# Audit partner tenure and independence in a low litigation risk setting

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**Abstract:**

This article investigates whether long audit partner tenures impair auditor independence with a sample of Spanish companies for the period: 2002-2010. Independence is proxied by the opinion of the audit report. The motivation relies, on the one hand, on the current discussion about the necessity to reinforce the independence of auditors and, on the other hand, on the very limited available research at the partner level. The main result is the lack of significant effects of partner tenure on independence. This finding is robust to a series of checks. Unlike prior research, we also address the interaction effects of firm and partner tenure on independence. Results indicate that partner tenure does not compromise independence even under long or extremely long audit firm tenures. The Spanish audit market constitutes an ideal setting in which to address this issue, as it is characterized by unusually lengthy engagements with the audit firm. We report a negative effect of firm tenure on independence in the pre-crisis period, but not during the recent economic downturn or for the whole research period. This result suggests that auditors could be willing to impair independence in long tenures with the audit firm, except during economic downturns, when the risk of litigation increases.

**Keywords:** audit partner tenure; audit firm tenure; auditor independence; audit qualifications; litigation risk.

**JEL:** M42.

## 1. Introduction

Auditor independence is not a new issue in accounting research. In the late fifties McLaren (1958) pointed out that excessive familiarity could result in collusion between auditors and clients. Shortly afterwards, Mautz & Sharaf (1961) stated that extended auditor-client relationships could negatively affect independence because auditor's objectivity about a client would be reduced with the passage of time. Similarly, Hoyle (1978) argued that the audit program might become a routine as the auditor would anticipate the client's systems and control procedures. These concerns were summarized by Shockley (1981, p. 789): "complacency, lack of innovation, less rigorous audit procedures and a developed confidence in the client may arise after a long association with the client". However, more than two decades later, Myers et al. (2003) also argued that long relationships might cause auditor complacency about and possibly complicity in the decisions that management makes regarding the presentation of financial statements. As posed by Dopuch et al. (2003), this threat to independence does not limit to the time of the audit report, but it could also affect the judgments made by the auditor during the whole auditing process. Concerns about the negative effects of long tenures have also been expressed by the IFAC Code of Ethics: "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, potential loss of independence associated to long audit tenures needs to be balanced against other arguments suggesting that longer tenures could provide higher levels of audit quality. This was clearly posed by Myers et al. (2005) who argued 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. The potential contradictory effects of tenure on audit quality are implicit in DeAngelo's (1981) classical definition of audit quality as the joint probability an auditor will both detect and report material misstatements. Thus, audit quality would be a function of the ability to detect material misstatements (expertise) and the willingness to report detected misstatements (independence). The ability to detect misstatements should be higher when the auditor has deeper client knowledge, and this knowledge increases with tenure through a learning curve effect. However, the auditor's willingness to report detected misstatements could be lower in lengthy engagements. To address these contradictory effects, the Sarbanes-Oxley Act (SOX) required a study by the Comptroller General of the United States (GAO, 2003) about the potential effects of imposing the mandatory rotation of auditors. The results of the study did not show a negative effect of extended tenures on the quality of financial reports, and thus, it did not recommend rotation. However, the regulator finally established audit rotation at a partner level. Many countries worldwide have adopted similar rotation rules.

This article investigates whether lengthy partner tenures impair auditor independence. Following previous research, the premise is that a less independent auditor will be less willing to issue a negative report so as not to lose clients (e.g., Chow & Rice, 1982; Craswell, 1988;

Krishnan, 1994). Our analysis is based on a sample of Spanish public companies for the nine-year period 2002-2010.

The motivation of this study relies on the lack of research on the relationship between tenure and auditor's opinion at the partner level. This is mainly due to the fact that audit reports in many countries do not record the name of engagement partners. Thus, there are just a few articles addressing the effects of partner tenure on various proxies of audit quality, and only two of them (Carey & Simnett, 2006 (hereinafter, C&S) and Ye et al., 2011) have specifically examined the effects of tenure on the opinion of the audit report. The 2010 Green Paper on Audit Policy by the European Commission (hereinafter "the Green Paper") explicitly acknowledged the necessity of further research on the tenure-audit quality relationship within the EU. Four years after the release of the Green Paper, the Directive 2014/56/EU amending Directive 2006/43/EC on statutory audits of annual accounts and consolidated accounts and the Regulation (EU) No 537/2014 of the European Parliament and of the Council on specific requirements regarding statutory audit of public-interest entities (hereinafter "the 2014 EU Regulation") clearly indicate that the independence of auditors constitutes a major issue for European regulators and also for scholars (e.g., Ewelt-Knauer et al., 2013; Cameran et al., 2014 and 2015).

We aim to contribute to the literature by extending prior research in various ways. Firstly, for the first time, the effects of partner tenure on the opinion of the audit report are studied in a low litigation risk country. Since litigation risk constitutes a major motivation in the auditor reporting decision, auditors' incentives to maintain independence should be stronger in high litigation risk countries than in low litigation ones. Thus, evidence reported in high litigation countries cannot be directly extrapolated to low litigation countries. We aim to fulfil this gap in the literature. Moreover, in the current discussion on auditor independence within the EU, the evidence we report might be useful for other low litigation risk European countries. Secondly, while the scarce available evidence about the effects of partner tenure on audit qualifications has been obtained under voluntary partner rotation, we provide evidence obtained under mandatory partner rotation. Since partner rotation is currently mandatory in many countries, it is necessary to update the available evidence on the partner tenure-independence relationship to this regulatory framework. Thirdly, unlike prior research, we include audit firm tenure into the analysis of the effects of partner tenure. This point enhances the contribution of our paper in two ways. On the one hand, because as firm and partner tenures would show some positive correlation, the omission of audit firm tenure in the analysis could cause misleading results, as partner tenure will also account for the effects of the omitted variable firm tenure. On the other hand, because the inclusion of firm tenure allows to examine the interaction effects of firm and partner tenure. Hence, we can address, for example, whether the effects of partner tenure on independence are more server under longer tenures with the audit firm.

Anticipating our main result, partner tenure does not seem to have significant effects on the likelihood of audit qualifications. This result is robust to a series of checks. Moreover, we

do not find different implications of partner tenure on auditor independence depending on the tenure with the audit firm.

This paper is organized as follows. Section two outlines a review of the literature on the tenure-independence relationship. Section three summarizes recent policy developments regarding audit partner rotation in major jurisdictions around the world and, afterwards, focusses on the Spanish audit market. In section four we articulate the research question and present the design of the research. The discussion of the results and sensitivity analyses are addressed in section five. Finally, the conclusions and implications of our findings are drawn in section six.

## 2. Review of the literature

There is some contradiction between the causes of deterioration of independence in long audit tenures suggested in the literature (e.g., Mautz & Sharaf, 1961; Shockley, 1981; Dopuch et al., 2003) and the methodology used to assess the significance of such causes. Thus, the negative implications of long tenures for independence would usually derive from personal relationships between the company's management team and the incumbent auditor. Since personal relationships cannot be achieved between firms, the main threat to independence should not be long audit firm tenures but long partner tenures. Nevertheless, empirical research has addressed the relationship between tenure and independence almost exclusively at the firm level. Such a situation is mostly explained by the fact that in many countries audit reports do not record the name of the engagement partner. Nevertheless, even in those countries in which audit reports record the name of the audit partner like Spain, some studies have investigated the implications of long audit firm tenures (e.g., Ruiz-Barbadillo et al., 2004; and 2006) but none has addressed the effects of long partner tenures.

While a number of articles have studied the effects of audit firm tenure on the opinion of the audit report (e.g., Louwers, 1998; Carcello & Neal, 2000; Gul et al., 2011), only C&S and more recently Ye et al. (2011) have examined the issue at partner level. Since the probability of switching the audit firm increases after a qualified opinion, the issuance of qualified reports can be viewed as an exercise of independence. C&S found that the auditor's propensity to issue going-concern modified opinions (GCMOs) diminishes over the audit partner's tenure, after controlling for other factors which influenced this propensity. The authors, therefore, concluded that long tenures are negatively associated to independence. They acknowledged, however, that the deterioration of independence was confined to non-Big 4 audit firms. Consistent with C&S findings, Ye et al. (2011) found that longer engagement partner tenure is associated with a reduction in the propensity to issue GCMOs. As both papers investigated the same audit market, the reporting of similar results was to be expected. Beyond the tenure-audit qualifications relationships, scholars have also investigated the effects of partner tenure on other proxies of audit quality, such as the quality of earnings. With a private sample of US companies, Manry et al. (2008) concluded that audit quality increases with tenure, as discretionary accruals were significantly and negatively associated to the lead audit partner's

tenure. However, this significant effect was observed only for relatively small clients having fairly lengthy partner tenures. In the same line, evidence available for Taiwan (Chi & Huang, 2005; Chen et al., 2008; Chi et al., 2011) and China (Gul et al., 2013) supports a positive effect of partner tenure on earnings quality. Conversely, C&S[1] and Fargher et al. (2008) found lower manager's accounting discretion in the initial years of tenure of a new audit partner, thus suggesting a negative effect of partner tenure on audit quality in Australian. A final set of papers has not directly examined the implications of partner tenure on audit quality but the related issue of the implications of the auditor rotation regime. Hence, Chi et al. (2009) concluded that mandatory partner rotation does not enhance audit quality in Taiwan. It should be noted, however, that they examined the quality of earnings only during the first year of the engagement with the new partner. More recently, Firth et al. (2012) found that firms under mandatory partner rotation show significantly higher likelihood of modified opinions than no-rotation firms, in China. Therefore, contrary to Chi et al. (2009), they concluded that mandatory partner rotation does enhance audit quality.

Although, as posed by Bamber & Bamber (2009), the effects of audit firm rotation cannot be extrapolated to partner rotation,[2] evidence reported at the audit firm level might provide some insights into the effects of partner tenure on independence. Thus, next we summarize available evidence at the audit firm level. Empirical research has, for the most part, rejected that long firm tenures threaten independence. With samples of US financially distressed firms, Louwers (1998) and Carcello & Neal (2000) do not support a significant effect of tenure on the auditors' reporting decision. A similar conclusion was reached by Vanstraelen (2002) and Knechel & Vanstraelen (2007) for the Belgian market. The former included both financially distressed and non-distressed companies, while the latter was limited to companies entering bankruptcy. Ruiz-Barbadillo et al. (2004) and (2006) investigated the issuance of GCMOs to financially distressed companies in Spain. The authors did not report loss of independence with tenure. However, more recent research has provided some contradictory results. Hence, Lim & Tan (2010) reported a positive effect of tenure on the propensity to issue GCMOs to financially distressed firms. Conversely, Gul et al. (2011) concluded that auditors were willing to forgo their independence by issuing fewer GCMOs when auditor tenure was long. All the aforementioned studies share the focus on GCMOs. The studies by Vanstraelen (2000) for the Belgian market, and Ruiz-Barbadillo et al. (2005) for Spain represent exceptions to the mainstream approach, as they include all types of modified opinions into the analysis and do not limit the sample to financially distressed firms. Hence, Vanstraelen (2000) concluded that long-term auditor-client relationships significantly increase (decrease) the likelihood of unqualified reports (auditor's independence) in the Belgian market. Conversely, Ruiz-

[1] Although they did not find a significant effect of tenure on either working capital accruals or abnormal working capital accruals, they reported that a lower proportion of clients misses breakeven for long partner tenure observations, suggesting a greater ability to manage earnings.

[2] According to the authors, when the audit firm rotates, the new firm brings a new team, applies its own methodology and new client procedures, while in partner rotation, in most cases, all that changes is one audit partner.

Barbadillo et al. (2005) did not observe loss of independence with tenure, as the likelihood of modified opinions was in fact higher in longer tenures.

Summarizing previous research, empirical evidence generally supports the view that long audit firm tenures would not impair independence. The limited available evidence at the partner level shows a negative effect of tenure on audit qualification, while results regarding the effects of tenure on earnings quality are mixed. Therefore, empirical evidence would support mandatory rotation rules currently established in many countries imposing rotation only at the partner level. However, evidence at the partner level should be carefully approached, as it is scarce and limited to just a few countries.

## 3. The regulation of auditor tenure in major jurisdictions

Audit tenure can be measured at firm and partner levels. While many countries have established the mandatory rotation of engagement partners, the rotation of the audit firm is generally voluntary. Thus, regulators seem to assume that whereas long partner tenures would constitute a serious threat to independence, long audit firm tenures would not. However, this view might be changing according with the concerns expressed in the Green Paper (EC, 2010, p. 11) which states: 'even when "key audit partners" are regularly rotated as currently mandated by the Directive, the threat of familiarity persists'. These concerns led to the 2014 EU Regulation, which establishes the mandatory rotation of the audit firm after a maximum of ten years within the EU.

Even though the results of the study required by the SOX did not recommend mandatory rotation in the US, regulators finally established that lead audit partners and concurring partners could not perform audit services for the same client for more than five consecutive fiscal years. Many countries worldwide have adopted similar audit rotation rules. For example, by the year 2008, the State members of the EU were required to adapt national law systems to the revised 8$^{th}$ Company Law Directive. A main feature of the Directive was to enforce audit rotation at the partner level, although each State could voluntarily establish the maximum length of the auditor-client relationship. Nevertheless, even before the Directive was issued, some countries had already implemented auditor partner rotation rules as a direct response to the SOX. For example, maximum partner tenure of seven years was established in Spain after the Financial Law was passed in 2002 and in Germany after the reform of its Commercial Code in 2004. At present, several maximum periods coexist within the EU, for example, five years in the United Kingdom, six years in France or seven years in Germany and Spain. In Japan, the mandatory rotation of the engagement partner after seven years was established in 2003. A similar legislation was introduced in Australia in 2004, requiring that the audit partner of listed companies to be rotated after no more than five years. These legislative changes have followed the recommendations of the IFAC Code of Ethics, which explicitly recognized that prolonged use of the same lead engagement partner might create a 'familiarity threat'. Accordingly, the Code proposed the mandatory rotation of the lead engagement

partner after seven years and a two-year period before the rotating partner could resume the lead engagement partner role.

Although most countries only require the rotation of the lead audit partner, a few ones have enforced a mandatory rotation rule for the audit firm. Hence, periodical rotation of external auditor of public companies was established in Italy in 1974, which cannot be audited by the same firm for more than nine consecutive years. In addition, a minimum of three years was required before an auditor could be reappointed. Similarly, Brazil (five years), Singapore (five years) and South Korea (six years) have also established the rotation of the audit firm (Cameran et al., 2005).

Regarding the regulation of audit tenure in Spain, the 1988 Spanish Audit Law imposed the mandatory rotation of the audit firm after nine years. Nevertheless, as a result of a subsequent legal reform in 1995, the mandatory rotation was abolished. Thus, the mandatory rotation of the audit firm was, in fact, never applied in Spain. After the reform, auditors could be engaged for an initial period between three and nine years, but after the expiration of the initial engagement the company could renew the contract with the same auditor on a yearly basis. Researchers have widely agreed that Spanish legislation has not been particularly strict regarding safeguards to strength auditor independence (e.g., Gonzalo Angulo, 1995; Paz-Ares, 1996; Ruiz-Barbadillo et al., 2004). With the same aim as the SOX in the U.S., the Spanish Financial Law was passed in 2002. An amendment was included during the Law's approval process including the mandatory rotation of the audit firm after twelve years. According to this amendment, the change of the audit firm would be mandatory after the expiration of this term, and a minimum three-year period was required to re-hire the audit firm. Similarly to the 1988 firm rotation rule, this amendment led to strong criticism from the auditing profession (Ruiz-Barbadillo et al., 2006), causing its final withdrawal. Mandatory rotation after seven years was finally imposed, but limited to the audit team not to the audit firm. In addition, a minimum two years period was required before the partner could be reappointed. The maximum partner tenure of seven years has also been maintained by the 2010 reform of the Spanish Audit Law, however, without imposing the rotation of the rest of the audit team. Finally, a new Audit Law to adapt the Spanish regulation to the 2014 EU Regulation is currently in the process of approval by the Spanish Parliament.

## 4. Methodology

### 4.1. Research design and hypothesis development

This paper addresses the effects of partner tenure on auditor independence, measuring independence through the ability of the auditor to issue a qualified report. As prior research, we assume that a more independent auditor will be more willing to issue a qualified report to a client. Yet, it should be noted that most prior research measuring independence by the opinion of the audit report has been conducted in high litigation risk countries (e.g., DeFond et al., 2002; C&S; Ye et al., 2011). In these countries, potential litigation costs should provide

strong incentives to auditors to preserve independence. Hence, we could wonder whether this framework is still valid in a low litigation risk country such as Spain. We consider that even in low litigation risk countries, and more specifically in Spain, there are incentives for auditors to maintain independence. This view is supported by prior research conducted in low litigation risk countries measuring audit quality by the opinion of the audit report (e.g., Laitinen and Laitinen, 1998 for Finland; Vanstraelen, 2000 and 2002 and Knechel & Vanstraelen, 2007 for Belgium; Ruiz-Barbadillo et al., 2004 and 2006 for Spain; Lam & Mensah, 2006 for Hong Kong; Chi & Chin et al., 2011 for Taiwan; Firth et al., 2012 for China). As clearly put by Lam & Mensah (2006), the maintenance of a high litigation risk environment does not appear to be a necessary pre-requisite for high quality audits. Moreover, in the specific case of the Spanish audit market it should be noted that, on the one hand, the supervisory agency ICAC (Institute of Accounting and Auditing) has imposed some penalties to audit firms for low quality audits (for example, Deloitte received a 12 million € fine after the Bankia scandal) and, on the other hand, the market shows an extreme concentration by Big 4 firms (firms with strong incentives to maintain reputation, and therefore independence). Hence, we conclude that, although incentives to maintain independence are expected to be stronger in high litigation counties, in low litigation countries and, particularly in Spain, auditors still face incentives to maintain independence and, consequently, to provide high quality audits.

While most studies on auditor independence have restricted the analysis to financially distressed companies and have examined only GCMOs (e.g., C&S and Ye et al., 2011), some papers have followed a more comprehensive approach and have included all types of firms and audit qualifications into the analysis (e.g., Laitinen & Laitinen, 1998; Vanstraelen, 2000; Ruiz-Barbadillo et al., 2005; Chi & Chin, 2011; Firth et al., 2012). Such a view would be supported by empirical evidence reporting negative effects of a qualified report for the auditor client (e.g., Ball et al., 1979; Chow & Rice, 1982; Levinthal & Fichman, 1988; Choi & Jeter, 1992) and therefore a higher probability of losing the client after a qualified report (e.g., Chow & Rice, 1982b; Craswell, 1988; Krishnan, 1994). Accordingly, the issuance of qualified opinions (not only GCMOs) by the auditor represents an exercise of independence. Besides, this approach presents some advantages in terms of generalization of the reported results and also allows to address the classical role of the auditor which is not bankruptcy prediction. Therefore, similarly to Laitinen & Laitinen (1998), Vanstraelen (2000), Ruiz-Barbadillo et al. (2005), Chi & Chin (2011) and Firth et al. (2012), we consider audit reports with either qualified, unfavorable, disclaimer of opinion, or with explanatory paragraphs expressing doubts about the future of the company, collectively as qualified reports.

Consequently, our research question states:

> Does auditor independence, measured through the opinion of the audit report, decrease with auditor tenure?

Following DeAngelo's (1981) classical definition of audit quality, long-tenured partners would be expected to be better able to detect misstatements but could also be less willing to report the detected misstatements. As discussed in the introductory section, long tenures

might weaken auditor's objectivity (Mautz & Sharaf, 1961), strengthen confidence in the client (Shockley, 1981), and, as a result, make qualified reports less likely. In this line, evidence reported by C&S and Ye et al. (2011) has shown lower likelihood of audit qualifications in longer partner tenures in Australia. Thus, even in countries characterized by high litigation risk, independence seems to be impaired in long engagements with the audit partner. Since auditor's litigation risk is lower in Spain than it is in Australia, auditors' incentives to maintain independence in longer tenures would also be expected to be lower. Accordingly, we predict a weakening of independence in lengthy engagements with the audit partner, and thus the first hypothesis states:

> Hypothesis #1 (H1): The likelihood of a qualified report will decrease with audit partner tenure.

Although the main interest in this research is on the impact of partner tenure, the effects of audit firm tenure are also examined. The above discussion on H1 can be used to develop the hypothesis on the effects of audit firm tenure. As posed by Bamber & Bamber (2009), when the audit partner is changed by another partner of the same audit firm, the rest of the audit team remains with the client. Thus, the same factors which could explain a negative impact of lengthy engagements with the audit partner on independence would also explain the effects of lengthy engagements with the audit team. In this line, the Green Paper warns that, even when lead partners are regularly rotated, the threat of familiarity persists. While prior evidence for the Spanish audit market has provided mixed results, we predict a negative effect of audit firm tenure on the likelihood of a qualified report. This expectation relies on two main points. On the one hand, on the concerns expressed by the Green Paper and the 2014 EU regulation regarding the negative effects of long audit firm tenures on audit quality within the EU. If European regulators consider that long audit firm tenures impair independence at the EU level, this problem should be more serious in low litigation countries such as Spain. On the other hand, on the relatively long audit firm tenures in Spain by international standards. Longer tenures provide more room for a bonding effect in the auditor-client relationship. Thus, our second hypothesis states:

> Hypothesis #2 (H2): The likelihood of a qualified report will decrease with audit firm tenure.

Unlike prior research, this paper also addresses the interaction effects of firm and partner tenures on auditor independence. We wonder whether, let's say, five years of partner tenure involve the same potential implications for auditor independence, under five or 20 years of tenure with the audit firm. As discussed above, when the audit partner is changed but not the audit firm, the rest of the audit team remains with the client, and neither the audit methodology nor the client's procedures tend to change (Bamber & Bamber, 2009). Thus, the potentially negative implications of partner tenure on independence could also depend on the tenure with the audit firm, as the marginal effect of one more year of partner tenure on the partner's involvement with the client might be stronger under long tenures with the audit firm.

In long audit firm tenures, long-time standing audit teams would be expected to facilitate the bonds between a new lead audit partner and the client's management team. Hence, the "familiarity threat" (IFAC, 2003) of long tenures with the audit partner would be expected to be more severe under long audit firm tenures. Accordingly, the third hypothesis states:

> Hypothesis #3 (H3): The negative effects of partner tenure on the likelihood of a qualified report will be stronger under long audit firm tenures.

To test H1 and H2 we will estimate the model given by *(1)*.

$$OPINION = \beta_0 + \beta_1 * PBANK + \beta_2 * SIZE + \beta_3 * AGE + \beta_4 * LEV + \beta_5 * CLEV + \beta_6 * LLOSS + \beta_7 * INVEST + \beta_8 * AUDFIRM + \beta_9 * FIRMTEN + \beta_{10} * PARTEN + \Sigma(\delta * YEAR) + \Sigma(\Phi * INDUSTRY) + \varepsilon \quad (1)$$

where:

Dependent Variable:
*OPINION*: 1 if company receives a modified audit opinion in the audit report and 0 otherwise.

Experimental Variables:
*FIRMTEN*: the number of consecutive years audited by the same audit firm.
*PARTEN*: the number of consecutive years the same partner has been signing the audit report of the company.

Control Variables:
*PBANK*: probability of bankruptcy as measured by adjusted Zmijewski score, with the weights proposed by Carcello et al. (1995);
*SIZE*: natural logarithm of total assets of the company at financial year-end;
*AGE*: natural logarithm of the number of years since listing on the supervisor of the Spanish stock market;
*LEV*: total liabilities divided by total equity;
*CLEV*: change in *LEV* during the year;
*LLOSS*: 1 if client reported negative net income for the previous year and 0 otherwise;
*INVEST*: current assets less debtors and inventories divided by current liabilities;
*AUDFIRM*: 1 if the company is audited by a Big 4 audit firm and 0 otherwise;

Year controls:
Eight year dummies indicating years 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 2009.

Industry controls:
We follow the sector classification provided by the Madrid Stock Exchange which includes six main industries. Thus, five dummies variables indicating the firm's industry are included in *(1)*.

According to H1 (H2) we expect a negative and statistically significant coefficient associated to *PARTEN (FIRMTEN)*. To test H3 we will estimate the model given by *(2)*. To define long audit firm tenures (*LONGFT*: 1 if tenure is ten years or more and 0 otherwise) we use the median value of FIRTEN as the cutoff point. This model includes the same variables as model *(1)* but also the interaction variable *PARTEN*LONGFT*. According to H3 we expect a negative and statistically significant coefficient associated to this variable.

$$OPINION = a_0 + a_1{*}PBANK + a_2{*}SIZE + a_3{*}AGE + a_4{*}LEV + a_5{*}CLEV + a_6{*}LLOSS + a_7{*}INVEST + a_8{*}AUDFIRM + a_9{*}FIRMTEN + a_{10}{*}PARTEN + a_{11}{*}\ PARTEN{*}LONGFT + \Sigma(\zeta{*}YEAR) + \Sigma(\xi{*}INDUSTRY) + \mu \qquad (2)$$

Control variables in *(1)* and *(2)* are similar as those in C&S, Laitinen & Laitinen (1998) or Chi & Chin (2011) to estimate the auditor's probability of issuing a qualified report, consisting basically in financial ratios. Although C&S limit the analysis to GCMOs and financially distressed firms, similarly to Laitinen & Laitinen (1998) and Chi and Chin (2011), we do not restrict the analysis to financial distressed firms and consider audit reports with either qualified, unfavorable, disclaimer of opinion, or explanatory paragraphs, collectively as qualified reports. *PBANK* measures the probability of bankruptcy based on Zmijewski (1984), where higher values indicate a higher probability of bankruptcy. Thus we predict a positive effect on *PBANK* on the likelihood of audit qualifications. *SIZE* is included to control for the impact it can have on the propensity of the auditor to be independent. Hence, small clients would face higher risk of bankruptcy and this should increase the likelihood of qualified reports (Francis & Krishnan, 1999; Reynolds & Francis, 2001). Besides, small clients have lower negotiating power with the auditor to avoid audit qualifications. However, on the other hand, since large clients involve potentially higher litigation costs, auditors might be more willing to issue qualified reports to these clients (Craswell et al. 2002). Consequently, the sign on the coefficient for *SIZE* could be either positive or negative. *AGE* accounts for a higher risk of financial distress for younger companies (Dopuch et al., 1987). Accordingly, we predict a negative effect of *AGE* on the likelihood of a qualified report. *LEV* measures the risk associated to higher levels of debt, while *CLEV* captures changes in leverage that may make companies to unsustainable levels of debt. Hence, financial leverage will raise litigation risk as it makes bankruptcy more likely. In addition, highly levered firms tend to present lower accounting quality (Aharony et al., 1993). Thus, we predict a positive effect of both *LEV* and *CLEV* on the likelihood of a qualified report. *LLOSS* and *INVEST* are included because companies with losses and low levels of liquidity are more likely to enter bankruptcy (Reynolds & Francis, 2001) and also, similarly to what occurs with leverage, to manipulate earnings. Hence, we expect positive (negative) effects of *LLOSS* (*INVEST*) on the likelihood of audit qualifications. Finally, *AUDFIRM* accounts for a potential higher propensity to issue qualified reports by big 4 auditors.

### 4.2. Sample and dataset

We perform the empirical analysis on the basis of non-financial companies quoted in the Spanish Stock Exchange (*Sistema de Interconexión Bursátil Español*) during the research period 2002-2010. In addition, to be able to compute the length of audit partner tenure, for the companies in the sample, information about the auditor opinion and the name of the engagement partner should be available for the period 1995-2010. Information regarding audit reports is obtained from the *Comisión Nacional del Mercado de Valores* (CNMV), while data about independent variables in the models is provided by Thomson Reuters Knowledge. Our dataset is formed by 83 firms and, given the nine-year research period, by 747 firm-year observations. However, in 12 cases, information about at least one variable in the models was not available. Therefore, the sample is finally formed by 735 observations. We examine 735 audit reports, 600 of them unqualified and 135 have a qualified opinion. GCMOs have been relatively scarce in our research period, as only 13 out of the 135 qualified reports have GCMOs. Besides, none of the audit reports has an adverse opinion or a disclaimer of opinion.

In the Report on the Review of the Annual Financial Reports filled with the CNMV (CNMV, 2009), the regulator of the Spanish stock market classifies audit qualifications into two major groups: Quantified and unquantified. In addition, quantified qualifications are also classified into two subgroups depending on whether they affect profit and losses or equity. Similarly, unquantified qualifications are also classified into 'Uncertainty and others' and 'Limitations'. Among qualifications due to uncertainties, the most serious ones are those concerning the continuation of business, in which the auditor expresses its doubts about the future of the company. However, uncertainties can also have less dramatic effects; for example, they can be associated to the firm's ability to recover some tax credits. On the other hand, qualifications for limitations on scope show that the auditor has not had enough information to apply the procedures required by the technical auditing standards.

Table 1 shows some descriptive statistics about the variables used in the models. Qualified audit reports represent 15 percent of the total sample. Average partner tenure is three years, rather below the maximum tenure established by Spanish legislation. It should be noted that the maximum tenure in our sample is nine years, two years over the maximum of seven years established by the Spanish law. Regarding the tenure with the audit firm, the average of ten years with a maximum of 24 years would show the relatively long audit firm tenures in Spain by international standards.[3] On average, companies in the sample have been reporting to CNMV for 16 years. Regarding the type of audit firm, companies audited by Big 4 auditors represent 92 percent of the sample, thus showing an extreme concentration of the Spanish audit market by Big 4 auditors by international standards.[4]

[3] For example, the average audit firm tenure is 5.7 years in Chi & Huang (2005); 3.6 years in Knechel & Vanstraelen (2007); 8.6 years in Gul et al. (2007); 6.9 years in Chen et al. (2008); and 6.9 years in Lim & Tan (2010).

[4] For example, 64% reported by C&S for Australia or 80% reported by Chi & Huang (2005) for Taiwan.

**INSERT TABLE 1 AROUND HERE**

Table 2 shows Pearson's correlation coefficients, with significance levels, between pairs of variables. In general, correlation levels are rather low, with a maximum value of 0.56 between *LEV* and *CLEV*. The correlation pattern of *OPINION* with the independent variables strongly supports the discussion carried out at the end of the previous section. Hence, qualified opinions would be negatively associated to the firm's financial health (*LEV*, *CLEV*, *LLOSS* and *INVEST*) and to *SIZE,* while no significant relationship is observed with *PBANK*, *AGE* or *AUDFIRM*. Moreover, although no significant association between *OPINION* and *PARTEN* is reported, *OPINION* would be negatively related to *FIRMTEN*. This would suggest loss of independence in longer tenures with the audit firm though not in longer tenures with the audit partner. Focusing on independent variables, correlation matrix shows some rather obvious results, as the correlation pattern of *PBANK* with *LEV*, *CLEV*, *LLOSS* and *INVEST*. However, some other results are more interesting. For example, companies audited by Big 4 firms tend to be relatively larger and more profitable. These companies also show longer firm tenures but shorter partner tenures, the later indicating that partner rotation is higher among clients of Big 4 firms. This probably reflects both, a greater willingness of Big 4 firms to rotate partners, as well as a better chance of doing so compared to non-Big 4 firms. Finally, results for variables measuring tenure would show the expected positive correlation between *PARTEN* and *FIRMTEN*.

**INSERT TABLE 2 AROUND HERE**

## 5. Results

Firstly, we present and discuss the results of a preliminary univariate analysis and afterwards address the multivariate logistic analysis. Finally, in the last subsection, we examine the interaction effects of firm and partner tenure on auditor independence.

### 5.1. Univariate analysis

Table 3 shows the results of the univariate analysis. As the Shapiro-Wilk test strongly rejects the hypothesis of normality for each independent variable, the Mann-Whitney test of differences of medians is performed in order to assess the statistical significance of these differences. Median values of independent variables across subsamples of firms, according to the opinion of the audit report, and significance levels (from the Mann-Whitney test for continuous variables and the chi-square test for dichotomous variables) are provided. As shown by the table, *PARTEN* is not significantly associated to the opinion of the audit report. Conversely, firms with unqualified reports tend to show significantly longer engagements with the audit firm. In both cases, these results would support the correlation pattern shown by table 2. Results regarding control variables are, in general, far from surprising. Hence, firms with qualified reports show relatively lower levels of solvency (*PBANK, LLOSS* and *INVEST*)

and tend to be smaller than firms with unqualified reports. However, we do not find significant results for, *AGE, LEV, CLEV* or *AUDFIRM*.

**INSERT TABLE 3 AROUND HERE**

### 5.2. Multivariate analysis

In this subsection we address the joint effect of partner tenure and the proposed control variables on the likelihood of audit qualifications through logistic regression models. Results of the estimation of *(1)* are shown in table 4 (column A).

**INSERT TABLE 4 AROUND HERE**

Unlike C&S and Ye et al. (2011) who used cross-sectional datasets, we follow a panel data approach. Datasets with panel structure allow to control for individual unobserved heterogeneity better, and therefore to reduce the likelihood of reporting purely spurious effects due to an omitted variable bias. In the particular case of audit qualifications, given the relatively low explanatory power of the models proposed, the omitted variable bias could be serious. In keeping with the panel structure of the dataset we perform panel data logistic regressions. As expected, the likelihood ratio test supports the use of a panel data approach to estimate the model (*P-value* < *0.000*) over a classical pooled regression. Besides, the model is statistically significant (*P-value* < *0.000*), indicating that observations are well fitted by the model. Other indicators of the model's goodness of fit are the pseudo $R^2$ and the percentage of cases correctly predicted. Hence, the model explains 28 percent of the total variance and correctly classifies 90 percent of cases. Although correlation coefficients between pairs of independent variables shown in table 2 did not suggest serious multicollinearity, variance inflation factors (VIF) are calculated after the estimation to rule out the negative potential effects of multicollinearity. As expected, VIF (not reported) are rather low, with a maximum value of 1.68 for variable *LEV*, thus supporting the initial view that multicollinearity would not affect our results.

The main result in table 4 (column A) is that partner tenure does not significantly affect the issuance of audit qualifications. This finding had been anticipated by the correlation pattern in table 2 and later by the univariate analysis in table 3. Accordingly, H1, stating that the likelihood of a qualified report will decrease with audit partner tenure, would be rejected. Since we do not limited to GCMOs or to financially distressed firms, this result is not fully comparable to those provided by either C&S or Ye et al. (2011), both papers reporting a negative effect of partner tenure on the likelihood of GCMOs in the Australian market. Besides, it should be noted that while C&S and Ye et al. (2011) investigated partner tenure under voluntary partner rotation, our research is carried out under a mandatory partner rotation rule. However, despite the limited comparability between our results with both C&S and Ye et al. (2011), it is somehow surprising that long partner tenures seem to involve negative effects on independence in the high litigation risk Australian audit market but not Spain. Similarly to partner tenure, the

effects of audit firm tenure on the likelihood audit qualifications are also non-significant, and thus H2 is also rejected.

Results regarding control variables strongly meet our expectations after the review of prior research and the univariate analysis. Hence, audit qualifications would be more likely for companies with lower solvency (*PBANK, LLOSS* and *INVEST*). In section 4 we had not predicted the sign of the effect for *SIZE* as, on the one hand, large companies tend to exhibit higher audit quality and negotiating power with the audit firm, but, on the other hand, these companies also involve higher levels of litigation risk for the audit firm. Results would indicate that audit qualifications are more likely for small than for large firms. As predicted, clients of Big 4 audit firms show higher probability of receiving a qualified report. However, we do not report significant results for *AGE*, *LEV* or *CLEV*. In all three cases the lack of significance had been anticipated by the univariate analysis in table 3.

As usual in the literature, we perform a series of checks to assess the robustness of results. Firstly, we address the potential effects of influential observations. Hence, after the estimation of *(1)* we detected 13 influential observations (with Pregibon dbeta higher than 0.2). Results of the reestimation of *(1)* without these observations (not reported) are qualitatively the same as those in column A, and therefore we conclude that our results are not affected by influential observations. The second analysis aims to assess potential endogeneity problems associated to those companies changing the audit firm (and thus also the audit partner) as a result of a qualified opinion. Thus, we reestimate *(1)* after removing from the sample 91 observations with one or two years of audit firm tenure. Results of the new estimation (not reported) are qualitatively the same as those in in column A. Thirdly, we check the robustness of results to an alternative measure of partner tenure. Hence, we substitute the single linear variable *PARTEN* for the two dichotomous variables *SHORTPARTEN* (1 if partner tenure is three years or less and 0 otherwise) and *LONGPARTEN* (1 if partner tenure is more than four years and 0 otherwise). We chose the median value of *PARTEN* to delimitate short partner tenures. Results of the new estimation in table 4 (column B) do not show any significant effects for either *SHORTPARTEN* or *LONGPARTEN*. Thus, the non-significant effect of partner tenure on audit qualification does not depend on how partner tenure is measured. In the same line, Davis et al. (2009) posed that audit quality could increase in early years through a learning effect, but it would decrease in later years due to a bonding effect. Although the authors studied the effects of audit firm tenure, the explanation could be easily extended to partner tenure. Hence, we estimate a quadratic model with *PARTEN* and the new variable *PARTEN2*, defined as the square of *PARTEN*. Under the non-monotonic effect of tenure, the coefficient of *PARTEN* should be positive and significant while the coefficient of *PARTEN2* should be negative and significant. Results in table 4 (column C) do not support a non-monotonic effect of partner tenure on audit qualifications, as neither *PARTEN* nor *PARTEN2* show any significant effects. The following analysis addresses a potential flaw in our model due to the inclusion of GCMOs and NGCMOs as a single category of the dependent variable *OPINION*. It could be argued that, as both types of audit qualifications refer to different dimensions of the audit activity and could also involve different levels of litigation risk, the inclusion of GCMOs and NGCMOs as a single category of

the dependent variable might cause misleading results. Hence, similarly to Chi & Chin (2011) we reestimate *(1)* after the removal from the sample of those observations with GCMOs. As expected, given the low incidence of GCMOs in our data, results reported in column D are very similar to those in column A, in particular regarding *FIRMTEN* and *PARTEN*.

We also address the robustness of our results to situations of superficial partner rotation. Whenever a mandatory partner rotation rule has been implemented, a so-called 'period of grace' has also been established. As an example, the SOX required a five-year time-out period before a partner could re-audit a client. In Spain this period is limited to only two years. Chen et al. (2008) and Bamber & Bamber (2009) posed the importance of differentiating between situations of rotation and those that could be considered as superficial rotation, in which the partner re-audit the same firm again after a short period out the firm. This issue might affect results, since in these situations the measure of tenure as the number of consecutive years auditing the same company will not adequately account for the nature of the relationship between the partner and the client.[5] Therefore, partner tenure measures generally used in the literature, which do not control for superficial rotation, could provide misleading results. Obviously, the potential implications of ignoring situations of superficial rotation will depend on its frequency in the sample. Our dataset comprises 192 partner changes, including eight cases in which the new partner had audited the company before. The eight cases represent 23 observations. While in half of them the partner remained rotated off for three years or less, in the remaining four cases it was out of the firm at least six years. Given the low incidence of superficial rotation in our sample, we do not expect it can seriously affect reported results. Nevertheless, we re-estimate *(1)*, initially without the 23 observations potentially affected by superficial rotation and then reducing the sample only by the four cases (10 observations) in which the partner remained rotated off for three years or less. As expected, results (not reported) do not show any significant differences compared to those reported in column A for the whole sample.

**INSERT TABLE 5 AROUND HERE**

The final analysis performed accounts for the potential effects of economic downturns on the tenure-independence relationship. Periods of economic downturns involve higher litigation risk for the audit firm as the risk of bankruptcy increases. Therefore, we might expect auditors being less willing to impair independence in long-term engagements with either the partner or the audit firm during these periods. To address this issue we split our sample into two subsamples (pre-crisis and crisis) and afterwards perform sequential estimations of *(1)* for each subsample. Results of the new estimations are shown in table 5. The most interesting finding would be that while *PARTEN* remains non-significant in both estimations, this is not the case with *FIRMTEN*, which shows significant results in the estimation conducted with the pre-

[5] To clarify this issue, we can imagine two partners auditing two different companies for the two-year period 2008-2009. However, while the first auditor had already audited the company during the whole period 2000-2005, the second auditor had not previously audited the company. Although familiarity threats associated to tenure would be expected to be rather different in both situations, the value of the variable partner tenure will be two years in both cases.

crisis subsample. The negative sign of the coefficient would indicate loss of independence in longer tenures with the audit firm in the pre-crisis period. The lack of significance of *FIRMEN* in the estimation with the crisis subsample and the significance effect with negative sign in the estimation with the pre-crisis subsample would be in line with our expectations discussed above that auditors would be less willing to impair independence during periods of economic downturns.

### 5.3. The interaction of firm and partner tenure

Could the potential loss of independence in longer partner tenures depend on the tenure with the audit firm? In our view, it cannot be assumed, on an a priori basis, that, for example, four years of partner tenure should involve the same effects on independence under four or 20 years of audit firm tenure. As posed by Bamber & Bamber (2009), in audit partner rotation, in most cases, all that changes is one audit partner, while remaining most of the audit team and the audit firm's methodology and procedures. While studies on the effects of partner tenure on discretionary accruals have generally included audit firm tenure in the model (Chi & Huang, 2005; Chen et al., 2008; Fargher et al., 2008), this is not case in C&S or Ye et al. (2011) studies examining the effects of partner tenure on the opinion of the audit report. Nevertheless, none of the abovementioned papers has specifically addressed the differential effect of partner tenure on audit quality under long and short audit firm tenures.

**INSERT TABLE 6 AROUND HERE**

In order to control for the potential effects of firm tenure on the actual involvement of the engagement partner with the client, table 6 (column A) shows the results of the estimations of *(2)*. According to H3 we expected that the negative effect of partner tenure on independence would be stronger under long audit firm tenures. However, the interaction variable *PARTEN*LONGFT* shows no significant effects on the likelihood of audit qualifications, and therefore similarly to H1 and H2, H3 is also rejected. Results regarding *FIRMTEN*, *PARTEN* or control variables are qualitative the same as those in table 4 (column A).

The final analysis regarding the interaction effects of firm and partner tenure consists on the exam of auditor independence in audit engagements characterized by long firm and partner tenures. Although, according to the evidence reported so far in this paper, we do not expect lower independence in these engagements, we consider this a meaningful check, as the prior estimations could not adequately account for potential loss of auditor independence in these engagements (for example when long partner tenure interact with extremely long audit firm tenures). Accordingly, we reestimate *(2)* after substituting *PARTEN*LONGFT* by the new variable *LONGFTLONGPT* (long firm and partner tenures defined as 1 for those engagements in which firm tenure is ten years or more and partner tenure is more than four years and 0 otherwise). Results in table 6 (column B) show non-significant results for the new variable. We chose the median value of *FIRMTEN* as the cutoff point to define long audit firm tenures. However, similar results are observed (not reported) when long firm tenures are defined as

more than 20 years. Thus, even under long tenures with the audit partner and extremely long tenures with the audit firm, we do not report loss of independence.

## 6. Concluding remarks

While a number of papers have addressed the implications of audit firm tenure on various proxies of audit quality, just a few articles have examined the effects of partner tenure and only two of them have specifically considered the impact of partner tenure on the opinion of the audit report, both studying the high litigation risk Australian market. Besides, these studies have been conducted under voluntary partner rotation regulations. This paper extends previous research, as we study partner tenure in a low litigation risk country and under mandatory partner rotation regulation. Moreover, unlike prior research we also examine the interaction effects of firm and partner tenure on auditor independence. The results of this research might have some use in the current regulatory debate within the EU regarding auditor independence.

Our main finding would be the lack of significant effects of partner tenure on the likelihood of audit qualifications. Thus, auditor independence does not seem to be compromised in long-term engagements with the audit partner. This result is robust to a series of checks. Moreover, we do not find different implications of partner tenure on auditor independence depending on the tenure with the audit firm. Evidence reported by C&S and Ye et al. (2011) for Australia showed negative effects of partner tenure on the likelihood of audit qualifications. Although important differences in the methodology and the regulatory context would make difficult the comparability of our results with those by C&S and Ye et al. (2011), it is somewhat surprising that long partner tenures seem to compromise independence in the high litigation Australian market but not it in the Spanish low litigation setting. However, it should be noted that the loss of independence reported by C&S for the Australian market was rather weak and limited to non-Big 4 firms. If compared with Australia, the pronounced concentration of the Spanish market by Big 4 firms could explain these contradictory results. Moreover, C&S and Ye et al. (2011) examined partner tenure under voluntary partner rotation while the institutional context of this research is characterized by mandatory partner rotation. Precisely, the mandatory rotation of partners was imposed in many countries to preserve auditor independence. However, further research examining the issue in countries with different legal traditions would undoubtedly contribute to a better understanding of the potential loss of independence associated to partner tenure.

Focusing on audit firm tenure, our results do not support loss of independence in long tenures with the audit firm for the whole research period. However, we report a negative effect of firm tenure on independence in the pre-crisis period, but not during the economic downturn. This result might indicate that auditors could be willing to impair independence in long tenures with the audit firm, except during periods of economic downturns when the risk of litigation increases.

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**Table 1. Descriptive statistics (735 firm-year observations)**

| VARIABLE | MEAN | MEDIAN | ST. DEV. | MAXIMUM | MINIMUM |
|---|---|---|---|---|---|
| ***OPINION*** | 0.15 | 0.00 | 0.35 | 1.00 | 0.00 |
| ***PBANK*** | -2.96 | -1.61 | 32.77 | 77.56 | -938.07 |
| ***SIZE*** | 6.68 | 6.46 | 2.00 | 11.77 | 1.14 |
| ***AGE (in years)*** | 16.22 | 17 | 5.00 | 25.00 | 1.00 |
| ***LEV*** | 3.44 | 1.70 | 4.76 | 922.77 | -14.46 |
| ***CLEV*** | 0.07 | -0.03 | 0.96 | 13.64 | -2.99 |
| ***LLOSS*** | 0.14 | 0.00 | 0.35 | 1.00 | 0.00 |
| ***INVEST*** | 0.17 | 0.08 | 0.24 | 2.99 | 0.00 |
| ***AUDFIRM*** | 0.92 | 1.00 | 0.27 | 1.00 | 0.00 |
| ***FIRMTEN*** | 9.78 | 9.00 | 5.94 | 24.00 | 1.00 |
| ***PARTEN*** | 3.33 | 3.00 | 2.01 | 9.00 | 1.00 |

*OPINION*: 1 if company receives an 'unclean' audit report and 0 otherwise; *PBANK*: probability of bankruptcy; *SIZE*: natural logarithm of total assets of the company. *AGE*: natural logarithm of the number of years since listing on the supervisor of the Spanish stock market. To facilitate interpretation, this table shows descriptive statistics of the variable defined in years; *LEV*: total liabilities divided by total equity; *CLEV*: change in *LEV* during the year; *LLOSS*: 1 if client reported negative net income the previous year and 0 otherwise; *INVEST*: current assets less debtors and inventories, divided by current liabilities; *AUDFIRM*: 1 if the company is audited by a Big 4 audit firm and 0 otherwise; *FIRMTEN*: number of consecutive years audited by the same audit firm; *PARTEN*: number of consecutive years the partner has been signing the audit report of the company.

**Table 2. Pearson correlations and levels of significance between pairs of variables**

| | ***OPINION*** | ***PBANK*** | ***SIZE*** | ***AGE*** | ***LEV*** | ***CLEV*** | ***LLOSS*** | ***INVEST*** | ***AUDFIRM*** | ***FIRMTEN*** |
|---|---|---|---|---|---|---|---|---|---|---|
| ***PBANK*** | 0.02 | | | | | | | | | |
| ***SIZE*** | -0.18*** | 0.23*** | | | | | | | | |
| ***AGE*** | -0.03 | 0.22*** | 0.10*** | | | | | | | |
| ***LEV*** | 0.09*** | 0.10*** | -0.01 | -0.02 | | | | | | |
| ***CLEV*** | 0.13*** | 0.21*** | -0.03 | -0.03 | 0.56*** | | | | | |
| ***LLOSS*** | 0.22*** | 0.15*** | -0.23*** | 0.03 | -0.03 | 0.01 | | | | |
| ***INVEST*** | -0.12*** | -0.21*** | -0.01 | -0.00 | -0.03 | -0.08* | 0.04 | | | |
| ***AUDFIRM*** | -0.04 | -0.01 | 0.24*** | -0.04 | -0.00 | -0.10*** | -0.16*** | -0.10*** | | |
| ***FIRMTEN*** | -0.19*** | 0.04 | 0.23*** | 0.16*** | -0.01 | -0.04 | -0.16*** | 0.03 | 0.26*** | |
| ***PARTEN*** | -0.03 | 0.00 | -0.02 | 0.05 | 0.03 | 0.06 | -0.02 | 0.06 | -0.07** | 0.16*** |

*, **, *** Significant at the 10 percent, 5 percent and 1 percent levels, respectively.

*OPINION*: 1 if company receives an 'unclean' audit report and 0 otherwise; *PBANK*: probability of bankruptcy; *SIZE*: natural logarithm of total assets of the company; *AGE*: natural logarithm of the number of years since listing on the supervisor of the Spanish stock market; *LEV*: total liabilities divided by total equity; *CLEV*: change in LEV during the year; *LLOSS*: 1 if client reported negative net income the previous year and 0 otherwise; *INVEST*: current assets less debtors and inventories, divided by current liabilities; *AUDFIRM*: 1 if the company is audited by a Big 4 audit firm and 0 otherwise; *FIRMTEN*: number of consecutive years audited by the same audit firm; *PARTEN*: number of consecutive years the partner has been signing the audit report of the company.

**Table 3. Median values of independent variables according with auditor opinion. For qualitative variables, mean values are provided.**

| | UNQUALIFIED | QUALIFIED | Sig. Level |
|---|---|---|---|
| ***PBANK*** | -1.70 | -1.20 | *** |
| ***SIZE*** | 6.62 | 5.45 | *** |
| ***AGE (in years)*** | 17 | 16 | |
| ***LEV*** | 1.63 | 1.89 | |
| ***CLEV*** | -0.03 | -0.02 | |
| ***LLOSS*** | 0.11 | 0.33 | *** |
| ***INVEST*** | 0.09 | 0.03 | *** |
| ***AUDFIRM*** | 0.92 | 0.89 | |
| ***FIRMTEN*** | 10.00 | 6.00 | *** |
| ***PARTEN*** | 3.00 | 3.00 | |
| **Number of obs.** | 600 | 135 | |

*, **, *** Significant at the 10 percent, 5 percent and 1 percent levels, respectively.

Significance tests:

Mann-Whitney test of differences of medians for variables: *PBANK, SIZE, AGE, LEV, CLEV, INVEST, FIRMTEN* and *PARTEN*.

Pearson's chi-square test for the dichotomous variables: *LLOSS* and *AUDFIRM*.

*OPINION*: 1 if company receives an 'unclean' audit report and 0 otherwise; *PBANK*: probability of bankruptcy; *SIZE*: natural logarithm of total assets of the company. *AGE*: natural logarithm of the number of years since listing on the supervisor of the Spanish stock market. To facilitate interpretation, this table shows descriptive statistics of the variable defined in years; *LEV*: total liabilities divided by total equity; *CLEV*: change in *LEV* during the year; *LLOSS*: 1 if client reported negative net income the previous year and 0 otherwise; *INVEST*: current assets less debtors and inventories, divided by current liabilities; *AUDFIRM*: 1 if the company is audited by a Big 4 audit firm and 0 otherwise; *FIRMTEN*: number of consecutive years audited by the same audit firm; *PARTEN*: number of consecutive years the partner has been signing the audit report of the company.

*This is a post-print (final draft post-refeering). Published in final edited form as*
**Garcia-Blandón, J.; Argilés-Bosch, J.M.** Audit partner tenure and independence in a low litigation risk setting. En: *Accounting in Europe*. London: Taylor and Francis Online, 2016. Vol.13, núm.3, p.405-424. ISSN 1744-9480. Disponible a: https://doi.org/10.1080/17449480.2016.1244340



**Table 4. The effects of auditor tenure on independence. Results from logistic regressions. Parameters estimates and z-values in parentheses**

| | Predicted sign | Column A: Estimation of *(1)* | | Column B: Estimation of *(1)* with *SHORTPARTEN* and *LONGPARTEN* instead of *PARTEN* | | Column C: Estimation of *(1)* with *PARTEN* and *PARTEN2* | | Column D: Estimation of *(1)* without observations with GCMOs | |
|---|---|---|---|---|---|---|---|---|---|
| ***PBANK*** | + | 0.49<br>(2.66) | *** | 0.49<br>(2.64) | *** | 0.49<br>(2.66) | *** | 0.47<br>(2.28) | ** |
| ***SIZE*** | +/- | -2.05<br>(-3.96) | *** | -2.05<br>(-3.95) | *** | -2.08<br>(-3.96) | *** | -2.94<br>(-4.21) | *** |
| ***AGE*** | - | -1.71<br>(-0.90) | | -1.65<br>(-0.86) | | -1.87<br>(-0.96) | | -2.09<br>(-0.99) | |
| ***LEV*** | + | 0.07<br>(1.22) | | 0.06<br>(1.15) | | 0.06<br>(1.19) | | 0.15<br>(2.10) | ** |
| ***CLEV*** | + | 0.05<br>(0.23) | | 0.07<br>(0.32) | | 0.05<br>(0.26) | | -0.08<br>(-0.31) | |
| ***LLOSS*** | + | 1.26<br>(2.30) | ** | 1.21<br>(2.21) | ** | 1.26<br>(2.29) | ** | 0.82<br>(1.35) | |
| ***INVEST*** | - | -5.81<br>(-3.18) | *** | -5.72<br>(-3.09) | *** | -5.80<br>(-3.14) | *** | -5.12<br>(-2.54) | ** |
| ***AUDFIRM*** | + | 2.06<br>(1.99) | ** | 2.04<br>(1.97) | ** | 2.11<br>(2.01) | ** | 2.50<br>(2.06) | ** |
| ***FIRMTEN*** | -(H2) | -0.03<br>(-0.32) | | -0.03<br>(-0.66) | | -0.03<br>(-0.71) | | -0.01<br>(-0.25) | |
| ***PARTEN*** | - in A (H1);<br>+ in C | 0.07<br>(0.72) | | | | -0.22<br>(-0.63) | | 0.11<br>(0.95) | |
| ***SHORTPARTEN*** | +(H1) | | | 0.22<br>(0.47) | | | | | |
| ***LONGPARTEN*** | -(H1) | | | 0.60<br>(1.07) | | | | | |
| ***PARTEN2*** | - | | | | | 0.04<br>(0.86) | | | |
| **Constant** | | 6.61<br>(2.02) | ** | 6.47<br>(1.93) | * | 7.19<br>(2.12) | ** | 9.56<br>(2.45) | ** |
| ***YEAR*** | | YES (not reported) | | YES (not reported) | | YES (not reported) | | YES (not reported) | |
| ***INDUSTRY*** | | YES (not reported) | | YES (not reported) | | YES (not reported) | | YES (not reported) | |
| **N**<br>**Pseudo $R^2$**<br>**Wald Chi (2)**<br>**% Cor. Clas.** | | 735<br>0.28<br>45.93<br>90 | <br><br>***<br> | 735<br>0.28<br>45.96<br>90 | <br><br>***<br> | 735<br>0.28<br>45.85<br>90 | <br><br>***<br> | 722<br>0.28<br>38.99<br>91 | <br><br>***<br> |

*, **, *** Significant at the 10 percent, 5 percent and 1 percent levels, respectively.

*PBANK*: probability of bankruptcy; *SIZE*: natural logarithm of total assets of the company; *AGE*: natural logarithm of the number of years since listing on the supervisor of the Spanish stock market; *LEV*: total liabilities divided by total equity; *CLEV*: change in *LEV* during the year; *LLOSS*: 1 if client reported negative net income the previous year and 0 otherwise; *INVEST*: current assets less debtors and inventories, divided by current liabilities; *AUDFIRM*: 1 if the company is audited by a Big 4 audit firm and 0 otherwise; *FIRMTEN*: number of consecutive years audited by the same audit firm; *PARTEN*: number of consecutive years the partner has been signing the audit report of the company; *SHORTPARTEN*: 1 if partner tenure is three years or less and 0 otherwise; *LONGPARTEN*: 1 if partner tenure is more than four years and 0 otherwise; *PARTEN2*: the square of *PARTEN*.

**Table 5. The effects of auditor tenure on independence before and during economic downturns. Results from logistic regressions. Parameters estimates and z-values in parentheses**

| | Predicted sign | Pre-crisis: 2002-2007 | | Crisis: 2008-2010 | |
|---|---|---|---|---|---|
| ***PBANK*** | + | 0.38<br>(1.40) | | 0.06<br>(1.72) | * |
| ***SIZE*** | +/- | -1.61<br>(-3.17) | *** | -1.93<br>(-4.47) | *** |
| ***AGE*** | - | -0.00<br>(-0.00) | | 4.30<br>(1.50) | |
| ***LEV*** | + | -0.04<br>(-0.42) | | 0.18<br>(2.24) | ** |
| ***CLEV*** | + | 0.08<br>(0.18) | | -0.14<br>(0.93) | |
| ***LLOSS*** | + | 0.17<br>(0.60) | | 0.51<br>(0.79) | |
| ***INVEST*** | - | -4.28<br>(-2.68) | *** | -9.05<br>(-1.55) | |
| ***AUDFIRM*** | + | 1.68<br>(2.36) | ** | 0.96<br>(0.92) | |
| ***FIRMTEN*** | -(H2) | -0.09<br>(-2.01) | ** | -0.05<br>(-0.63) | |
| ***PARTEN*** | -(H1) | 0.02<br>(0.29) | | 0.14<br>(0.64) | |
| **Constant** | | 5.02<br>(1.64) | | -0.96<br>(-0.25) | |
| ***YEAR*** | | YES (not reported) | | YES (not reported) | |
| ***INDUSTRY*** | | YES (not reported) | | YES (not reported) | |
| **N**<br>**Pseudo $R^2$**<br>**Wald Chi (2)**<br>**% Cor. Clas.** | | 494<br>0.26<br>86.85<br>90 | <br><br>***<br> | 241<br>0.44<br>56.62<br>92 | <br><br>***<br> |

*, **, *** Significant at the 10 percent, 5 percent and 1 percent levels, respectively.

*PBANK*: probability of bankruptcy; *SIZE*: natural logarithm of total assets of the company; *AGE*: natural logarithm of the number of years since listing on the supervisor of the Spanish stock market; *LEV*: total liabilities divided by total equity; *CLEV*: change in *LEV* during the year; *LLOSS*: 1 if client reported negative net income the previous year and 0 otherwise; *INVEST*: current assets less debtors and inventories, divided by current liabilities; *AUDFIRM*: 1 if the company is audited by a Big 4 audit firm and 0 otherwise; *FIRMTEN*: number of consecutive years audited by the same audit firm; *PARTEN*: number of consecutive years the partner has been signing the audit report of the company.

**Table 6. The interaction of firm and partner tenures. Results from logistic regressions. Parameters estimates and z-values in parentheses**

| | Predicted sign | Column A. Estimation of *(2)* | | Column B. Estimation of (2) with *LONGFTLONGPT* instead of *PARTEN*LONGFIRMTEN* | |
|---|---|---|---|---|---|
| ***PBANK*** | + | 0.49<br>(2.68) | *** | 0.49<br>(2.66) | *** |
| ***SIZE*** | - | -2.03<br>(-3.93) | *** | -2.05<br>(-3.96) | *** |
| ***AGE*** | - | -1.63<br>(-0.85) | | -1.72<br>(-0.90) | |
| ***LEV*** | + | 0.06<br>(1.24) | | 0.07<br>(1.21) | |
| ***CLEV*** | + | 0.05<br>(0.25) | | 0.05<br>(0.24) | |
| ***LLOSS*** | + | 1.26<br>(2.29) | ** | 1.25<br>(2.29) | ** |
| ***INVEST*** | - | -5.82<br>(-3.18) | *** | -5.81<br>(-3.18) | ** |
| ***AUDFIRM*** | + | 2.09<br>(2.01) | ** | 2.05<br>(1.99) | ** |
| ***FIRMTEN*** | -(H2) | -0.02<br>(-0.29) | | -0.03<br>(-0.73) | |
| ***PARTEN*** | -(H1) | 0.11<br>(0.99) | | 0.06<br>(0.57) | |
| ***PARTEN*LONGFT*** | -(H3) | -0.10<br>(-0.72) | | | |
| ***LONGFTLONGPT*** | - | | | 0.09<br>(0.13) | |
| ***Constant*** | | 6.37<br>(1.94) | * | 6.63<br>(2.02) | ** |
| ***YEAR*** | | YES (not reported) | | YES (not reported) | |
| ***INDUSTRY*** | | YES (not reported) | | YES (not reported) | |
| **N**<br>**Pseudo $R^2$**<br>**Wald Chi (2)**<br>**% Cor. Clas.** | | 735<br>0.28<br>46.14<br>90 | <br><br>***<br> | 735<br>0.28<br>45.95<br>90 | <br><br>***<br> |

*, **, *** Significant at the 10 percent, 5 percent and 1 percent levels, respectively.

*PBANK*: probability of bankruptcy; *SIZE*: natural logarithm of total assets of the company; *AGE*: natural logarithm of the number of years since listing on the supervisor of the Spanish stock market; *LEV*: total liabilities divided by total equity; *CLEV*: change in *LEV* during the year; *LLOSS*: 1 if client reported negative net income the previous year and 0 otherwise; *INVEST*: current assets less debtors and inventories, divided by current liabilities; *AUDFIRM*: 1 if the company is audited by a Big 4 audit firm and 0 otherwise; *FIRMTEN*: number of consecutive years audited by the same audit firm; *PARTEN*: number of consecutive years the partner has been signing the audit report of the company; *LONGFT*: 1 if audit firm tenure is ten years of more, and 0 otherwise; *LONGFTLONGPT*: 1 if firm tenure ten years or more and partner tenure is more than four years and 0 otherwise.