in the estimations with restatements, suggesting the weaker linkage of reclassification with audit quality compared with accounting restatements. Nevertheless, results for our variables of interest $TENURE < 10$ and $TENURE < 20$ are consistent with the estimates of Equation (5) with restatements, as we do not observe significant results for any of these variables. Therefore, the likelihood of an accounting restatement or a reclassification does not depend on audit firm tenure.

4.4 . Additional analysis: the impact of country litigation risk

Previous studies agree on the importance of litigation risk to explain the auditor-client relationship (Choi, Kim, Liu, & Simunic, 2008; Wong, Firth, & Lo, 2018). According to Enomoto, Kimura, and Yamaguchi (2018), cross-country studies on earnings management consider litigation risk a main determinant of managerial behaviors. This subsection addresses the potential impact of cross-country differences in litigation risk on the relationship between tenure and audit quality. Hence, auditors in low litigation risk countries face weaker incentives to maintain their independence and to provide high-quality audit services. Therefore, the potential negative implications of long tenures for audit quality are expected to be particularly serious in low litigation risk countries. This point makes it difficult to generalize results reported in high litigation risk countries such as the United States (Hope & Langli, 2010). To address this issue, as prior studies on the audit field have noted (Francis, 2004; Hope & Langli, 2010; Vanstraelen, 2002), we agree that litigation risk is lower in countries with a civil-law tradition compared with countries with a common-law origin. Hence, we split the sample into a common-law and a civil-law subsample. Applying La Porta, Lopez-de-Silanes, Shleifer, and Vishny's (1998) classification scheme to our sample presents the UK and Ireland as the only common-law countries (with a strong dominance of UK companies), and the other countries are considered civil-law countries. Then, we replicate the analyses conducted with discretionary accruals, earnings benchmarks, and accounting restatements across subsamples.

Table 9 displays the estimates of the analysis with discretionary accruals in absolute values as the proxy for audit quality given by Equation (3). The most interesting result is that both tenure variables ($TENURE > 10$ and $TENURE > 20$) present non-significant coefficients in the common-law subsample and significant coefficients ($p\text{-value} < 0.05$ for $TENURE > 10$ and < 0.10 for $TENURE > 20$)

with negative signs in the civil-law subsample. Consequently, the impact of long audit firm tenures on audit quality might be either neutral (in common-law countries) or positive (in civil-law countries), but never negative. According to the discussion on the importance of litigation risk for the audit activity, we expected the positive effects of long tenures on audit quality, if they exist, to be stronger in common-law countries. Overall, these results are consistent with those in Table 5 with the whole sample, which indicates a neutral or positive impact of long tenures on audit quality. For simplicity, we do not tabulate results for raw discretionary accruals, current accruals, or absolute current accruals, as in none of these cases did we report significantly positive coefficients in the estimations conducted with these accrual measures.

The results of the analysis with earnings benchmarks are shown in Table 10. Panels A and B display the estimates of Equation (4) for the common-law and civil-law subsamples, respectively. For our tenure variables, in the common-law subsample, we report either non-significant results or significant results with negative signs. Thus, the likelihood of just beating earnings benchmarks would be similar or significantly lower for companies with relatively longer audit firm tenures than the rest, but never higher. This point suggests that in common-law countries, audit quality might in fact be higher under firm tenures longer than 10 or 20 years. On the other hand, in the civil-law subsample, we do not observe any significant coefficient for either $TENURE > 10$ or $TENURE > 20$ in any of the six estimations performed. Accordingly, in civil-law countries, audit firm tenure does not significantly impact audit quality as measured by the likelihood of just beating earnings benchmarks. Unlike the results in Table 9, in Table 10, the differences between common-law and civil-law subsamples are in the predicted direction. Again, for simplicity, we do not tabulate results for the just missing earnings benchmarks. Nevertheless, they are strongly consistent with the just beating earnings benchmark analysis, as we observed either non-significant coefficients for $TENURE > 10$ and $TENURE > 20$ or significant coefficients with positive signs, indicating that the likelihood of just missing earnings forecasts (an indicator of higher audit quality) is in fact higher under long tenures.

Finally, Table 11 displays the results of the analysis of accounting restatements conducted through the estimation of Equation (5) across subsamples. We do not observe any significant coefficient for either $TENURE > 10$ or $TENURE > 20$ in any of the two subsamples of companies. Therefore, we should conclude that the likelihood of restatements is not significantly different for clients with more than 10 or 20 years of tenure compared with the other clients. These results are strongly consistent with those reported with the whole sample in Table 8, not showing any significant impact of tenure on the likelihood of restatements. As before, for simplicity reasons, we do not tabulate the estimates of Equation (5) with $RESTORCL$ (restatements of reclassifications) as the dependent variable. Nevertheless, results are strongly consistent with those in Table 11, as we do not observe any significant coefficient for our tenure variables in any of the four estimations.

5 | CONCLUSIONS, IMPLICATIONS, AND LIMITATIONS

Despite lack of evidence that long audit firm tenures do impair audit quality or that the mandatory rotation of audit firms has been discarded in countries such as the United States, European regulators have recently established a mandatory rotation rule. Undoubtedly, the new regulation is expected to have a serious impact on the configuration of the European market for audit services, as more than half of the companies in our sample surpass the maximum 10 years of tenure established as the general rule. The limitation on the duration of auditor-client engagements is intended to enhance the independence of auditors. The investigation of the situation in the European market in the years

immediately before the enactment of the mandatory rotation rule provides the best possible setting to assess the potential impact of the new regulation.

Our results reject the concept that firms currently passing the 10-year or 20-year threshold of audit tenure present significantly lower levels of audit quality compared with the other firms. In fact, we report some evidence to the contrary, as in some analyses, we observe higher levels of audit quality for these companies. Therefore, if there does not seem to be a problem of lack of audit quality associated with long audit tenures in the EU, the limitation of the audit firm tenure imposed by the new European regulation lacks sound academic support, and we would not expect higher levels of audit quality to result from it. The results obtained with the common-law subsample of firms might be informative for the United States.

On the other hand, the view of audit firms is that mandatory audit firm rotation would likely lead to higher audit fees over time, largely because such rotation increases the audit effort, the need or desire of audit firms to recoup their costs over a shorter period and an overall increase in auditing costs (GAO, 2004). This opinion was shared by most audit committee chair members, who stated that costs are likely to exceed benefits in the passing of legislation requiring audit rotations (GAO, 2004). Moreover, the view of European regulators that mandatory firm rotation will increase competence among audit firms might also be questioned, particularly when considering that the 2014 EU Regulation also strongly limits the provision of non-audit services to audit clients. In many cases, the audit firm might prefer to end the audit engagement with a client to maintain the provision of the (usually) more rewarding non-audit services to that client. Consequently, the number of audit firms competing for each client might, in fact, decline over time.

Although the findings of this study can be regarded as robust, the main limitation to its scope is evident in the difficulties associated with the accuracy of variables in the measurement of audit quality (DeFond & Zhang, 2014). We intended to minimize this concern by utilizing three different sets of proxies to measure audit quality. Moreover, due to data availability, we cannot discard significant measurement errors in our variable differentiating between firms with more and less of 20 years of tenure. Finally, the fact that our sample composition is strongly dominated by companies from the largest European countries might limit the ability to generalize the findings to all EU member states. Further research might undoubtedly contribute to overcome these limitations and build on the presented findings.

ENDNOTES

¹PIEs are defined as (a) entities that are both governed by the law of a member state and listed on a regulated market; (b) all credit institutions in the EU; (c) all insurance companies; (d) any company designated by member states as a public interest entity, for instance because of the nature of its business, size, or number of employees.

²By the year 2008, the State members of the EU were required to adapt national law systems to the revised 8th Company Law Directive, which established the mandatory rotation of partners.

³For this study, audit reports with qualified, unfavorable, disclaimer of opinion, or with explanatory paragraphs expressing doubts about the future of the company are collectively considered qualified reports.

⁴In the case of *LEV*, the stronger incentives of highly leveraged firms to manipulate earnings (Becker et al., 1998) also suggest a positive coefficient for this variable.

⁵In Capital IQ, database reclassifications are defined as results somewhat different from original, but bottom-line results are the same.

⁶Since the aim of this paper is to investigate the potential impact of a mandatory rotation rule in the EU, our research setting has to be not only regulatory homogeneous (in particular with regard to audit rotation rules) but also characterized by voluntary rotation regulation.

⁷For each definition of accruals, we perform two estimations, one with *TENURE* > 10 as the variable of interest and the other with *TENURE* > 20.

⁸Carey and Simnett (2006) reported *R-squared* of 0.04 and 0.012 in the estimations with absolute and raw discretionary accruals, respectively.

⁹*Pseudo R-squared* of 0.032 and 0.051 for the “just misses breakeven” and “just misses last year” benchmarks, respectively. Carey and Simnett (2006) did not study the “just misses analysts’ forecasts” benchmark.

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TABLE 1 Sector and country composition of the S&P350 index

By sector

Construction and materials: 37
Consumer goods: 85
Energy: 15
Finance: 63
Health care: 21
Industry: 71
Information technology: 28
Real state: 8
Utilities: 22
Total: 350

By country

Austria: 3
Belgium: 9
Channel Island: 7
Denmark: 13
Finland: 9
France: 46
Germany: 41
Ireland: 7
Italy: 17
Luxembourg: 5
Netherlands: 23
Norway: 7
Portugal: 2
Spain: 22
Sweden: 25
Switzerland: 27
United Kingdom:
87
Total: 350

TABLE 2 Sample selection process^a

	Discretionary accruals	Earnings benchmark	Accounting restatements
Initial sample	2,800	2,800	2,800
Less: financial firms	504	504	504
Less: Italian firms	96	96	96
Less: audit firm	391	391	391
Less: Missing data	469	283	321
Final sample	1,340	1,526	1,488

^aThese figures correspond to the main analysis for each proxy of audit quality, and with *TENURE* > 10 as the variable of interest.

TABLE 3 Descriptive statistics for independent variables in the analysis with discretionary accruals

Variable	Mean	Median	SD	Maximum	Minimum
<i>TENURE > 10</i>	0.56	1.00	0.50	1.00	0.00
<i>TENURE > 20</i>	0.45	0.00	0.50	1.00	0.00
<i>Z-SCORE</i>	3.15	2.51	2.54	17.70	0.19
<i>OPINION</i>	0.18	0.00	0.39	1.00	0.00
<i>SIZE</i>	4.12	4.07	0.54	5.61	2.91
<i>AGE</i>	1.85	1.96	0.37	2.54	0.90
<i>LEV</i>	0.61	0.61	0.17	1.00	0.16
<i>LLOSS</i>	0.08	0.00	0.27	1.00	0.00
<i>CFFO</i>	0.10	0.09	0.06	0.33	-0.04
<i>GROWTH</i>	0.06	0.05	0.15	0.75	-0.33
<i>PERFORM</i>	0.08	0.07	0.07	0.33	-0.11
<i>AUDFIRM</i>	0.96	1.00	0.19	1.00	0.00

Note. Variables:

TENURE > 10: 1 if audit firm tenure is longer than 10 years and 0 otherwise;

TENURE > 20: 1 if audit firm tenure is longer than 20 years and 0 otherwise;

Z-SCORE: probability of bankruptcy as measured by Altman's Z-score indicator; *OPINION*: 1 if the audit report is qualified and 0 otherwise;

SIZE: natural logarithm of total assets of the company;

AGE: natural logarithm of the number of years since the company was founded; *LEV*: total liabilities divided by total assets;

LLOSS: 1 if the client reported a loss for the previous year and 0 otherwise; *CFFO*: cash flow from operations on total assets;

GROWTH: change in assets from prior year;

PERFORM: earnings before tax over total assets; and

AUDFIRM: 1 if the company is audited by a Big 4 auditor and 0 otherwise.

TABLE 4 Univariate analysis of mean and median differences of discretionary accruals by groups of audit tenure firm

	<i>ABSAWCA</i>		<i>AWCA</i>	
	Mean	Median	Mean	Median
Total sample	0.0236	0.0134	-0.0006	-0.0006
<i>TENURE</i> > 10 = 0 (up to 10 years)	0.0246	0.0125	-0.0005	0.0003
<i>TENURE</i> > 10 = 1 (more than 10 years)	0.0228	0.0138	-0.0007	-0.0012
Sig. level ^a	0.3349	0.8913	0.5833	0.5493
<i>TENURE</i> > 20 = 0 (up to 20 years)	0.0234	0.0127	-0.0002	0.0002
<i>TENURE</i> > 20 = 1 (more than 20 years)	0.0236	0.0139	-0.0012	-0.0011
Sig. level ^a	0.9063	0.2450	0.5969	0.4214

Note. Variables:

ABSAWCA: discretionary accruals in absolute values; and *AWCA*: raw value of discretionary accruals.

^a*t* test is used for mean accruals and Mann-Whitney test for median accruals.

TABLE 5 The relationship between audit firm tenure and audit quality as measured by accruals. Standard errors in parentheses

Variable	Pred. sign	<i>ABSAWCA</i>	<i>AWCA</i>	<i>ABSCURACC</i>		<i>CURACC</i>			
<i>TENURE > 10</i>	? (H1)	-0.004 (0.002)*	0.002	(0.003)		-0.005 (0.002)**		0.001 (0.002)	
<i>TENURE > 20</i>	? (H2)	-0.001	0.002(0.002) (0.002)	-0.000	0.000 (0.002)		(0.002)		
<i>Z-SCORE</i>	-	0.001 (0.001)*	0.001 (0.001)**	0.000 (0.000)	0.000 (0.001)	0.001 (0.001)**	0.001 (0.001)*	0.000 (0.001)	0.000 (0.001)
<i>OPINION</i>	+	0.003 (0.004)	0.006 (0.003)*	-0.004 (0.004)	-0.006 (0.004)	0.003 (0.003)	0.005 (0.003)	-0.005 (0.004)	-0.007 (0.004)
<i>SIZE</i>	-	-0.013 (0.002)***	-0.012 (0.002)***	-0.004 (0.003)	-0.003 (0.003)	-0.010 (0.002)***	-0.010 (0.002)***	-0.005 (0.002)**	-0.005 (0.002)**
<i>AGE</i>	-	-0.005 (0.003)	-0.006 (0.003)**	-0.001 (0.004)	-0.003 (0.004)	-0.004 (0.003)	-0.004 (0.003)	-0.002 (0.003)	-0.002 (0.003)
<i>LEV</i>	+	0.013 (0.001)	0.010 (0.008)	0.008 (0.010)	0.004 (0.010)	0.009 (0.007)	0.008 (0.006)	-0.002 (0.010)	-0.002 (0.008)
<i>LLOSS</i>	+	0.018 (0.006)***	0.011 (0.005)**	-0.008 (0.006)	-0.003 (0.006)	0.012 (0.004)***	0.008 (0.004)**	-0.007 (0.005)	-0.005 (0.005)
<i>CFFO</i>	-	-0.010 (0.038)	-0.001 (0.033)	0.047 (0.045)	0.046 (0.039)	-0.008 (0.029)	0.007 (0.025)	-0.019 (0.035)	-0.017 (0.031)
<i>GROWTH</i>	+	0.005 (0.009)	0.002 (0.008)	0.026 (0.011)**	0.021 (0.010)**	-0.000 (0.007)	-0.004 (0.006)	0.022 (0.010)**	0.020 (0.008)**

Variable	Pred. sign	<i>ABSAWCA</i>		<i>AWCA</i>		<i>ABSCURACC</i>		<i>CURACC</i>	
<i>PERFORM</i>	?	-0.078 (0.032)**	-0.083 (0.029)***	-0.044 (0.038)	-0.020 (0.034)	-0.036 (0.026)	-0.039 (0.023)*	0.006 (0.032)	0.006 (0.029)
<i>AUDFIRM</i>	-	0.006 (0.003)	0.006 (0.004)	0.007 (0.005)	0.006 (0.005)	0.006 (0.003)	0.005 (0.003)	0.006 (0.004)	0.006 (0.005)
<i>Country effects</i>		YES	YES	YES	YES	YES	YES	YES	YES
<i>Industry effects</i>		YES	YES	YES	YES	YES	YES	YES	YES
<i>Year effects</i>		YES	YES	YES	YES	YES	YES	YES	YES
<i>Constant</i>		0.086 (0.017)***	0.077 (0.016)***	-0.003 (0.022)	0.009 (0.021)	0.071 (0.013)***	0.064 (0.013)***	0.018 (0.018)	0.024 (0.017)
# of obs.		1,340	1,484	1,340	1,484	1,340	1,484	1,340	1,484
<i>R-square</i>		0.128	0.114	0.035	0.036	0.103	0.088	0.041	0.045
Wald-Chi sq.		121.54***	116.97***	59.56**	63.24***	127.59***	130.30***	71.97***	79.37***

Note. Variables: ACCRUALS (*ABSAWCA*: discretionary accruals in absolute values; *AWCA*: raw value of discretionary accruals; *ABSCURACC*: current accruals in absolute values; *CURACC*: raw value of current accruals);

LONGTENURE is defined as either *TENURE* > 10 (1 if audit firm tenure is longer than 10 years and 0 otherwise) or as *TENURE* > 20 (1 if audit firm tenure is longer than 20 years and 0 otherwise); *Z-*

SCORE: probability of bankruptcy as measured by Altman's Z-score indicator;

OPINION: 1 if the audit report is qualified and 0 otherwise;

SIZE: natural logarithm of total assets of the company;

AGE: natural logarithm of the number of years since the company was founded;

LEV: total liabilities divided by total assets;

LLOSS: 1 if the client reported a loss for the previous year and 0 otherwise;

CFFO: cash flow from operations on total assets;

GROWTH: change in assets from prior year;

PERFORM: earnings before tax over total assets; and

AUDFIRM: 1 if the company is audited by a Big 4 auditor and 0 otherwise.

*Statistical significance at the 10%. **Statistical significance at the 5%. ***Statistical significance at the 1%.

TABLE 6 The relationship between audit firm tenure and audit quality as measured by the ability of the auditor client of just beating earnings benchmarks. Standard errors in parentheses

Variable	Pred. sign	Just beats break even: Pr(<i>BEATBE</i> = 1)		Just beats last year's profits: Pr(<i>BEATLYEAR</i> = 1)		Just beats analysts' forecasts: Pr(<i>BEATANALYSTS</i> = 1)	
<i>TENURE</i> > 10	? (H1)	0.196 (0.222)		-0.310 (0.421)		0.216 (0.164)	
<i>TENURE</i> > 20	? (H2)		-0.079 (0.214)		-0.256 (0.362)		-0.056 (0.166)
<i>Z-SCORE</i>	-	-0.322 (0.160)**	-0.544 (0.171)***	-0.199 (0.082)***	-0.176 (0.077)**	-0.052 (0.037)	-0.064 (0.037)*
<i>SIZE</i>	-	2.979 (0.582)***	2.614 (0.611)***	-2.384 (0.911)***	-2.194 (0.848)***	-1.019 (0.350)***	-1.102 (0.334)***
<i>AGE</i>	-	0.052 (0.330)	0.239 (0.607)	0.405 (0.411)	0.509 (0.405)	-0.311 (0.219)	-0.179 (0.215)
<i>MKTVAL</i>	+	-3.086 (0.574)***	-2.767 (0.607)***	2.946 (0.848)***	2.456 (0.790)***	1.579 (0.389)***	1.828 (0.375)***
<i>AUDFIRM</i>	-	-0.262 (0.516)	-0.257 (0.529)	-0.381 (0.689)	-0.804 (0.682)	-0.412 (0.442)	-0.584 (0.425)
Country effects		YES	YES	YES	YES	YES	YES
Industry effects		YES	YES	YES	YES	YES	YES
Year effects		YES	YES	YES	YES	YES	YES
Constant		-2.080 (1.422)	-2.301 (1.413)	-20.822 (1.964)***	-19.236 (1.820)***	-2.292 (1.024)**	-2.945 (0.976)***
# of obs.		1,526	1,702	1,521	1,694	1,378	1,545
Pseudo R-square		0.218	0.228	0.1673	0.185	0.053	0.055
Log likelihood		-381.90***	-421.93***	-162.98***	-177.82***	-835.95***	-928.48***

Note. Variables:

LONGTENURE is defined as either *TENURE* > 10 (1 if audit firm tenure is longer than 10 years and 0 otherwise) or as *TENURE* > 20 (1 if audit firm tenure is longer than 20 years and 0 otherwise); *Z-SCORE*: probability of bankruptcy as measured by Altman's Z-score indicator;

SIZE: natural logarithm of total assets of the company;

AGE: natural logarithm of the number of years since the company was founded;

MKTVAL: market value of equity; and

AUDFIRM: 1 if the company is audited by a Big 4 auditor and 0 otherwise.

*Statistical significance at the 10%. **Statistical significance at the 5%. ***Statistical significance at the 1%.

TABLE 7 The relationship between audit firm tenure and audit quality as measured by the ability of the auditor client of just missing earnings benchmarks. Standard errors in parentheses

Variable	Pred. sign	Just misses break even	Just misses last year's profits	Just misses analysts' forecasts			
<i>TENURE</i> > 10	? (H1)	-0.409 (0.316)	0.210 (0.445)	0.191 (0.155)			
<i>TENURE</i> > 20	? (H2)		0.162 (0.364)	-0.277 (0.342)	0.347 (0.158)**		
<i>Z-SCORE</i>	+	-0.182 (0.539)	-0.190 (0.465)	-0.036 (0.053)	-0.026 (0.058)	-0.001 (0.048)	-0.004 (0.049)
<i>SIZE</i>	+	3.661 (1.03)***	3.746 (0.984)***	-2.097 (0.715)***	-2.186 (0.657)***	-0.292 (0.333)	-0.355 (0.327)
<i>AGE</i>	+	-0.167 (0.547)	-0.665 (0.549)	0.857 (0.879)	0.597 (0.832)	0.285 (0.214)	0.273 (0.202)
<i>MKTVAL</i>	-	-3.720 (1.029)***	-3.850 (0.959)***	2.539 (0.864)***	2.050 (0.751)***	1.708 (0.362)***	1.714 (0.354)***
<i>AUDFIRM</i>	+	0.552 (1.020)	0.303 (1.004)	-0.794 (0.950)	-1.091 (0.939)	0.042 (0.438)	0.004 (0.440)
<i>Country effects</i>		YES	YES	YES	YES	YES	YES
<i>Industry effects</i>		YES	YES	YES	YES	YES	YES
<i>Year effects</i>		YES	YES	YES	YES	YES	YES
<i>Constant</i>		-5.963 (2.334)**	-4.674 (2.427)*	-7.102 (2.299)***	-3.072 (2.239)***	-5.472 (0.892)***	-6.972 (1.036)***
# of obs.		1,526	1,702	1,521	1,694	1,378	1,545
<i>Pseudo R-square</i>		0.231	0.235	0.069	0.090	0.110	0.105
Log likelihood		-150.195***	-153.483***	-122.52***	-140.79***	-800.00***	-900.87***

Note. Variables:

LONGTENURE is defined as either *TENURE* > 10 (1 if audit firm tenure is longer than 10 years and 0 otherwise) or as *TENURE* > 20 (1 if audit firm tenure is longer than 20 years and 0 otherwise); *Z-SCORE*: probability of bankruptcy as measured by Altman's Z-score indicator;

SIZE: natural logarithm of total assets of the company;

AGE: natural logarithm of the number of years since the company was founded;

MKTVAL: market value of equity; and

AUDFIRM: 1 if the company is audited by a Big 4 auditor and 0 otherwise.

*Statistical significance at the 10%. **Statistical significance at the 5%. ***Statistical significance at the 1%.

TABLE 8 The relationship between audit firm tenure and audit quality as measured by the probability of accounting restatements and reclassifications. Standard errors in parentheses

Variable	Pred. sign	Restatements and reclassifications:			
		Restatements: Pr(<i>REST</i> = 1)		Pr(<i>RESTORCL</i> = 1)	
<i>TENURE</i> > 10	? (H1)	0.018 (0.181)		0.001 (0.134)	
<i>TENURE</i> > 20	? (H2)		-0.055 (0.170)		0.094 (0.138)
<i>ACQUIS</i>	+	0.092 (0.032)***	0.073 (0.031)**	0.045 (0.026)	0.044 (0.023)*
<i>MKTVAL</i>	-	0.419 (0.188)**	0.484 (0.181)***	0.250 (0.173)	0.310 (0.162)*
<i>LEV</i>	+	1.879 (0.662)***	1.970 (0.646)***	0.321 (0.438)	0.590 (0.427)
<i>LOSS</i>	+	0.141 (0.323)	0.319 (0.293)	0.072 (0.253)	0.091 (0.240)
<i>FIN</i>	+	0.296 (0.893)	0.522 (0.865)	-0.620 (0.757)	-0.628 (0.726)
<i>EBITDAEV</i>	+	0.739 (1.715)	-0.326 (1.497)	-1.467 (1.370)	-1.709 (1.290)
<i>AUDFIRM</i>	-	-0.351 (0.546)	0.120 (0.486)	-0.964 (0.341)***	-0.908 (0.353)***
Country effects		YES	YES	YES	YES
Industry effects		YES	YES	YES	YES
Year effects		YES	YES	YES	YES
Constant		-6.859 (1.241)***	-4.570 (0.984)***	-0.903 (0.943)	-1.344 (0.887)***
# of obs.		1,500	1,706	1,500	1,706
Pseudo R-square		0.192	0.194	0.066	0.067
Log likelihood		-520.70***	-591.31***	-970.81***	-1103.39***

Note. Variables:

LONGTENURE is defined as either *TENURE* > 10 (1 if audit firm tenure is longer than 10 years and 0 otherwise) or as *TENURE* > 20 (1 if audit firm tenure is longer than 20 years and 0 otherwise);

ACQUIS: 1 if the company acquired another firm during the fiscal year and 0 otherwise;

MKTVAL: market value of equity;

LEV: total liabilities divided by total assets;

LOSS: 1 if the client reported a loss in the current year and 0 otherwise;

FIN: finance raised by the company in the current year;

EBITDAEV: the inverse of the economic value of the company on EBITDA multiple; and

AUDFIRM: 1 if the company is audited by a Big 4 auditor and 0 otherwise.

*Statistical significance at the 10%. **Statistical significance at the 5%. ***Statistical significance at the 1%.

TABLE 9 Additional analysis: The relationship between audit firm tenure and absolute discretionary accruals in common-law and civil-law countries. Standard errors in parentheses

Variable	Pred. sign	Common-law subsample		Civil-law subsample	
<i>TENURE</i> > 10	? (H1)	0.003 (0.004)		-0.007 (0.003)**	
<i>TENURE</i> > 20	? (H2)		0.004 (0.003)		-0.004 (0.002)*
<i>Z-SCORE</i>	-	-0.000 (0.002)	0.001 (0.002)	0.002 (0.001)**	0.002 (0.001)**
<i>OPINION</i>	+	0.008 (0.006)	0.007 (0.005)	-0.002 (0.004)	0.003 (0.004)
<i>SIZE</i>	-	-0.012 (0.003)***	-0.010 (0.003)***	-0.016 (0.003)***	-0.014 (0.003)***
<i>AGE</i>	-	0.001 (0.004)	0.005 (0.003)	-0.007 (0.004)	-0.012 (0.004)***
<i>LEV</i>	+	-0.006 (0.016)	-0.000 (0.014)	0.008 (0.010)	0.020 (0.010)**
<i>LLOSS</i>	+	0.014 (0.009)	0.008 (0.008)	0.017 (0.007)**	0.009 (0.006)
<i>CFFO</i>	-	-0.016 (0.047)	0.032 (0.042)	-0.004 (0.052)	-0.016 (0.044)
<i>GROWTH</i>	+	0.005 (0.012)	0.004 (0.010)	0.008 (0.013)	0.005 (0.010)
<i>PERFORM</i>	?	-0.034 (0.049)	-0.073 (0.047)	-0.121 (0.045)***	-0.114 (0.037)***
<i>AUDFIRM</i>	-	0.006 (0.034)	0.020 (0.031)	0.006 (0.004)	0.004 (0.003)
Country effects		YES	YES	YES	YES
Industry effects		YES	YES	YES	YES
Year effects		YES	YES	YES	YES
Constant		0.097 (0.021)***	0.040 (0.044)***	0.097 (0.021)***	0.098 (0.020)***
# of obs.		401	453	939	1,031
R-square		0.091	0.087	0.164	0.153
Wald-Chi sq.		30.70	33.79*	114.58***	101.97***

Note. Variables:

ABSAWCA: discretionary accruals in absolute values;

LONGTENURE is defined as either *TENURE* > 10 (1 if audit firm tenure is longer than 10 years and 0 otherwise) or as *TENURE* > 20 (1 if audit firm tenure is longer than 20 years and 0 otherwise); *Z-*

SCORE: probability of bankruptcy as measured by Altman's Z-score indicator;

OPINION: 1 if the audit report is qualified and 0 otherwise;

SIZE: natural logarithm of total assets of the company;

AGE: natural logarithm of the number of years since the company was founded;

LEV: total liabilities divided by total assets;

LLOSS: 1 if the client reported a loss for the previous year and 0 otherwise;

CFFO: cash flow from operations on total assets;

GROWTH: change in assets from prior year;

PERFORM: earnings before tax over total assets; and
AUDFIRM: 1 if the company is audited by a Big 4 auditor and 0 otherwise.
*Statistical significance at the 10%. **Statistical significance at the 5%. ***Statistical significance at the 1%.

TABLE 10 Additional analysis: The relationship between audit firm tenure and audit quality as measured by earnings benchmarks in common-law and civil-law countries. Standard errors in parentheses

Panel A. Common-law subsample^a

Variable	Pred. sign	Just beats break even: Pr(<i>BEATBE</i> = 1)		Just beats last year's profits: Pr(<i>BEATLYEAR</i> = 1)		Just beats analysts' forecasts: Pr(<i>BEATANALYSTS</i> = 1)	
<i>TENURE</i> > 10	? (H1)	-1.646 (0.479)***		-1.838 (0.950)*		0.066 (0.355)	
<i>TENURE</i> > 20	? (H2)		-0.285 (0.433)		-2.123 (0.985)**		-0.138 (0.339)
<i>Z-SCORE</i>	-	-0.101 (0.273)***	-0.687 (0.226)***	-0.259 (0.106)**	-0.224 (0.097)**	0.035 (0.101)	0.007 (0.099)
<i>SIZE</i>	-	2.893 (1.124)***	1.406 (2.092)	-6.767 (2.311)***	-6.766 (2.610)***	-0.948 (0.814)	-0.078 (0.946)
<i>AGE</i>	-	1.024 (0.576)*	0.160 (0.568)	0.783 (0.937)	0.998 (1.286)	-0.569 (0.414)	-1.072 (0.796)
<i>MKTVAL</i>	+	-2.395 (1.205)**	-1.072 (2.254)	6.975 (2.527)***	7.225 (2.914)***	1.802 (0.955)*	2.153 (0.917)**
<i>Country effects</i>		YES	YES	YES	YES	YES	YES
<i>Industry effects</i>		YES	YES	YES	YES	YES	YES
<i>Year effects</i>		YES	YES	YES	YES	YES	YES
<i>Constant</i>		-3.700 (1.310)***	-2.690 (1.520)*	-6.192 (3.954)	-8.425 (5.243)	-3.208 (1.760)*	-4.456 (1.420)***
# of obs.		460	501	456	516	407	464
<i>Pseudo R-square</i>		0.266	0.206	0.284	0.294	0.110	0.100
Log likelihood		-88.21***	-96.59***	-39.65***	-40.24***	-229.60**	-260.70***

(Continues)

TABLE 10 (Continued)

Panel B. Civil-law subsample

Variable	Pred. sign	Just beats break even		Just beats last year's profits		Just beats analysts' forecasts	
<i>TENURE</i> > 10	? (H1)	0.060 (0.262)		0.393 (0.357)		0.254 (0.186)	
<i>TENURE</i> > 20	? (H2)	0.011 (0.253)		0.356 (0.397)		-0.058 (0.195)	
<i>Z-SCORE</i>	-	-0.227 (0.217)	-0.513 (0.267)*	-0.200 (0.109)*	-0.152 (0.104)	-0.027 (0.037)	-0.029 (0.038)
<i>SIZE</i>	-	3.184 (0.762)***	2.962 (0.766)***	-1.730 (0.853)**	-1.609 (0.813)**	-0.838 (0.373)**	-0.866 (0.355)**
<i>AGE</i>	-	-0.172 (0.441)	0.165 (0.397)	0.319 (0.491)	0.746 (0.504)	-0.213 (0.271)	-0.095 (0.270)
<i>MKTVAL</i>	+	-3.351 (0.743)***	-3.139 (0.730)***	2.729 (0.804)***	2.314 (0.768)***	1.428 (0.430)***	1.544 (0.417)***
<i>AUDFIRM</i>	-	-0.339 (0.531)	-0.383 (0.524)	-0.329 (0.706)	-0.532 (0.578)	-0.674 (0.422)	-0.861 (0.398)**
<i>Country effects</i>		YES	YES	YES	YES	YES	YES
<i>Industry effects</i>		YES	YES	YES	YES	YES	YES
<i>Year effects</i>		YES	YES	YES	YES	YES	YES
<i>Constant</i>		-1.863 (2.157)	-2.208 (2.200)	-23.215 (2.131)***	-22.748 (2.314)***	-2.978 (1.290)**	-3.222 (1.180)***
# of obs.		1,066	1,201	1,065	1,178	971	1,081
<i>Pseudo R-square</i>		0.234	0.253	0.196	0.189	0.047	0.052
Log likelihood		-284.10***	-311.95***	-112.66***	-130.75***	-595.45***	-656.22***

Note. Variables:

LONGTENURE is defined as either *TENURE* > 10 (1 if audit firm tenure is longer than 10 years and 0 otherwise) or as *TENURE* > 20 (1 if audit firm tenure is longer than 20 years and 0 otherwise); *Z-SCORE*: probability of bankruptcy as measured by Altman's Z-score indicator;

SIZE: natural logarithm of total assets of the company;

AGE: natural logarithm of the number of years since the company was founded;

MKTVAL: market value of equity; and

AUDFIRM: 1 if the company is audited by a Big 4 auditor and 0 otherwise.

^a*AUDFIRM* is not included in the estimations conducted with the common-law subsample because of perfect multicollinearity. *Statistical significance at the 10%. **Statistical significance at the 5%.

***Statistical significance at the 1%.

TABLE 11 Additional analysis: The relationship between audit firm tenure and the probability of accounting restatements in common-law and civil-law countries. Standard errors in parentheses

Variable	Pred. sign	Common-law subsample		Civil-law subsample
<i>TENURE</i> > 10	? (H1)	0.216 (0.294)		-0.125 (0.219)
<i>TENURE</i> > 20	? (H2)		-0.258 (0.354)	-0.017 (0.202)
<i>ACQUIS</i>	+	0.065 (0.042)	0.077 (0.050)	0.113 (0.041)***
<i>MKTVAL</i>	-	0.308 (0.343)	0.656 (0.325)**	0.309 (0.253)
<i>LEV</i>	+	2.933 (0.998)***	2.826 (1.001)***	1.315 (0.931)
<i>LOSS</i>	+	-0.459 (0.588)	-0.196 (0.644)	0.471 (0.381)
<i>FIN</i>	+	-0.188 (1.625)	0.183 (0.162)	0.585 (1.127)
<i>EBITDAEV</i>	+	2.346 (3.100)	2.629 (3.000)	0.590 (1.985)
<i>AUDFIRM</i>	-	-1.659 (0.915)*	-1.927 (0.841)**	-0.045 (0.533)
<i>Country effects</i>		YES	YES	YES
<i>Industry effects</i>		YES	YES	YES
<i>Year effects</i>		YES	YES	YES
<i>Constant</i>		-6.707 (1.731)***	-7.520 (1.703)***	-4.277 (1.601)***
# of obs.		448	499	1,052
<i>Pseudo R-square</i>		0.244	0.247	0.197
Log likelihood		-155.74***	-165.51***	-351.93***

Note. Variables:

LONGTENURE is defined as either *TENURE* > 10 (1 if audit firm tenure is longer than 10 years and 0 otherwise) or as *TENURE* > 20 (1 if audit firm tenure is longer than 20 years and 0 otherwise);

ACQUIS: 1 if the company acquired another firm during the fiscal year and 0 otherwise;

MKTVAL: market value of equity;

LEV: total liabilities divided by total assets;

LOSS: 1 if the client reported a loss in the current year and 0 otherwise;

FIN: finance raised by the company in the current year;

EBITDAEV: the inverse of the economic value of the company on EBITDA multiple; and

AUDFIRM: 1 if the company is audited by a Big 4 auditor and 0 otherwise.

