The interaction effects of firm and partner tenure on audit quality

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Abstract:

This paper investigates the impact of firm and partner tenure on audit quality, where audit quality is proxied by discretionary accruals. We study a sample of Spanish listed companies between 2005-2011 and address both the individual and the interaction effects of firm and partner tenure. Our study is motivated by the current debate, particularly intense at the EU level, on the impact of the auditor rotation regime on the quality of auditing. We find that, without considering the interaction effects, firm and partner tenure do not seem to play a relevant role as determinants of audit quality. Importantly, the interaction of firm and partner tenure shows stronger effects on audit quality than both forms of tenure separately considered. Finally, our analysis suggests that audit quality is maximized when medium firm and partner tenures interact. However, results for the interaction variables are sensitive to the accruals estimation method.

Keywords: audit quality; audit firm tenure; audit partner tenure; discretionary accruals; interaction effects.

1. Introduction

The potentially competing effects of tenure on audit quality are implicit in DeAngelo's (1981) definition of audit quality as the joint probability that an auditor will both detect and report material misstatements. Mautz and Sharaf (1961) suggest that lengthy auditor-client relationships may impair independence because the auditor's objectivity towards the client would diminish with the passage of time. Similarly, Hoyle (1978) contends that the audit program might become a mere routine in lengthy audit engagements. These concerns are summarised by Shockley (1981, p. 789), who notes that 'complacency, lack of innovation, less rigorous audit procedures and a developed confidence in the client may arise after a long association with the client'. The closeness of the relationship between auditors and clients is also recognized by the IFAC Code of Ethics as a threat to independence: '(….) a familiarity threat occurs when, by virtue of a close relationship with an assurance client, its directors, officers or employees, a firm or a member of the assurance team becomes too sympathetic to the client's interests' (IFAC Code of Ethics ED 2003, p. 18). However, the potential loss of independence associated with long audit tenures needs to be balanced against other arguments suggesting that longer tenures may also improve audit quality, because the competence of auditors is expected to increase with tenure. Accordingly, Myers et al. (2005) argue that financial reporting problems are more likely to occur early in the auditor-client relationship, when the auditor is less familiar with the client's business, processes and risks.

Nevertheless, regulators seem to pay more attention to the negative impact of long tenures on independence than to positive effects on competence, and thus many countries have implemented mandatory rotation rules, generally at the partner level, with the aim of improving audit quality. In the US, the Sarbanes-Oxley Act of 2002 (hereafter "SOX Act") accelerated the mandatory rotation of the audit partner. Similarly, member states of the EU were required to adapt national legislations to the 2006 revised 8th Company Law Directive. The directive established the mandatory rotation of the lead audit partner after a maximum seven-year period. However, the Green Paper on auditing (hereafter "Green Paper") issued by the European Commission (EC) posed serious concerns regarding the sufficiency of the new regulatory framework to adequately guarantee independence (EC 2010). Only four years after the release of the Green Paper, the Directive 2014/56/EU and the Regulation (EU) No 537/2014 (hereafter "2014 EU Regulation") imposed mandatory rotation at both firm and partner levels.

This paper aims to extend the available evidence on the impact of audit tenure on the quality of auditing. Firstly, we examine the individual effects of firm and partner tenure and afterwards

address the interaction effects of both forms of tenure. In line with prior studies (e.g. Myers et al. 2003, Lim and Tan 2010), audit quality is proxied by discretionary accruals. While discretionary accruals is the usual proxy for audit quality, it should be noted that, as pointed out by Francis (2004), the measurement of audit quality is a controversial issue and all proxies used in the literature are subject to potential limitations.[1] The empirical analysis is based on a sample of Spanish listed companies for the period 2005-2011. This paper is motivated by the current debate, particularly intense at the EU level, on the impact of the auditor rotation regime on audit quality. We aim to contribute to this debate.

While the impact of audit firm tenure on audit quality has been widely investigated, evidence at the partner level is relatively scarce and limited to just a few countries. More importantly, to the best of our knowledge, this is the first study to focus on the interaction effects of both forms of tenure. We consider this a meaningful issue, as the impact of partner tenure on audit quality may depend on firm tenure. We argue that one year of partner tenure will not necessarily involve the same implications for audit quality under, for example, one or twenty years of firm tenure. In the first case, the audit firm, audit team and lead partner will be completely unfamiliar with the new client. Yet, in the second case, although the client is new for the partner, it is well known by the audit firm (and probably also by part of the audit team). In this latter case, part of the client knowledge will be transferred to the new partner (Ferguson, et al. 2003). Thus, although partner tenure is one year in both cases, the implications for audit quality would likely be different.[2] Moreover, the examination of interaction effects could reveal hidden effects which would never come out whether both forms of tenure were studied separately.

It should be noted that prior research on firm and partner tenure has not consistently reported strong results on such relationships (e.g. Chi and Huang 2005, Carey and Simnett 2006, Manry et al. 2008, Chi et al. 2009). However, as these studies have not analysed the interaction effects of both forms of tenure, the conclusion that audit tenure does not affect audit quality may be too hasty. This would be the case, for example, if the effects of both forms of tenure were weak but in the same direction.[3] In such a situation, when the two weak effects are added

[1] See Francis (2004) and Defond and Francis (2005) for a detailed discussion of the shortcomings of discretionary accruals as a measure of audit quality, and Campa and Donnelly (2016) for a new alternative measure of audit quality.
[2] A similar explanation can be used to justify that the impact of partner tenure on the "independence" dimension of audit quality will likely be conditioned by audit firm tenure.
[3] Such behaviour could be expected according to the competence-independence framework used in the investigation of audit quality.

through the interaction variables, results may become significant, indicating that audit tenure is sometimes relevant. Accordingly, the analysis of the interaction effects may provide a clearer and more complete picture of the influence of audit tenure on audit quality and, therefore, this constitutes a natural extension of prior research.[4]

DeFond and Francis (2005) encouraged the study of audit quality at the individual auditor level in those markets where data are available. Two characteristics of the Spanish audit market might enhance the interest of this study at the EU level. Firstly, the potentially negative effects of long tenures on audit quality may be more clearly observed in low litigation risk countries such as Spain (Ruiz-Barbadillo et al. 2004), because incentives to maintain independence are weaker in these countries compared to high litigation settings (Hope and Langli 2010). Secondly, because of the concern of EU regulators about the potentially negative implications of extremely long audit firm tenures,[5] countries such as Spain, characterized by relatively long firm tenures, provide an interesting research setting. On the contrary, the short firm tenures reported in some prior studies[6] may make it difficult to adequately address the impact of long firm tenure on audit quality, or even the effects of long partner tenures under long firm tenures. Finally, it should also be noted that unlike most prior research at the EU level, our evidence is obtained under a mandatory partner rotation rule.[7] As partner rotation is currently mandatory in the EU, it seems timely to update the available evidence to this regulatory framework.

We do not observe significant effects of firm or partner tenure on audit quality, when both forms of tenure are examined individually. However, for the interaction variables we find some significant effects in the predicted direction. Moreover, we report some evidence that audit quality is maximized when medium firm tenure interacts with medium partner tenure. These results suggest it is necessary to address the interaction of firm and partner tenure when investigating the influence of tenure on audit quality. However, it should also be noted that our

[4] In a similar way as the inclusion of a firm tenure variable in the analysis of partner tenure allows to better understand the impact of partner tenure on audit quality. When audit firm tenure is not included in the model, the partner tenure variable will also be capturing the effects of the omitted firm tenure variable. Thus, results may be misleading.

[5] 'Situations where a company has appointed the same audit firm for decades seem incompatible with desirable standards of independence'. (EC 2010, p. 11).

[6] For example, the average audit firm tenure is 5.7 years in Chi and Huang (2005), 6.9 years in Chen et al. (2008) and 6.9 years in Lim and Tan (2010).

[7] As an exception, Hohenfels (2016) investigates the impact of audit firm tenure on audit quality under mandatory partner rotation in the German audit market. However, the author does not use discretionary accruals but earnings response coefficients as the proxy for earnings quality.

results on the importance of the interaction effects are sensitive to the accruals estimation procedure.

This paper is organized as follows. Section two summarises recent policy developments on auditor rotation. Section three outlines a review of the literature and introduces the development of our hypotheses. In section four, the research design is presented, followed by the discussion of results in section five. Finally, conclusions and limitations of our research, as well as the implications of our findings, are drawn.

2. The regulation of audit firm and partner rotation

Many countries have enacted mandatory rotation rules at the partner level. Following the SOX Act, the US accelerated mandatory partner rotation from seven to five years and also extended the mandated cooling-off period before the partner can return to the engagement from two to five years. Furthermore, the SOX Act also extended such rotation requirements to the engagement quality review partner. Similarly, the 2006 revised 8th Company Law Directive established a maximum tenure of seven years for lead audit partners in the EU, although member states could impose a shorter maximum tenure. Other important economic jurisdictions such as China, Japan or Australia have also enacted mandatory rotation rules at the partner level.[8]

Unlike the regulation of partner rotation, just a small number of countries have established the mandatory rotation of the audit firm in the past (Ewelt-Knauer et al. 2013). However, shortly after the approval of the 2006 Directive, the sufficiency of the new regulatory framework to guarantee independence was put into question. According to the Green Paper, one of the main threats to the effective independence of external auditors was that mandatory rotation had been established only at the partner level. As stated by the Green Paper: 'Even when 'key audit partners' are regularly rotated as currently mandated by the Directive, the threat of familiarity persists. In this context, the mandatory rotation of audit firms –not just of audit partners– should be considered'. (EC 2010, p. 11). Following this concern, in May 2014 the EU Regulation establishing the mandatory rotation of the audit firm for public interest entities[9] was published in the Official Journal of the EU. The new regulation establishes that neither the initial

[8] Ewelt-Knauer et al. (2013) provide a comprehensive discussion on the different auditor rotation regimes.
[9] Public interest entities 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 public interest entities, for instance because of the nature of business, size, or number of employees. The 2014 EU Regulation will affect at least the 142 listed companies on the Spanish Stock Exchange (CNMV 2013).

engagement of a particular statutory auditor or audit firm, nor this in combination with any renewed engagements shall exceed a maximum duration of ten years. Nevertheless, member states may extend the initial term to a maximum of 20 years if a public tendering process for the statutory audit is conducted and takes effect upon the expiry of the maximum duration period, and to 24 years where, after the expiry of the maximum duration more than one statutory auditor or audit firm is simultaneously engaged.

In Spain, the *Ley de Auditoría de Cuentas* (Audit Law) was enforced in 1988 as a direct response to the revised 8th Company Law Directive. The Audit Law established a three-to-nine-year contract with the audit firm and, in order to strengthen independence, the mandatory rotation of the audit firm at the end of the initial contract. Nevertheless, following a legal reform in 1995, the mandatory rotation of the audit firm was abolished and, in fact, never applied.[10] After this reform, auditors could be engaged for the same three-to-nine-year initial period but, after the expiration of the initial contract, the renewal of the engagement could be done on a year by year basis. Similar to the SOX Act in the US, the *Ley Financiera* (Financial Law) was passed in 2002 as a direct reaction to the corporate financial scandals of the nineties. During the Law's approval process an amendment limiting the duration of the engagement with the audit firm to a maximum of 12 years was added. Besides, a minimum three-year cooling-off period was required to re-hire the audit firm. However, as the 1995 reform revoking the mandatory rotation of the audit firm, strong criticism from the auditing profession led to the eventual withdrawal of the amendment. A maximum seven-year tenure was finally imposed to the audit team, without, however, affecting the audit firm. The maximum tenure of seven years for the lead partner was maintained by the 2011 reform of the Audit Law, however, without requiring the rotation of the whole audit team. This reform also changed the tacit year by year renewal of the initial contract with the audit firm for tacit reappointments for periods of three years. Finally, following the 2014 EU Regulation, a new Audit Law was passed in 2015. The new Law enacts a maximum tenure of five years with the lead partner and of ten years with the audit firm. However, in the latter case the period may be further extended for four more years, provided that a second audit firm is contracted to perform joint audits during this period. Table 1 summarises the regulatory changes of firm and partner tenure in the Spanish audit market.

[10] As the Spanish Audit Law enacted in 1988 imposed the mandatory rotation of the audit firm after nine years of tenure and being 1988 the first year under the mandatory rotation rule, 1997 would have been the first year in which audit firms would have been compelled to rotate. However, the enactment of the Spanish Law 12/1995 in 1995 actually abolished the mandatory rotation.

Insert Table 1 around here

3. Review of the literature and hypothesis development

Following DeAngelo's (1981) definition of audit quality, the ability to detect misstatements will be greater when the auditor has deeper client knowledge and, undoubtedly, this knowledge increases with tenure through a "learning curve effect" (e.g. Knapp 1991, Johnson et al. 2002). This is also the view of the Public Company Accounting Oversight Board (PCAOB) when states that 'audit quality may suffer in the early years of an engagement' (PCAOB 2011, p.3). However, the auditor's willingness to report the detected misstatements could also be lower in longer relationships, due to the so-called "familiarity effect". Hence, the Independence Standards Board (ISB 2000) identifies familiarity with the client as a major threat to independence. Supporting this view, the results of the analysis proposed by Bamber and Iyer (2007) to explain auditor-client relationships suggest that identification with a client is more likely to lead to acquiescence to the client preferred position.

According to the former discussion, the final impact of tenure on audit quality will depend on which effect prevails. From the perspective of psychology, learning theorists advocate that performance generally improves as a power function of practice (e.g. Glaser and Bassok 1989, Ritter and Schooler 2001). That means rapid improvements in performance in the early stages of practice, though diminishing returns associated with additional practice. Therefore, we would expect a learning curve where the positive effects of tenure on competence will weaken after the initial years of engagement. Conversely, the familiarity effect will likely occur more gradually through the auditor-client relationship. Long tenures might weaken auditor objectivity (Mautz and Sharaf 1961), strengthen confidence in the client (Shockley 1981) and, as a result, undermine audit quality. However, it takes time to build up confidence and to identify with the client. This is clearly stated by Mautz and Sharaf (1961, p. 208): 'the greatest threat to [their] independence is a slow, gradual, almost casual erosion of [their] honest disinterestedness'. Therefore, the joint effect of a relatively steep learning curve in the first years of engagement and a slow and gradual erosion of independence with tenure suggests that audit quality is maximized in medium tenures.

Extant empirical evidence generally supports a positive effect of audit firm tenure on audit quality as measured by the quality of earnings. Hence, a first set of papers finds evidence that discretionary accruals are negatively and significantly related to tenure (e.g. Johnson et al. 2002, Chung and Kallapur 2003, Myers et al. 2003, Gul et al. 2007 and 2009, Lim and Tan 2010). Some

other studies have shown a non-monotonic effect of tenure on earnings quality, since discretionary accruals increase during the early years of tenure with the audit firm, but decrease afterwards (Davis et al. 2009). Although the aforementioned papers investigate the US audit market, the evidence available for other countries also suggests a positive effect of tenure on audit quality. Hence, for the Taiwanese market, Chi and Huang (2005) and Chen et al. (2008) conclude that discretionary accruals significantly decrease with tenure. Similarly, available evidence for the French (Piot and Janin 2007) and Australian (Fargher et al. 2008) markets also provides some support for an increase of earnings quality with tenure. Evidence for Spain shows either negative (Monterey and Sanchez 2007) or non-monotonic (Jara and Lopez 2007) effects of tenure on discretionary accruals. In the same way, studies using other proxies of audit quality suggest a positive (or neutral) impact of tenure on audit quality, as measured by material misstatements (St. Pierre and Anderson 1984, Carcello and Nagy 2004), going-concern modified opinions (Louwers 1998, Geiger and Raghunandan 2002, Vanstraelen 2002, Knechel and Vanstraelen 2007) or earnings restatements (Stanley and DeZoort 2007).

After the theoretical analysis of the potential positive and negative effects of tenure on audit quality and the review of the available evidence, we hypothesize:

> *Hypothesis # 1* (H1): the maximum level of audit quality is achieved under medium audit firm tenure.

The "experience versus familiarity" framework used to develop hypothesis H1 can also be used to analyse the implications of partner tenure. As a matter of fact, as both "learning effect" and "familiarity effect" are largely intrinsic to the audit partner, this theoretical framework seems particularly suitable to analyse the effects of partner tenure. Hence, following the previous discussion on the implications of firm tenure, audit quality should be maximized in medium partner tenures. As we discussed in the introductory section, only a few papers have addressed the effects of partner tenure on audit quality. The available evidence is limited to the US (Manry et al. 2008), Australia (Carey and Simnett 2006, Fargher et al. 2008) and Taiwan (Chi and Huang 2005, Chen et al. 2008, Chi et al. 2011).

Manry et al. (2008) report that discretionary accruals are significantly and negatively associated with the lead audit partner's tenure, thus suggesting a positive impact of partner tenure on audit quality. However, statistical significance was weak and reported only for small clients with very long tenures.

Extant research for the Australian audit market suggests a negative effect of partner tenure on audit quality. Hence, Fargher et al. (2008) observe lower managers' accounting discretion in the initial years of tenure of a new audit partner of the same firm. Moreover, although Carey and Simnett (2006) do not find significant effects of tenure on discretionary accruals, they report a lower proportion of clients missing breakeven for long partner tenure observations, thus suggesting a greater ability to manage earnings in order to report a profit, during later years of tenure.

The available evidence for Taiwan generally shows a positive impact of partner tenure on audit quality. Hence, Chi and Huang (2005) conclude that earnings quality initially increases with tenure but then decreases, with five years being the cut-off point. However, after including in the model audit firm tenure the coefficients on partner tenure and squared partner tenure become both non-significant. Later on, Chen et al. (2008) and Chi et al. (2011) find higher earnings quality in longer partner tenures. This result was reported after controlling for audit firm tenure.

From a different approach, because their primary interest is not in the effects of partner tenure but in the related issue of the implications of mandatory partner rotation, Chi et al. (2009) conclude that partner rotation has not enhanced audit quality in China. The authors do not observe different levels of earnings quality among firms subject to mandatory partner rotation, when compared to both firms who rotate partners voluntarily and firms who do not rotate partners. However, more recent evidence for China reported by Lennox et al. (2014) has led to the opposite conclusion, as they find that the mandatory rotation of engagement partners has resulted in higher audit quality during the period surrounding rotation. Finally, Daugherty et al. (2012) examine audit partners' perceptions of mandatory partner rotation and cooling-off periods in the US after the SOX Act. They conclude that partner rotation provisions have had an indirect negative impact on audit quality.

Therefore, after the review of the theoretical literature and the available empirical evidence, we pose our second hypothesis as follows:

> *Hypothesis # 2* (H2)*:* the maximum level of audit quality is achieved under medium audit partner tenure.

While both hypotheses H1 and H2 address the individual effects of firm and partner tenure on audit quality, the main contribution of this paper is in the study of the interaction effects of both forms of tenure. We analyse seven possible combinations of three firm tenure possibilities

(short, medium and long) with three partner tenure categories (short, medium and long).[11] According to the discussion in the introductory section, the study of interaction effects aims to provide a better knowledge of how audit quality behaves across the different combinations of firm and partner tenure. Consistent with hypotheses H1 and H2, if we expect that audit quality is maximized in medium firm tenure (H1) and medium partner tenure (H2), we would also expect that audit quality is maximized when medium firm tenure interacts with medium partner tenure. Therefore, we pose our third hypothesis as follows:

> *Hypothesis # 3* (H3)*:* the maximum level of audit quality is achieved under medium firm and partner tenure.

4. Model and sample selection

4.1. Model

We follow prior studies (e.g. Myers et al. 2003, Lim and Tan 2010) and measure audit quality by discretionary accruals. Thus, we assume that high-quality audits should lead to higher earnings quality by reducing the management of earnings through discretionary accruals. Discretionary accruals are computed using the Jones (1991) model, as modified by Dechow et al. (1995):

$$TA_t/A_{t-1} = \alpha_1(1/A_{t-1}) + \alpha_2((\Delta REV_t - \Delta REC_t)/A_{t-1})) + \alpha_3(PPE_t/A_{t-1}) + \varepsilon_t \qquad (1)$$

where:

TA_t is total accruals in year t;
ΔREV_t is revenues in year t less revenues in year t-1;
ΔREC_t is net receivables in year t less net receivables in year t-1.
PPE_t is gross property plant and equipment at the end of year t;
A_{t-1} is total assets at the end of year t-1;
α_1, α_2 and α_3 are the parameters to be estimated; and
ε_t is the error term.

Francis and Wang (2008) point out the shortcomings of the usual approach of cross-sectional estimations of Jones (1991) model in international settings because of the small number of firm-year observations in many industries. Therefore, they estimate current discretionary accruals as the difference between total accruals and predicted accruals, the latter calculated according to

[11] Given the definitions of short and long tenures used in this paper, and considering that whenever a change of audit firm has occurred in our sample it has also involved a change of partner, there are no observations in the following combinations in our sample: short firm with long partner tenure, and short firm with medium partner tenure.

the firm's previous year ratios. This approach allows us to overcome the small number of observations per industry, though it estimates discretionary accruals without taking advantage of any available information about the situation of other firms in the same industry, by using the same firm as its own control. Alternatively, Mora and Sabater (2008) overcome the problem of too few observations per industry, by computing discretionary accruals through panel data estimations of Jones model at the industry level with firm specific fixed effects and year specific dummy variables. Even though there is rarely one "correct" model to estimate discretionary accruals, and the different approaches are subject to one or other kind of limitation, following Mora and Sabater (2008) we perform panel data estimations of Jones model at the industry level. We base our decision on the fact that this approach takes advantage of the current situation of the company's industry when computing discretionary accruals.

To test hypotheses H1 and H2 developed in the previous section, in Equation *(2)* we propose a multivariate analysis with our experimental variables for firm and partner tenure and the control variables used in previous studies (e.g. Myers et al. 2003, Carey and Simnett 2006).

$$Accruals = f\,(SF, LF, SP, LP, controls, year\ dummies, industry\ dummies) \qquad (2)$$

Additionally, in order to test our hypothesis H3, in Equation *(3)* we include the interaction effects of firm and partner tenure:

$$Accruals = f\,(SFSP, MFSP, MFLP, LFSP, LFMP, LFLP, controls, year\ dummies, industry\ dummies) \qquad (3)$$

where:

Dependent Variable (*Accruals*):

ABSDISAC: the absolute value of discretionary accruals.

We measure audit quality by the quality of earnings as proxied by discretionary accruals in absolute values. However, to check the robustness of the results, we also study the following measures of accruals:

DISAC: signed discretionary accruals;

IIDISAC: income increasing discretionary accruals;

IDDISAC: income decreasing discretionary accruals;

EXABSDISAC: extreme discretionary accruals in absolute values. A dichotomous variable, which takes the value of 1 for those observations in the highest decile of *ABSDISAC* and 0 otherwise;

EXIIDISAC: extreme income increasing discretionary accruals. A dichotomous variable, which takes the value of 1 for those observations in the highest decile of *IIDISAC* and 0 otherwise.

Experimental variables are defined in Table 2 (panel A). The default categories for the experimental variables in Equation *(2)* are medium firm tenure (*MF:* observations with firm tenures between four and ten years) and medium partner tenure (*MP:* observations with partner tenures of four or five years), while in Equation *(3)* they are medium firm and partner tenure (*MFMP:* observations with firm tenures between four and ten years and four or five years of partner tenure).[12]

The cut-off points to define short, medium and long firm and partner tenures have been chosen according to three criteria: economic significance for regulators and policy makers; the range in the continuous measures of firm and partner tenure in our sample; and the achievement of a minimum number of observations in each category. Regarding the first point, we chose 11 years as the minimum value to define a long-tenure relationship with the audit firm because the new 2014 EU Regulation states a maximum audit firm tenure of ten years. Similarly, we choose six years to define a long-term engagement with the audit partner because many countries (for example, the US, the UK or Spain after the 2015 Audit Law) have established a maximum tenure of five years with the lead audit partner. According to hypotheses H1, H2 and H3, we predict positive and statistically significant coefficients for all experimental variables in Equations *(2)* and *(3)*.

Insert Table 2 around here

Next, we justify our control variables, defined in Table 2 (panel B), following prior research (e.g. Frankel et al. 2002, Johnson et al. 2002, Myers et al. 2003, Carey and Simnett 2006). *PBANK* accounts for the probability of bankruptcy based on Zmijewski (1984). We expect that a higher risk of bankruptcy is associated with a lower quality of earnings. The opinion of the audit report *(OPINION)* controls for an expected lower earnings quality for firms with qualified opinions

[12] The Spanish branch of Arthur Andersen joined Deloitte in 2002, immediately after the fall of Arthur Andersen. Thus, Deloitte's former Arthur Andersen clients did not change either the audit partner or the national local audit firm. Accordingly, in order to compute the number of years audited by the same audit firm, we consider that Arthur Andersen clients who moved to Deloitte in 2002 after the fall of Arthur Andersen did not change their audit firm.

(Carey and Simnett 2006). According to Watts and Zimmerman (1986), large firms are expected to show lower levels of accruals. Thus, with *SIZE* we attempt to capture the effects of the size of the firm on accruals. Since accruals are expected to differ across the firm's life cycle (Anthony and Ramesh 1992, Dechow et al. 2001, Myers et al. 2003), we include the variable *AGE*. According to Becker et al. (1998), managers of highly leveraged firms (*LEV*) have stronger incentives to use discretionary accruals in order to manipulate earnings so as to avoid debt covenant violation. Since firms experiencing losses are expected to be more prone to manipulate earnings (Carey and Simnett 2006), we include *LLOSS* as a control variable. Dechow et al. (1995) point out that abnormal accruals models fail to completely extract non-discretionary accruals that are correlated with firm performance (*PERFORM*). Thus, income increasing (decreasing) accruals will be overestimated in high (low) earnings years.[13] Following Myers et al. (2003), *CFFO* is included because firms with higher cash flow from operations are more likely to perform better (Frankel et al. 2002), and also because accruals and cash flows are negatively correlated on average (e.g. Dechow 1994, Sloan 1996). The inclusion of *GROWTH* as a control variable is consistent with prior research showing a positive relationship between accruals and growth opportunities (e.g. Myers et al. 2003, Carey and Simnett 2006). Thus, we predict a positive coefficient on *GROWTH* in all the estimations, with the only exception of the model with income-decreasing accruals, where we expect a negative coefficient. Finally, *AUDFIRM* attempts to capture the fact that large audit firms are more conservative and, therefore, more willing to limit discretionary accruals (e.g. Becker et al. 1998, Francis et al. 1999).[14]

4.2. Sample selection

We perform the empirical analysis on the basis of non-financial firms quoted in the Spanish Stock Exchange (*Sistema de Interconexión Bursátil Español*) during the 2005-2011 research period. Complete information for all variables in the models is only available from year 2004 onwards. However, as some variables require one year of lagged information, the research period starts in 2005. On the other hand, 2011 is the latest year for which information was available in our database. We trace back firm and partner tenure for each firm in our sample. Information about audit firm tenure is hand-collected from corporate governance reports, while the opinion of the audit report and the name of audit partners are obtained from financial

[13] *PERFORM* is expected to show a positive effect (and positive sign) on income increasing accruals and a negative effect (and positive sign) on income decreasing accruals. Thus, similar to Carey and Simnett (2006) we do not predict the sign of the effect in the model with accruals in absolute values.
[14] However, Carey and Simnett (2006), Chen et al. (2008) and Chi et al. (2009) do not observe a significant effect of auditor type on accruals and Myers et al. (2003) report mixed results. All these studies were conducted under voluntary audit firm rotation regulations.

statements, available at the *Comisión Nacional del Mercado de Valores* (CNMV) website. Finally, we collect data for control variables from Thomson Reuters Knowledge. Our sample consists of 102 firms and 680 firm-year observations.[15]

Table 3 presents descriptive statistics for the control variables used in the study. Audit firm tenure has an average value of ten years with a maximum of 25 years. As discussed in the introduction section, these values are relatively high by international standards. On the other hand, average partner tenure is three years, well below the maximum legal tenure of seven years during our research period.[16] Other interesting information would be that 14 percent of the audit reports have a qualified opinion and 19 percent of the firms report losses. The table also reveals extreme concentration (higher than 90 percent) of the Spanish audit market by Big 4 firms. This market share is much higher than in Australia (64 percent in Carey and Simnett 2006) or even in Taiwan (80 percent in Chi and Huang 2005). The examination of the correlation matrix (not reported) confirms the expected high correlations of *PBANK* with *LEV* (0.71) and *PERFORM* (-0.48). Apart from these cases, there are no other correlations greater than +/- 0.40.

Insert Table 3 around here

Table 4 presents descriptive statistics for discretionary accruals in absolute values across categories of auditor tenure. We report mean and median values of *ABSDISAC* for firms under short (*SF*), medium (*MF*) and long (*LF*) firm tenure, and under short (*SP*), medium (*MP*) and long (*LP*) partner tenure. The table also provides the same information for each of the seven combinations resulting from the interaction between firm and partner tenure. As it can be seen, discretionary accruals remain rather stable across tenure groups. Both the *t*-test and the Mann-Whitney test support this view, as differences in mean and median values are not statistically significant at the usual levels.

Insert Table 4 around here

5. Empirical results

Given the panel structure of our dataset, we perform the Breusch-Pagan Lagrange multiplier test, which suggests the use of panel data estimation methods over ordinary least squares

[15] Since some firms in the sample entered the Spanish stock market after 2005, the final number of firm-year observations is lower than 714 (102 firms over seven years).
[16] Although, after the approval of the Financial Law in 2002 the maximum partner tenure was established in seven years, one company in our sample showed eight years of partner tenure in 2008 and nine years in 2009.

regression in Equations *(2)* and *(3)*. Afterwards, the Hausman test supports the use of random-effects estimation in both equations. As expected, given the nature of the control variables, the modified Wald test indicates heteroscedasticity in the data. Therefore, we perform panel data estimations with random effects and robust standard errors.

Table 5 presents the results of the estimations of Equation *(2)*. Column A shows the results of the estimation conducted with *ABSDISAC* as the dependent variable. The estimation is globally significant (*P-value* < 0.00) and the proposed model shows high explanatory power in predicting discretionary accruals, for example, if compared to Carey and Simnett (2006) (4%), Manry et al. (2008) (19%) or Chen et al. (2008) (20%). Finally, after estimation we calculate variance inflation factors (not reported) in order to assess multicollinearity problems. The rather low values of these factors (average value of 1.72 with a maximum of 2.80) do not suggest serious multicollinearity problems.

Insert Table 5 around here

Regarding the experimental variables in the model, the main finding in Table 5 (column A) is the lack of significant effects of either firm or partner tenure on audit quality. Hence, results support neither hypothesis H1 nor hypothesis H2, as we do not observe higher levels of audit quality under medium firm or partner tenures, at the usual levels of significance. After the estimation of the model, we perform the Wald test to address whether one form of tenure dominates over the other. The results of the test do not support the dominance of any form of tenure. Our results for audit firm tenure would contradict prior evidence for the Spanish audit market reported by Monterrey and Sanchez (2007), who find a negative effect of tenure on discretionary accruals, and by Jara and Lopez (2007), who observe a non-monotonic effect. On the other hand, the non-significant effect of partner tenure on discretionary accruals has also been found by Carey and Simnett (2006) for Australia and by Chi and Huang (2005) for Taiwan, in the latter case after controlling for audit firm tenure.

Results of the additional analyses conducted with discretionary accruals defined as *DISAC*, *IIDISAC, IDDISAC, EXABSDISAC* and *EXIIDISAC* are shown in columns B, C, D, E and F, respectively. They strongly support the results of the main analysis for audit firm tenure in column A, as the lack of a significant effect for *SF* and *LF* is also observed in each additional analysis. The only exception is *SF* in the model with signed discretionary accruals (*DISAC*), which shows marginal significance (*P-value* < 0.10) with a negative sign. Therefore, these additional analyses reinforce the lack of support for hypothesis H1 found in the main analysis. Focusing on partner tenure,

significant results are reported for both *SP* and *LP* in the estimations with *DISAC* and *IIDISAC*, and for *SP* in the model with *EXIIDISAC*, in all cases with the predicted sign. Overall, this suggests a moderate non-monotonic effect of partner tenure on audit quality. Although the results of the main analysis do not support hypothesis H2, it should be noted that whenever a significant effect is reported for partner tenure in any of the six estimations performed, it is always in the predicted direction, consistent with the hypothesis.

Results for control variables in Table 5 (column A) show that, without exception, all the significant effects reported are in the predicted direction. Thus, firms with poor financial health (*PBANK* and *LLOSS*) present significantly higher levels of *ABSDISAC*. Conversely, large firms show lower *ABSDISAC* (*P-value* < 0.10). Also as expected, *ABSDISAC* depends positively on *GROWTH* and negatively on *CFFO*. Similar to Carey and Simnett (2006), we do not predict the sign for *PERFORM*. Results indicate that performance is positively associated with discretionary accruals. However, we fail to find significant results for *OPINION*, *AGE*, *LEV* or *AUDFIRM*. In the additional analyses (columns B, C, D, E and F), results for control variables reveal that *PBANK* does not significantly affect either *IDDISAC* or extreme accruals. While it is rather plausible that firms in poor financial conditions will more likely manage earnings through income increasing than income decreasing accruals, it is more difficult to understand the lack of significance of *PBANK* in the models with extreme accruals. The opinion of the audit report (*OPINION*) has a modest effect on discretionary accruals, being statistically significant only in the model with *EXABSDISAC*, with the predicted positive sign. As Carey and Simnett (2006) and Chen et al. (2008), our results suggest that audit quality does not depend on the type of audit firm. However, in our study, the lack of significance of *AUDFIRM* may also be explained by the extreme level of concentration of the Spanish audit market by Big-4 firms.

We perform several additional tests to check the robustness of the findings. Firstly, we control for audit firm changes, as the new audit firm might require important adjustments in the client's financial statements, leading to abnormal levels of accruals without necessarily indicating lower audit quality. Hence, we reestimate Equation *(2)* after the removal of 44 firm-year observations of firms that changed their audit firm in the current year. Results (not reported) do not show any significant differences compared with those in Table 5. Secondly, we check the robustness of results to the macroeconomic environment. Given the higher auditor litigation risk during economic downturns, the impact of tenure on audit quality might be conditioned to macroeconomic conditions. To conduct this analysis, we perform separate estimations of Equation *(2)* for the subperiods: 2005-2007 (economic growth) and 2008-2011 (economic downturn). Results (not reported) show no major differences across subperiods.

Table 6 shows the results of the estimation of the model with interaction effects given by Equation *(3).* The examination of the coefficients and statistical significance of experimental variables allows us to test for hypothesis H3. According to this hypothesis we expect positive sign and significant results for all the experimental variables in the model. This would indicate a lower audit quality for each alternative category, if compared with the medium firm and partner tenure (*MFMP*) default group. Focusing on the results of the estimation with discretionary accruals in absolute values (column A), all the experimental variables present positive coefficients and, with the only exception of *MFLP*, these coefficients are statistically significant or marginally significant. The positive coefficient on *MFLP* indicates higher levels of discretionary accruals in the *MFLP* group compared to the default group*,* although this result is not statistically significant. Therefore, audit quality is significantly lower (*P-value* < 0.10) in five of the six alternative combinations to *MFMP* and lower, though non-significant, in the sixth combination. Overall, these results provide support for hypothesis H3 stating that audit quality is maximized when medium firm and partner tenure interact.

Insert Table 6 around here

As in Table 5, results of the additional analyses with discretionary accruals defined as *DISAC, IIDISAC, IDDISAC, EXABSDISAC* and *EXIIDISAC* are shown in columns B, C, D, E and F, respectively. In general, results for the most usual measures of discretionary accruals (*ABSDISAC, DISAC* and *IIDISAC*) provide support for our hypothesis H3. Hence, we report significant or marginally significant results for 12 of the 18 experimental variables and, with no exception, with the predicted sign. Among these cases we find the variable *MFLP,* non-significant in the main model with *ABSDISAC,* but marginally significant in the model with *IIDISAC.* Therefore, our former conclusion from the main analysis regarding the overall support for hypothesis H3, is reinforced after these additional analyses. According to the aim of this paper, it should be noted that the significant effects of tenure on audit quality shown in Table 6 had remained largely undetected in the study of individual effects in Table 5. Therefore, the comparison of column A in Tables 5 and 6 stresses the importance of studying the interaction effects of firm and partner tenure in order to get a more complete picture of the impact of tenure on audit quality.

In the former section we argue that, due to data limitations, we do not use the standard cross-sectional industry estimations of Jones (1991) model to calculate discretionary accruals, but as Mora and Sabater (2008) we perform panel data estimations at the industry level. However, Francis and Wang (2008) propose an alternative method to overcome the data limitation problem, based on the calculation of predicted accruals from firms' previous year

data, and not through estimation. We justify the choice of Mora and Sabater (2008) approach, because it allows us to take advantage of intra-industry information for the calculation of discretionary accruals. Nevertheless, to check the sensitivity of results to the accruals estimation method, we reestimate Equations *(2)* and *(3)*, with *ABSDISAC* calculated as in Francis and Wang (2008). Results of the new estimations (not reported) do not indicate significant effects for any of the experimental variables. These results support those displayed in Table 5 showing no significant effects of firm or partner tenure when they are individually considered, but they are not consistent with Table 6, where we observe significant effects for most of the interaction variables.[17] Therefore, the evidence reported in Table 6 on the impact of the interaction of firm and partner tenure on audit quality needs to be carefully taken as it is sensitive to the approach used to calculate discretionary accruals.

In the introduction section we refer to the relatively long audit firm tenures in Spain by international standards. As an example, almost 20 percent of our sample show audit firm tenures of 18 years or longer. These rather long tenures in the Spanish audit market provide an interesting setting for the study of the implications of extremely long audit engagements. Hence, to address this issue we estimate Equation *(4)*:

$$Accruals = f\,(EXFSP, EXFLP, controls, year\ dummies, industry\ dummies) \qquad (4)$$

The experimental variables are:

EXFSP: Extremely long audit firm tenure (18 years or more) and short partner tenure (four years or less).

EXFLP: Extremely long audit firm tenure (18 years or more) and long partner tenure (more than four years).

We choose a cut-off point of 18 years because it defines the quintile of firms with the longest tenures. Moreover, in order to guarantee a minimum number of firm-year observations in each tenure group, we consider only two groups of partner tenure in this analysis.

Insert Table 7 around here

[17] It should be noted that the explanatory power of the model with the new definition of discretionary accruals drops from 52 to 21 percent, with only three control variables (*PBANK, SIZE* and *AGE*) showing significant effects, none of them at the one percent level. This would further support the use of Mora and Sabater (2008) approach in our study.

Table 7 presents the results of the estimations of Equation *(4)*. For the model with *ABSDISAC* (column A) we do not observe significant results for either *EXFSP* or *EXFLP.* Thus, we conclude that the longest audit firm tenures in the Spanish audit market do not seem to be a problem in terms of audit quality, even when they interact with long partner tenures. The additional analyses (columns B, C, D, E and F) provide reinforced support for this conclusion. Hence, we find significant results only for *EXFLP* (in the model with *IIDISAC*) and marginally significant results for *EXFSP* (in the model with *EXIIDISAC*). As expected, results for control variables do not differ much from those in Tables 5 and 6, the main difference being that *OPINION* becomes marginally significant in the main model, with the predicted positive sign.

We check the robustness of these findings to other definitions of long tenures (results not reported). Hence, for extreme tenures defined as 20 years or longer, results for the main model with *ABSDISAC* continue to show lack of significance for *EXFSP* or *EXFLP*, and the same holds if extreme tenures are defined as 15 years or longer. Moreover, results for *EXFLP* in the model with *IIDISAC* and for *EXFSP* in the model with *EXIIDISAC* are no longer significant in any of the new estimations. This check therefore reinforces our former conclusion that the rather long audit firm tenures in Spain do not seem to involve particularly negative implications for audit quality.

6. Concluding remarks

Despite mandatory partner rotation rules currently enforced in many jurisdictions, regulators and policy-makers are still concerned about the potentially negative impact of long audit tenures on audit quality. As a clear example of this concern, the 2014 EU Regulation has established, among other things, the mandatory rotation of the audit firm in the EU. Not surprisingly, the new regulation has generated considerable controversy in the audit profession and has encouraged further research on the impact of auditor tenure on audit quality.

The results of this paper lead us to draw several conclusions. Firstly, without considering interaction effects, firm and partner tenure seem to play a very modest role as determinants of audit quality. This would be in line with some of the evidence available for Spain as well as for other countries. Secondly, the impact of partner tenure, although weak, seems to be stronger than the effects of audit firm tenure. Thirdly and most importantly, as it is directly related with the aim of this paper, the interaction effects of firm and partner tenure on audit quality seem to be stronger than the individual effects of both forms of tenure. Therefore, the study of

interaction effects would provide a more complete picture of the tenure-audit quality relationship. Regarding this issue, our results suggest that audit quality is maximized when medium firm tenure interacts with medium partner tenure.

The results reported here may have implications at the EU level. Given the low litigation risk (Ruiz-Barbadillo et al. 2004) and relatively long audit firm tenures, Spain is an ideal setting in which to observe an impairment of audit quality with tenure. Since this does not seem to be the case, we should not expect a strong negative impact of audit firm tenure on audit quality at the EU level.

This study is subject to various limitations. First is the relatively small size of the Spanish audit market for listed companies, which causes some categories in the analysis of interaction effects to include few observations. Moreover, the significant effects reported for the interaction variables of firm and partner tenure are not robust to the use of an alternative approach to calculate discretionary accruals. Therefore, the sensitivity of results to different accrual models may also be considered a limitation of this study. These shortcomings need to be taken into account when interpreting the reported results.

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Table 1. Summary of regulatory changes on audit firm and partner rotation in Spain

	1988 Audit Law	1995 Reform	2002 Financial Law	2011 Audit Law	2015 Audit Law
Maximum firm tenure	nine years	none	none	none	ten years
Maximum partner tenure	none	none	seven years (it applies to the audit team)	seven years	five years
Renewal of the contract with the audit firm after the first contract	not possible	annually	annually	periods of tree years	maximum for a four-year period, under certain conditions

Table 2. Variable definitions

Panel A. Experimental variables

SF	short firm tenure: less than four years
LF	long firm tenure: more than ten years
SP	short partner tenure: less than four years
LP	long partner tenure: more than five years
SFSP	short firm and partner tenure: less than four years of firm tenure and less than four years of partner tenure
MFSP	medium firm and short partner tenure: between four and ten years of firm tenure and less than four years of partner tenure
MFLP	medium firm and long partner tenure: between four and ten years of firm tenure and more than five years of partner tenure
LFSP	long firm and short partner tenure: more than ten years of firm tenure and less than four years of partner tenure
LFMP	long firm and medium partner tenure: more than ten years of firm tenure and four or five years of partner tenure
LFLP	long firm and partner tenure: more than ten years of firm tenure and more than five years of partner tenure

Panel B. Control variables

PBANK	probability of bankruptcy as measured by adjusted Zmijewski scores, with the weights proposed by Carcello et al. (1995)
OPINION	1 if the company has received a qualified opinion and 0 otherwise
SIZE	natural logarithm of total assets of the company at financial year-end
AGE	natural logarithm of the number of years the company has been listed by the supervisor of the Spanish stock market
LEV	total liabilities divided by total assets at financial year-end
LLOSS	1 if client reported a loss for the previous year and 0 otherwise
PERFORM	earnings before tax over total assets at the end of the fiscal year
CFFO	cash flow from operations over total assets at the end of the fiscal year
GROWTH	change in assets from prior year
AUDFIRM	1 if the company is audited by a non-Big 4 audit firm and 0 otherwise

Table 3. Descriptive statistics

VARIABLE	MEAN	MEDIAN	ST. DEV.	MINIMUM	MAXIMUM
PBANK	-3.18	-3.20	1.41	-7.21	2.74
OPINION	0.14	0.00	0.35	0.00	1.00
SIZE	6.84	6.64	1.75	1.51	11.77
***SIZE* (in millions of €)**	4,720.62	762	13,483.89	4.53	129,314.20
AGE	2.61	2.89	0.62	0.00	3.26
***AGE* (in years)**	15.23	18.00	6.99	1.00	25.00
LEV	0.67	0.68	0.21	0.08	2.25
LLOSS	0.19	0.00	0.39	0.00	1.00
PERFORM	0.04	0.04	0.15	-0.54	1.90
CFFO	0.06	0.06	0.10	-0.47	0.66
GROWTH	0.29	0.05	1.85	-0.65	40.95
AUDFIRM	0.09	0.00	0.29	0.00	1.00
FIRM TENURE	10.05	9.00	6.59	1.00	25.00
PARTNER TENURE	3.17	3.00	1.85	1.00	9.00

Variables:

PBANK: probability of bankruptcy as measured by adjusted Zmijewski scores, with the weights proposed by Carcello et al. (1995);
OPINION: 1 if the company receives a qualified opinion and 0 otherwise;
SIZE: natural logarithm of total assets of the company at financial year-end;
AGE: natural logarithm of the number of years the company is included in the Register of the supervisor of the Spanish stock market;
LEV: total liabilities divided by total assets at financial year-end;
LLOSS: 1 if client reported a loss for the previous year and 0 otherwise;
PERFORM: earnings before tax over total assets at the end of the fiscal year;
CFFO: cash flow from operations over total assets at the end of the fiscal year;
GROWTH: change in assets from prior year;
AUDFIRM: 1 if the company is audited by a non-Big 4 audit firm and 0 otherwise;
FIRM TENURE: the number of consecutive years a firm has been audited by the same audit firm.
PARTNER TENURE: the number of consecutive years a firm has been audited by the same audit partner.

Neither *FIRM TENURE* nor *PARTNER TENURE* has been used in the empirical analysis as audit tenure has been included through categorical variables. However, they are in the table because provide useful information about audit tenure in our sample.

Table 4. Mean and median values of *ABSDISAC* for the whole sample and across subsamples

Audit tenure	*ABSDISAC*	
	Mean	**Median**
Whole sample (n=680)	0.057	0.051
***SF* (n=181)**	0.055	0.054
***MF* (n=233)**	0.056	0.053
***LF* (n=266)**	0.057	0.049
***SP* (n=422)**	0.056	0.052
***MP* (n=160)**	0.059	0.048
***LP* (n=98)**	0.055	0.056
***SFSP* (n=137)**	0.055	0.057
***MFSP* (n=126)**	0.055	0.049
***MFMP* (n=82)**	0.060	0.050
***MFLP* (n=49)**	0.061	0.060
***LFSP* (n=157)**	0.058	0.051
***LFMP* (n=80)**	0.059	0.047
***LFLP* (n=49)**	0.049	0.044

ABSDISAC: the absolute value of discretionary accruals;
SF (short firm tenure): less than four years;
MF (medium firm tenure): between four and ten years;
LF (long firm tenure): more than ten years;
SP (short partner tenure): less than four years;
MP (medium partner tenure): four or five years;
LP (long partner tenure): more than five years;
SFSP (short firm and partner tenure): less than four years of firm and less than four years of partner tenure;
MFSP (medium firm and short partner tenure): between four and ten years of firm and less than four years of partner tenure;
MFMP (medium firm and partner tenure): between four and ten years of firm and four or five years of partner tenure;
MFLP (medium firm and long partner tenure): between four and ten years of firm and more than five years of partner tenure;
LFSP (long firm and short partner tenure): more than ten years of firm and less than four years of partner tenure;
LFMP (long firm and medium partner tenure): more than ten years of firm and four or five years of partner tenure;
LFLP (long firm and partner tenure): more than ten years of firm and more than five years of partner tenure.

Table 5. Results of the multivariate analysis. Estimations without interaction effects. Main analysis in column A and additional analyses in columns B, C, D, E and F

Variable	A: *ABSDISAC*	B: *DISAC*	C: *IIDISAC*	D: *IDDISAC*	E: *EXABSDISAC*	F: *EXIIDISAC*
SF	0.01	-0.04	-0.03	-0.01	0.41	-0.50
	(0.55)	(-1.67) *	(-0.86)	(-0.66)	(1.20)	(-0.72)
LF	0.00	-0.01	0.00	-0.01	0.12	-0.06
	(0.33)	(-1.22)	(0.11)	(-1.06)	(0.33)	(-0.08)
SP	0.02	0.03	0.04	-0.00	0.57	2.14
	(1.44)	(2.37) **	(2.27) **	(-0.25)	(1.38)	(1.91)*
LP	0.01	0.03	0.04	0.00	-0.24	1.71
	(0.60)	(2.46) **	(2.29) **	(0.32)	(-0.40)	(1.18)
PBANK	0.04	0.03	0.03	0.01	-0.03	-0.77
	(2.07) **	(2.20) **	(2.23) **	(0.72)	(-0.17)	(-1.63)
OPINION	0.04	-0.00	-0.00	-0.02	0.70	-0.15
	(1.60)	(-0.21)	(-0.08)	(-0.90)	(2.24) **	(-0.17)
SIZE	-0.01	-0.01	-0.00	-0.02	-0.21	-0.03
	(-1.76) *	(-1.59)	(-0.03)	(-0.58)	(-2.14) **	(-0.16)
AGE	-0.03	0.02	-0.00	0.01	-0.41	0.39
	(-1.60)	(1.41)	(-0.03)	(0.80)	(-1.70) *	(0.81)
LEV	-0.05	-0.06	-0.10	0.00	0.90	0.25
	(-0.60)	(-1.09)	(-1.12)	(0.01)	(0.96)	(0.12)
LLOSS	0.06	0.01	0.01	-0.01	0.04	-0.46
	(2.25) **	(0.54)	(0.43)	(-1.69) *	(0.10)	(-0.62)
PERFORM	0.81	1.21	1.25	0.68	0.93	18.63
	(2.76) ***	(5.58) ***	(5.16) ***	(4.65) ***	(0.44)	(4.21) ***
CFFO	-0.41	-1.18	-1.22	-0.66	-0.33	-24.65
	(-2.54) ***	(-9.15) ***	(-6.24) ***	(-6.61) ***	(-0.19)	(-5.00) ***
GROWTH	0.04	0.02	0.03	-0.10	0.45	0.20
	(2.43) **	(2.32) **	(2.46) **	(-8.24) ***	(1.93) *	(2.89) ***
AUDFIRM	-0.01	-0.04	-0.00	-0.01	0.18	0.30
	(-0.30)	(-0.21)	(-0.11)	(0.39)	(0.40)	(0.33)
Constant	0.35	0.13	0.16	0.00	-1.31	-9.79
	(3.51) ***	(1.64)	(2.59) ***	(0.07)	(-0.86)	(-3.12) ***
N	680	680	319	361	680	680
R-sq.	0.52	0.67	0.79	0.56	0.14	0.57
Wald-Chi sq.	40.98 ***	138.16 ***	89.97 ***	121.27 ***	38.02 ***	94.66 ***

*, **, *** Significant at 10 percent, five percent and one percent levels, respectively.

ABSDISAC: absolute value of discretionary accruals; *DISAC*: discretionary accruals in raw values; *IIDISAC*: income increasing discretionary accruals; *IDDISAC*: income decreasing discretionary accruals; *EXABSDISAC*: extreme discretionary accruals in absolute values; *EXIIDISAC*: extreme income increasing discretionary accruals; *SF* (short firm tenure): less than four years*; LF* (long firm tenure): more than ten years; *SP* (short partner tenure): less than four years; *LP* (long partner tenure): more than five years; *PBANK*: probability of bankruptcy as measured by adjusted Zmijewski scores, with the weights proposed by Carcello et al. (1995); *OPINION*: 1 if the company receives a qualified opinion and 0 otherwise; *SIZE*: natural logarithm of total assets of the company at financial year-end; *AGE*: natural logarithm of the number of years the company has been listed by the supervisor of the Spanish stock market; *LEV*: total liabilities divided by total assets at financial year-end; *LLOSS*: 1 if client reported a loss for the previous year and 0 otherwise; *PERFORM*: earnings before tax over total assets at the end of the fiscal year; *CFFO*: cash flow from operations over total assets at the end of the fiscal year; *GROWTH*: change in assets from prior year; *AUDFIRM*: 1 if the company is audited by a non-Big 4 audit firm and 0 otherwise.

Table 6. Results of the multivariate analysis. Estimations with the joint effects of firm and partner tenure. Main analysis in column A and additional analyses in columns B, C, D, E and F

Variable	A: *ABSDISAC*	B: *DISAC*	C: *IIDISAC*	D: *IDDISAC*	E: *EXABSDISAC*	F: *EXIIDISAC*
SFSP	0.04	0.00	0.04	-0.01	1.43	3.64
	(2.04) **	(0.01)	(1.17)	(-0.88)	(2.13) **	(1.80) *
MFSP	0.04	0.05	0.08	0.00	1.17	4.69
	(1.83) *	(2.90) ***	(2.81) ***	(0.02)	(1.51)	(2.20) **
MFLP	0.01	0.03	0.06	-0.01	0.17	0.36
	(0.75)	(1.57)	(1.79) *	(-0.53)	(0.20)	(0.17)
LFSP	0.03	0.02	0.05	-0.02	0.99	3.63
	(1.72) *	(1.16)	(2.60) ***	(-1.29)	(1.21)	(1.82) *
LFMP	0.03	0.01	0.05	-0.01	0.95	3.45
	(1.95) *	(0.73)	(2.64) ***	(-0.90)	(1.10)	(1.59)
LFLP	0.03	0.04	0.07	0.01	0.37	4.64
	(1.71) *	(2.59) ***	(3.65) ***	(0.31)	(0.35)	(1.93) *
PBANK	0.04	0.03	0.02	0.01	-0.04	-0.89
	(2.08) **	(2.19) **	(2.17) **	(0.69)	(-0.19)	(-1.88) *
OPINION	0.04	-0.00	0.00	-0.02	0.71	0.29
	(1.61)	(-0.24)	(0.03)	(-0.92)	(2.29) **	(0.33)
SIZE	-0.10	-0.01	0.00	-0.01	-0.21	0.04
	(-1.79) *	(-1.61)	(0.00)	(-0.60)	(-2.09) **	(-0.19)
AGE	-0.03	0.02	-0.00	0.01	-0.42	0.36
	(-1.64)	(1.40)	(-0.05)	(0.82)	(-1.79) *	(0.79)
LEV	-0.05	-0.06	-0.10	0.00	0.91	0.62
	(-0.58)	(-1.08) *	(-1.10)	(0.04)	(0.96)	(0.26)
LLOSS	0.06	0.01	0.01	-0.02	0.03	-0.34
	(2.23) **	(0.44)	(0.53)	(-1.77) *	(0.06)	(-0.32)
PERFORM	0.81	1.21	1.24	0.69	1.04	21.20
	(2.77) ***	(5.62) ***	(5.20) ***	(4.84) ***	(0.47)	(4.36) ***
CFFO	-0.41	-1.17	-1.20	-0.67	-0.31	-26.74
	(-2.54) ***	(-9.22) ***	(-6.31) ***	(-6.61) ***	(-0.18)	(-4.44) ***
GROWTH	0.04	0.02	0.03	-0.10	0.47	0.28
	(2.43) **	(2.33) **	(2.46) **	(-8.22) ***	(2.02) **	(3.04) ***
AUDFIRM	-0.01	-0.04	-0.00	-0.01	0.20	0.24
	(-0.24)	(-1.12)	(-0.08)	(-0.32)	(0.46)	(0.25)
Constant	0.32	0.12	0.13	-0.00	-1.79	-13.16
	(3.27) ***	(1.51)	(2.10) **	(-0.08)	(-1.08)	(-3.50) **
N	680	680	319	361	680	680
R-sq.	0.52	0.68	0.80	0.57	0.15	0.60
Wald-Chi sq.	45.46 ***	139.51 ***	100.25 ***	122.28 ***	38.07 ***	58.34 ***

*, **, *** Significant at 10 percent, five percent and one percent levels, respectively.

ABSDISAC: absolute value of discretionary accruals; *DISAC*: discretionary accruals in raw values; *IIDISAC*: income increasing discretionary accruals; *IDDISAC*: income decreasing discretionary accruals; *EXABSDISAC*: extreme discretionary accruals in absolute values; *EXIIDISAC*: extreme income increasing discretionary accruals; *SFSP* (short firm and partner tenure): less than four years of firm and less than four years of partner tenure; *MFSP* (medium firm and short partner tenure): between four and ten years of firm and less than four years of partner tenure; *MFLP* (medium firm and long partner tenure): between four and ten years of firm and more than five years of partner tenure; *LFSP* (long firm and short partner tenure): more than ten years of firm and less than four years of partner tenure; *LFMP* (long firm and medium partner tenure): more than ten years of firm and four or five years of partner tenure; *LFLP* (long firm and partner tenure): more than ten years of firm and more than five years of partner tenure; *PBANK*: probability of bankruptcy as measured; *OPINION*: 1 if the company receives a qualified opinion and 0 otherwise; *SIZE*: natural logarithm of total assets of the company at financial year-end; *AGE*: natural logarithm of the number of years the company has been listed by the supervisor of the Spanish stock market; *LEV*: total liabilities divided by total assets; *LLOSS*: 1 if client reported a loss for the previous year and 0 otherwise; *PERFORM*: earnings before tax over total assets; *CFFO*: cash flow from operations over total assets; *GROWTH*: change in assets from prior year; *AUDFIRM*: 1 if the company is audited by a non-Big 4 audit firm and 0 otherwise.

Table 7. Results of the multivariate analysis. Study of extremely long audit firm tenures. Main analysis in column A and additional analyses in columns B, C, D, E and F

Variable	A: *ABSDISAC*	B: *DISAC*	C: *IIDISAC*	D: *IDDISAC*	E: *EXABSDISAC*	F: *EXIIDISAC*
EXFSP	0.00	-0.01	-0.00	-0.08	0.33	0.67
	(0.23)	(-0.59)	(-0.23)	(-0.63)	(0.59)	(1.66) *
EXFLP	0.00	0.02	0.03	0.00	-0.15	0.90
	(0.04)	(1.41)	(2.27) **	(0.15)	(-0.18)	(1.22)
PBANK	0.04	0.03	0.02	0.01	0.01	-0.47
	(2.16) **	(2.07) **	(2.19) **	(0.76)	(0.04)	(-1.48)
OPINION	0.04	-0.01	-0.00	-0.02	0.83	0.25
	(1.70) *	(-0.38)	(-0.10)	(-1.08)	(2.09) **	(0.40)
SIZE	-0.01	-0.01	-0.00	-0.00	-0.24	-0.31
	(-1.75) *	(-1.60)	(-0.11)	(-0.55)	(-1.91) *	(-2.43) **
AGE	-0.03	0.02	-0.00	0.01	-0.52	0.58
	(-1.56)	(1.44)	(-0.00)	(0.80)	(-1.81) *	(1.42)
LEV	-0.05	-0.05	-0.09	-0.00	0.69	1.53
	(-0.56)	(-0.86)	(-1.05)	(-0.01)	(0.61)	(1.26)
LLOSS	0.06	0.01	0.01	-0.02	0.05	-0.81
	(2.26) **	(0.56)	(0.37)	(-1.71) *	(0.10)	(-0.77)
PERFORM	0.82	1.21	1.24	0.69	1.08	23.13
	(2.78) ***	(5.47) ***	(5.05) ***	(4.80) ***	(0.69)	(4.90) ***
CFFO	-0.41	-1.18	-1.20	-0.66	-0.95	-25.06
	(-2.56) ***	(-9.02) ***	(-6.11) ***	(-6.58) ***	(-0.69)	(-6.36) ***
GROWTH	0.04	0.02	0.03	-0.10	0.55	0.14
	(2.42) **	(2.37) **	(2.56) **	(-8.22) ***	(3.11) ***	(2.08) **
AUDFIRM	-0.02	-0.04	-0.01	-0.00	0.11	-0.46
	(-0.39)	(-1.12)	(-0.15)	(-0.22)	(0.18)	(-0.61)
Constant	0.39	0.12	0.18	-0.01	-0.58	-5.57
	(3.80) ***	(1.53)	(3.14) ***	(-0.13)	(-0.33)	(-2.77) ***
N	680	680	319	361	680	680
R-sq.	0.51	0.67	0.79	0.56	0.12	0.53
Wald-Chi sq.	33.73 ***	128.84 ***	77.60 ***	112.69 ***	26.87 ***	78.31 ***

*, **, *** Significant at 10 percent, five percent and one percent levels, respectively.

ABSDISAC: absolute value of discretionary accruals; *DISAC*: discretionary accruals in raw values; *IIDISAC*: income increasing discretionary accruals; *IDDISAC*: income decreasing discretionary accruals; *EXABSDISAC*: extreme discretionary accruals in absolute values; *EXIIDISAC*: extreme income increasing discretionary accruals; *EXFSP*: extremely long audit firm tenure (18 years or more) and short partner tenure (four years or less); *EXFLP*: extremely long audit firm tenure (18 years or more) and long partner tenure (more than four years); *PBANK*: probability of bankruptcy as measured; *OPINION*: 1 if the company receives a qualified opinion and 0 otherwise; *SIZE*: natural logarithm of total assets of the company at financial year-end; *AGE*: natural logarithm of the number of years the company has been listed by the supervisor of the Spanish stock market; *LEV*: total liabilities divided by total assets; *LLOSS*: 1 if client reported a loss for the previous year and 0 otherwise; *PERFORM*: earnings before tax over total assets; *CFFO*: cash flow from operations over total assets; *GROWTH*: change in assets from prior year; *AUDFIRM*: 1 if the company is audited by a non-Big 4 audit firm and 0 otherwise.