

**The Effect of Auditor Reputation on the Pricing of Accruals: Evidence from
Privately Held Companies***

Belén Gill-de-Albornoz Noguer [†]

Universitat Jaume I

Manuel Illueca Muñoz [‡]

Universitat Jaume I and Instituto Valenciano de Investigaciones Económicas (IVIE)

Abstract

The aim of this paper is to test whether the pricing of accruals depends on auditor reputation. Using a wide sample made up of Spanish privately held firms for the period 1996-2002, we show that the inverse correlation between accruals quality and cost of debt reported by Francis et al. (2005) only holds when the auditor belongs to a Big 4 firm. When the auditors are national majors or local audit firms, an increase of accruals quality does not lead to a significant decrease in the cost of debt.

Key words: cost of debt, accruals quality, auditor quality, auditor reputation.

JEL classification codes: M41, G32.

* This paper has benefited considerably from the comments of Francisco Pérez and Jose Moreira. The usual caveat applies. An earlier version of this paper was distributed as working paper of the BBVA Foundation. Authors gratefully acknowledge financial support from the Spanish Ministry of Education through grants SEJ2005-08644-C02-02 and SEJ2005-02776.

[†] Finance and Accounting Department. Universitat Jaume I. Campus del Riu Sec, Avda. Sos Baynat s/n. 12071, Castellón de la Plana (Spain). Phone number: +34 964 387137. Fax: +34 964 728165. Email: noguer@cofin.uji.es.

[‡] Finance and Accounting Department. Universitat Jaume I. Campus del Riu Sec, Avda. Sos Baynat s/n. 12071, Castellón de la Plana (Spain). Phone number: +34 964 387135. Email: illueca@cofin.uji.es, manuel.illueca@ivie.es.

1. Introduction

Empirical accounting research has shown that accruals form part of the information set used by investors to make their decisions. On the one hand, some studies have provided evidence that accruals increase the ability of accounting figures to predict the future cash flows of the firm (e.g.: Dechow, 1994; Subramanyam, 1996). On the other hand, recent studies point out that when management estimate accruals correctly, the information risk of the firm is lower, the information asymmetries decrease, and consequently both the cost of capital and the cost of debt are reduced (Francis *et al.*, 2005 and Bharath *et al.*, 2004).

However, the use of accruals in decision making may depend on the degree of trust investors place in the process followed by the firm to calculate them. After all, accruals are based on estimations that are not free from error, in part because management may adopt an opportunistic approach in the setting of accounting policies (Healy and Whalen, 1999). Even if accruals are accurately estimated by the firm, investors could discard their use in practical settings if they do not give credence to the estimation process. Precisely in order to attribute credibility to accounting information and to encourage its use in decision making, the standards require that an audit report issued by an independent expert be included in the annual accounts, providing investors with an authorised assessment of the degree of diligence with which managers have applied the accounting principles currently in force. Accruals should be more credible if 1) the opinion included in the audit report does not question how the accruals were drawn up, and 2) the auditor has a good reputation among investors.

The aim of this study is to analyse the effects of auditor reputation on the way investors use the information contained in the accruals of the firm. For this purpose, the study focuses on one specific type of decision: the determination of the interest rate charged on debt contracts. In this specific setting, we carry out an empirical analysis to test whether the sensitivity of the cost of debt to variations in the quality of accruals depends on the auditor reputation. We predict that the greater the auditor's prestige, the greater the trust placed in the preparation of the annual accounts will be, the more useful accruals will be to the lender, and the greater the sensitivity of the interest rate to changes in accruals quality will be.

We use a wide sample of Spanish unlisted firms, taken from the *SABI* database, corresponding to the period 1996-2002. The analysis of the Spanish case is relevant for two reasons. Firstly, in Spain the obligation to audit annual accounts extends to non-quoted companies¹, about which lenders have less information and in which the role of the auditor as a mechanism of reduction of information asymmetries is potentially more important. And secondly, the relative importance of bank debt in the financing of Spanish firms is greater than in other countries, e.g. Anglo-American countries, where firms are more likely to look to the capital markets for funds (Carbó et al., 2006).

¹ The obligation to audit the annual accounts for Spanish companies was established in the Seventh Directive of the EU. The criteria currently in force are set out in Article 181 of the Act on Public Limited Companies, whereby companies are obliged to carry out audits except when they have met at least two of the following requirements over two consecutive years on the balance sheet date:

- total assets of less than 2,373,997.81 €.
- turnover of less than 4,747,995.62 €.
- annual average number of employees of less than 50.

To estimate the quality of accruals we use Dechow and Dichev's (2002) approach. Following earlier studies, audit quality is proxied by the auditor's belonging to one of the international audit firms, known as the Big 4². The choice of this variable is based on the fact that investors tend to perceive that international audit firms offer services of higher quality than their competitors. Indeed, firms tend to hire this type of auditors in settings where there are greater information asymmetries. Previous research shows that the probability of a company being audited by an international firm increases when: 1) agency costs increase (Francis and Wilson, 1988), 2) the company's activity tends to generate more accruals (Francis et al., 1999), and 3) the company borrows in order to invest in more risky activities (Piot, 2001).

Our findings can be summarised as follows. As in Francis et al. (2005) and Bharath et al. (2004), the quality of accruals is inversely correlated to the cost of debt, indicating that accruals are part of the information set considered by lenders to establish the interest rate charged on debt contracts. However, the negative correlation between these two variables disappears for firms audited by national auditors, and is only observed for firms that hire auditors of recognised prestige, belonging to one of the international auditing firms. This result holds when: 1) alternative accruals quality metrics are considered, 2) the effect of old debt contracts is taken into account, 3) the effect of firm size on the accruals quality and cost of debt relationship is controlled, and 4) accruals quality determinants are included in the analysis. The study incorporates an additional analysis showing that trust in accruals increases as the prestigious auditor

² At the beginning of the period analysed there were five international audit firms, which became four (Ernst & Young, Price Waterhouse-Coopers, Deloitte & Touche and KPMG) with the failure of Arthur Andersen following the Enron scandal.

acquires experience in auditing the firm. Indeed, the evidence provided suggests that lenders consider accruals only when the firm's annual accounts have been evaluated by an international auditor for at least two consecutive years.

The study is related to two stems of research that run parallel in the literature. Firstly, our results are related to previous research on the relationship between accruals quality and cost of debt (Francis et al., 2005; Bharath et al., 2004). According to the empirical evidence provided in this study, correct estimation of accruals is not a sufficient condition for reducing the information asymmetries surrounding the process of setting the interest rate. The estimation process must also have been supervised by a reputed auditor who will enhance the credibility of reported accounting figures. Secondly, the study contributes to the literature on the economic effects of auditing in the debt market. Some previous studies have shown that, in certain settings, the rate of interest is lower when firms hire an international auditor (Pitman and Fortín, 2004; Mansi et al., 2004). However, this is the first study to analyse the effects of auditor reputation on the use of accruals in the debt market. We find that it is not enough to hire a prestige auditor for the rate of interest to be reduced. Furthermore, accruals have to be properly estimated if the information asymmetries between lenders and borrowers are to effectively decrease.

The rest of the article is organised as follows. The second section offers an overview of the existing literature on two main aspects of this study: 1) the dichotomy of Big *versus* non-Big auditor as a proxy for audit quality, and 2) the economic effects of audit quality. Section three focuses on the research design, and covers the hypothesis to be tested, the models devised to test it empirically and the sample analysed. In section

four we carry out a preliminary analysis aimed at evaluating the goodness of the main measure of accruals quality used in this paper. Sections five and six present the main findings of our empirical analysis and the results of several robustness checks respectively. A further analysis dealing with the effect of the duration of the client-auditor relationship on the credibility of accruals is included in section seven. Finally, section eight concludes.

2. Previous literature on audit quality and its economic effects

The ability of the auditor to perform his task depends basically on two factors: his competence and his independence. Accordingly, DeAngelo (1981) defines audit quality as *'the joint probability that the auditor will (1) detect errors in financial statements and (2) report them'*. But audit quality is not directly observable, and in the literature we find diverse approaches to measuring it. One of the most widely accepted among researchers is auditor size³, normally proxied using the dichotomy of international *versus* non-international auditor (or Big *versus* non-Big). In this study we also use this dichotomy to proxy for audit quality and examine its effect on the relevance of accruals in determining the borrower's risk premium. Below, we synthesise the evidence provided by the existing literature on: 1) the adequacy of the Big *versus* non-Big auditor dichotomy to measure audit quality, and 2) the economic effects of audit quality measured using this dichotomy.

³ Other variables used to proxy audit quality are the duration of the auditor-client relationship or the probability of reporting a going concern opinion (e.g. Mansi et al., 2004; Francis and Krishnan, 1999).

2.1. The Big versus non-Big auditor dichotomy to measure audit quality

DeAngelo (1981) demonstrates analytically that the biggest and most reputable auditors have more incentives to detect and reveal errors in the financial statements. Subsequently, several studies have provided empirical evidence consistent with the hypothesis that international auditors (Big) are more technically competent to detect errors in the financial statements and more independent in reporting them.

St. Pierre and Anderson (1984) and Palmrose (1988) find that international auditors, despite their greater capacity to withstand possible payment of damages following litigation, suffer fewer lawsuits than small auditors, suggesting that the financial statements of their clients contain fewer errors and, therefore, that Big auditors are more competent. The literature has also shown that the clients of international auditors: 1) declare accounting errors in the previous financial year less frequently (DeFond and Jiambalvo, 1991), 2) generate more cases of client-auditor disagreement that lead to an auditor turnover (DeFond and Jiambalvo, 1993), and 3) are associated with larger forecast errors (Davidson and Neu, 1993).

Subsequent studies have tested whether international auditors are more effective in restricting earnings management by focussing on the analysis of accruals. The results obtained so far in this research area are not conclusive. Some studies based on samples of American firms find that international auditors are more effective in restricting accruals manipulation (Becker et al., 1998; Francis et al., 1999), mainly in the case of income increasing earnings management practices (Chung et al., 2003 and Kim et al.,

2003)⁴. However, in other countries, such as France (Piot and Janin, 2005) and Korea (Jeong and Rho, 2004), no significant relationship is observed between the manipulation of accruals and the presence of an international auditor⁵.

The literature related to the client perception of the Big international firms suggests that these auditors are used as a guarantee of quality. Francis and Wilson (1988) show that demand for an international auditor grows with the company's agency costs, and Francis et al. (1999) find that firms with a greater innate propensity to generate accruals make more use of international auditors to enhance their financial statements' credibility. In the same line, Piot (2001) shows that the demand for Big auditors is directly related to leverage in a set of French listed firms, indicating that audit quality is more highly valued when the lenders' risk of revenue expropriation is significant. Finally, Craswell et al. (1995) conclude that the audit quality offered by international auditors is higher because their clients are willing to pay significantly higher fees.

⁴ This finding is explained by what is termed the *conservative bias* of the auditor, which is greater in international auditing firms because they face a greater risk of litigation. Indeed, the results of Kim et al. (2003) indicate that Big auditors are less efficient in controlling earnings management when the clients have incentives to implement practices aimed at reducing reported earnings artificially.

⁵ Both Piot and Janin (2005) and Jeong and Rho (2004) explain their findings in terms of the institutional characteristics of their countries.

2.2. *The economic effects of audit quality*

Several studies have analysed the economic effects of audit quality, measuring it by means of the Big *versus* non-Big auditor dichotomy. These economic effects are related to the use that equity providers and lenders make of accounting figures.

2.2.1. Valuation of audit quality by equity providers

The literature has addressed two questions relating to the valuation of audit quality made by investors: 1) does the presence of an international auditor help to reduce information asymmetries? and 2) does the pricing of accruals depend on audit quality?.

The empirical studies on the first question have been carried out in settings where information asymmetries between the firm and investors are notable, e.g. on the firm's flotation. According to the Theory of Information Asymmetries, the initial underpricing observed when the firm becomes publicly listed⁶ should be negatively related to the quality of the audit contained in the information leaflet because the presence of an international auditor contributes to reducing investor uncertainty (Balvers et al., 1988). Confirming this prediction, Beatty (1989) and Willenborg (1999) find a negative and significant correlation between the initial underpricing of the firm and the presence of a Big auditor. On the other hand, Weber and Willenborg (2003) conclude that the audit report is more informative for the market when it is issued by an international auditor. They find that when an international auditor gives a going concern

⁶ This phenomenon, widely documented at the international level (e.g. Beatty and Ritter, 1986; Dimovski and Brooks, 2004), refers to the fact that the return on the first day of quotation is usually positive.

opinion prior to the flotation it is more likely that the firm will subsequently leave the market, offer lower returns and/or have financial problems, than when such an opinion is pronounced by a small auditor. Finally, confirming that the market additionally values the quality of the audit in settings where information asymmetries are important, Mitton (2002) shows that hiring an international auditor is associated with an additional abnormal return of 8.1% in a sample of Asian firms during the crisis of 1997-1998.

As to the second question, concerning the valuation of accounting figures by investors, Teoh and Wong (1993) find that the earnings response coefficient is higher for firms that use an international auditor, suggesting that investors give more credence to accounting figures audited by these firms. Similarly, Krishnan (2003) shows that: 1) the ratio between stock market return and discretionary accruals is greater when the firm is audited by a Big firm; 2) the valuation of the other two components of the result (cash-flow and non-discretionary accruals) does not depend on the audit quality; and 3) the discretionary accruals of international auditors' clients are more closely related to the future profitability of the firm. Consequently, Krishnan concludes that the presence of an international auditor reinforces the information content of the accounting figures, in particular of those that are susceptible to a higher degree of subjectivity in their determination, the accruals.

2.2.2. Valuation of audit quality by lenders

The effects of audit quality are not restricted to the equity markets. The two issues referred to in the previous section could also be addressed in the particular setting of debt markets. However, the few studies carried out to date have focussed

fundamentally on the first issue, i.e. the role of audit quality on reducing information asymmetries between the firm and the lender.

Pitman and Fortin (2004) find that the presence of an international auditor is inversely correlated to the cost of debt in a sample of American companies at the moment of going public, though the effect diminishes with the age of the firm because the accumulation of public information on it contributes by itself to reducing information asymmetries. Likewise, Mansi et al. (2004) find a negative and significant relationship between audit quality and the return demanded by investors on the companies' public debt securities, the relationship being more significant for the highest risk firms, with more information asymmetries. Finally, for a sample of unlisted Korean firms, Kim et al. (2005) show that the firms that are audited voluntarily have a significantly lower cost of debt financing than the rest. In this study, audit quality seems to be a second order factor in determining the cost of debt since the observed reduction of the interest rate does not significantly depend on the chosen auditor's reputation.

As in the abovementioned studies, this paper analyses the effect of audit quality on the cost of debt. However, our approach is related to the second issue mentioned in Section 2.2.1. Specifically, we test whether audit quality reinforces the information content of accounting accruals. With the exception of the experimental study by Mckinley et al. (1985), this question has been addressed only in the equity market (Krishnan, 2003).

3. Research design

3.1. Hypothesis development

The literature has shown that accruals contain information about the firm's capacity to generate cash flows in the future (Dechow, 1994). Logically, if accruals are of poor quality, the lender has less information to predict future cash flows and the conditions established in debt contracts worsen. This hypothesis has been tested in some recent studies. Francis et al. (2005) show the existence of an inverse relationship between accruals quality and cost of debt in a broad sample of American quoted companies and, in the same context, Bharath et al. (2004) obtain empirical evidence suggesting that accruals quality affects not only the rate of interest borne by the firm, but also other characteristics of debt contracts, such as the term and collateral requirements.

The existing literature on audit quality has shown that the presence of an international auditor enhances the credibility of the firm's accounting figures, especially those susceptible to estimation errors such as accruals. Indeed, Krishnan (2003) finds that when firms are audited by an international firm a stronger relationship arises between stock returns and discretionary accruals. In the context of debt contracts, the subjectivity inherent to the calculation of accruals could also limit their use in decision making if lenders do not trust the estimations made by the firm. It is therefore to be expected that the relationship between the cost of debt and accruals quality will be affected by the quality of the audit. In particular, previous literature lead us to predict that the (negative) relationship expected between accruals quality and cost of debt will

be stronger when there is an audit of quality. The null hypothesis to be tested is as follows:

H₀: Auditor reputation does not affect the relationship between the cost of debt and accruals quality

3.2. Accruals quality metric: The Dechow and Dichev (2002) model

We estimate accruals quality on the basis of the Dechow and Dichev (2002) model⁷. The approach of these authors is based on the notion that correctly calculated accruals are directly reflected in the cash flow series of the firm. To simplify the analysis, they focus on working capital accruals and assume that their materialisation in the cash flow series takes place either in $t-1$, or in t , or in $t+1$ ⁸. They thus propose the model specified in expression [i], in which working capital accruals (WCA_t) is the dependent variable, and total cash flow from operations of the previous fiscal year (CFO_{t-1}), of the current fiscal year (CFO_t) and of the subsequent fiscal year (CFO_{t+1}), are the independent variables, all of them deflated by average total assets.

$$\frac{WCA_{it}}{Avg_Tot_Ass_{it}} = \beta_0 + \beta_1 \frac{CFO_{i,t-1}}{Avg_Tot_Ass_{it}} + \beta_2 \frac{CFO_{it}}{Avg_Tot_Ass_{it}} + \beta_3 \frac{CFO_{i,t+1}}{Avg_Tot_Ass_{it}} + \varepsilon_{it} \quad [i]$$

where:

⁷ Section 6 incorporates a sensitivity analysis using two alternative accruals quality metrics.

⁸ Ecker et al. (2005) point out that the quality of working capital accruals is a good proxy for the quality of total accruals.

WCA_{it} = working capital accruals of firm i in year t , calculated as the change in current assets (ΔCA) minus the change in cash and cash equivalents ($\Delta Cash$) minus the change in current liabilities (ΔCL) plus the change in short term bank debt ($\Delta Debt$)⁹.

CFO_{it} , $CFO_{i,t-1}$ and $CFO_{i,t+1}$ = cash flow from operations of firm i in years t , $t-1$ and $t+1$ respectively, calculated as the difference between net income before extraordinary items ($NIBE$) and total accruals (TA) of the corresponding year, the latter being calculated for each firm i in year t as working capital accruals (WCA_{it}) minus depreciation and amortisation expenses for the period (DEP_{it}).

$Avg_Tot_Ass_{it}$ = average total assets of firm i in year t , calculated as the arithmetic mean of the firm's total assets (Tot_Ass) in years $t-1$ and t .

The Dechow and Dichev (2002) model is estimated in cross-section for each industry-year combination, at two-digit *NACE* code level¹⁰. The absolute value of the residual of regression [i] for each firm-year observation ($Aq_DD_{it} = |\varepsilon_{it}|$) is our inverse measure of accruals quality¹¹.

⁹ We use balance sheet and profit and loss account data to indirectly calculate accruals since Spanish firms do not report a compulsory cash-flow statement as in the US.

¹⁰ Dechow and Dichev (2002) suggest estimating the model with time series data for each firm, although they also implement the cross-section estimation and obtain similar results.

¹¹ According to Dechow and Dichev (2002), this is a good proxy for accruals quality for each firm-year observation. However, Francis et al. (2005) use a different approach consisting of estimating the Dechow and Dichev model in its cross-sectional version and computing the measure of accruals quality as the standard deviation of the residuals of the model for each firm from year $t-4$ until year t . Section 6.1

3.3. Empirical model

To test the hypothesis put forward in Section 3.1., we start from the estimation of model [1].

$$\begin{aligned}
 Cost_Debt_{i,t+1} = & \beta_0 + \beta_1 Aq_DD_{it} + \beta_2 Int_Cov_{it} + \beta_3 Current_Ratio_{it} + \beta_4 Size_{it} \\
 & (+) \qquad \qquad \qquad (-) \qquad \qquad \qquad (-) \qquad \qquad \qquad (-) \\
 & + \beta_5 Col_{it} + \sum_{j=1}^{N-1} \beta_{5+j} Year_j + \xi_{it} \qquad \qquad \qquad [1] \\
 & (-)
 \end{aligned}$$

where:

$Cost_Debt_{i,t+1}$ = interest expense of firm i in year $t+1$ over the average interest-bearing debt, calculated as the arithmetic mean of the interest-bearing debt at the end of years t and $t+1$.

Aq_DD_{it} = measure of accruals quality corresponding to firm i in year t , calculated as the absolute value of the residual of the cross-sectional estimation of the Dechow and Dichev (2002) model, as specified in equation [i].

Int_Cov_{it} = interest coverage of firm i in year t , calculated as the ratio of operating profit over interest expense for the period.

$Current_Ratio_{it}$ = current ratio of firm i in year t , calculated as average current assets over average current liabilities for the period.

includes a sensitivity analysis using, among others, the accruals quality metric suggested by Francis et al. (2005).

$Size_{it}$ = size of firm i in year t , measured as the logarithm of total assets.

Col_{it} = potential capacity of firm i to issue debt with collateral in year t , calculated as average fixed assets over average total assets.

The model includes $N-1$ dummy variables representing the N years of the period analysed ($Year_j$, where $j = 1...N$). The independent variables are incorporated into the model with a lag, as the financial statements available in year $t+1$ are those corresponding to year t . Following Francis et al. (2005), the expected sign of Aq_DD is positive, as this variable is an inverse measure of accruals quality. On the other hand, existing literature suggests that the cost of debt is inversely related to the interest coverage ratio (Int_Cov), the degree of liquidity ($Current_Ratio$), the firm's size ($Size$) and the firm's capacity to generate debt with collateral (Col).

Next, to test the effect of auditor reputation on the relationship between the cost of debt and accruals quality we incorporate into model [1] two additional variables (Aq_DD_Nation and Aq_DD_Inter) obtained as the product of Aq_DD by a dummy variable that equals 1 when the annual accounts are audited by a big national auditor ($Nation$) and by an international auditor ($Inter$) respectively, and 0 otherwise. This results in model [2]. The expected sign of both Aq_DD_Nation and Aq_DD_Inter is positive, indicating that the effect of accruals quality on the cost of debt increases when the firm has a prestigious auditor, belonging to a large Spanish firm established throughout the country, or to one of the Big international auditing companies.

$$\begin{aligned}
Cost_Debt_{i,t+1} = & \alpha_0 + \alpha_1 Aq_DD_{it} + \alpha_2 Aq_DD_Nation_{it} + \alpha_3 Aq_DD_Inter_{it} \\
& (+) \qquad \qquad \qquad (+) \qquad \qquad \qquad (+) \\
& + \alpha_4 Int_Cov_{it} + \alpha_5 Current_Ratio_{it} + \alpha_6 Size_{it} + \alpha_7 Col_{it} + \sum_{j=1}^{N-1} \alpha_{7+j} Year_j + \psi_{it} \qquad [2] \\
& (-) \qquad \qquad \qquad (-) \qquad \qquad \qquad (-) \qquad \qquad \qquad (-)
\end{aligned}$$

where:

$Aq_DD_Nation_{it}$ = product of the variable Aq_DD_{it} and the dichotomous variable $Nation_{it}$ which equals 1 if the annual accounts of firm i in year t are audited by a big national firm and 0 otherwise.

$Aq_DD_Inter_{it}$ = product of the variable Aq_DD_{it} and the dichotomous variable $Inter_{it}$ which equals 1 if the annual accounts of firm i in year t are audited by an international firm and 0 otherwise.

Models [1] and [2] are estimated using two alternative procedures. We first estimate both models using ordinary least squares under the assumption that the residuals are independent of regressors. To carry out the OLS pooled estimation S -1 dummy variables, representing the S industries of the sample, are included in the models as additional explanatory variables. Then, to avoid potential omitted variable bias derived from unobserved firm specific factors, a fixed effects estimation of models [1] and [2] is performed by incorporating F additional dummy variables that represent the F firms of the sample.

3.4. Sample and descriptive statistics

The sample studied in this paper was collected from the *SABI* database, which contains accounting and financial information on a wide sample of Spanish firms.

Initially, 42,520 firm-year observations are available corresponding to the period 1996-2002¹², which meet the following criteria:

- They belong to non-quoted firms.
- Total assets are over 1 million euros.
- They do not belong to the financial, insurance and property industries.
- They belong to an industry for which there are at least 20 observations available in the same year.
- The level of interest-bearing debt is higher than 5% of total assets.
- Data are available to calculate the control variables of models [1] and [2].

After eliminating extreme observations of the cost of debt, the final sample contained 39,968 firm-year observations¹³. Specifically, we eliminated 1% of the observations from the left-hand tail and 5% from the right-hand tail of the distribution

¹² *SABI* contains data for the period 1995-2003. However, to estimate the Dechow and Dichev model three consecutive years of data are required. For this reason, the observations in the final sample belong to the period 1996-2002.

¹³ The cost of debt financing is not directly observable through the information provided by *SABI*. Consequently, following Francis et al. (2005) and Pitman and Fortin (2004), we use the ratio of interest expense to average interest-bearing debt. However, since the average interest-bearing debt is calculated using only two observations, the denominator of the ratio used to proxy the cost of debt sometimes deviates from the real data, generating outliers in the dependent variable of our models that force us to restrict its range of variation.

of *Cost_Debt*, obtaining a final sample where this variable ranges from a minimum of 1.1% to a maximum of 23.1%¹⁴.

Table 1 presents the sample composition by year and industry (Panel A) and by year and type of auditor (Panel B). The observations are mainly concentrated in the manufacturing and retail trading industries, which represent 45% and 35% of the overall sample respectively, followed by service (17%), agriculture (2%) and energy (1%) companies. Most of the sample observations use local auditors (73%), although a considerable number of international auditor clients (24%) are also included. The remaining 3% use a big national auditor.

The descriptive statistics of the economic and financial characteristics of the sample firms, presented in Table 2, reveal the diversity of companies analysed, given the high standard deviations observed in all the variables. The mean (median) of total assets is 38.6 (8.3) million euros. The mean net income before extraordinary items is 1.6 million euros and the mean return on assets is 4.9%. The mean (median) level of long and short term debt is close to 9 (0.7) and 5 (1.4) million euros respectively. The mean and median values of the current ratio are above 1, and the mean (median) cost of debt financing is around 7.6% (6.6%).

¹⁴ Our results remain unchanged if: 1) 5% of both tails are eliminated; 2) the sample is truncated at percentiles 5 and 95 or 1 and 95 of *Cost_Debt*; 3) the sample is truncated giving a minimum value of 3% and a maximum value of 20% to the variable *Cost_Debt*.

4. Preliminary analysis of the accruals quality metric

Since in this study accruals quality is taken to mean its ability to predict the firm's future cash flow¹⁵, we begin the empirical analysis by testing whether the measure of accruals quality estimated using the Dechow and Dichev (2002) model is indeed correlated with the predictive capacity of accruals. For this purpose we first divided the sample into twenty groups according to the variable Aq_DD . For each group we estimated model [I], where cash flow from operations of the period is regressed on the cash flow from operations of the previous year (both deflated by average total assets) and firm fixed effects to control for the individual characteristics of each company. Following this, for each group we estimated model [II], which incorporates net income before extraordinary items of the previous year, deflated by average total assets, as an additional regressor in model [I]. Thus, the difference between the adjusted R^2 of the estimation of models [II] and [I] in each group is indicative of the additional ability of earnings, over the current cash flow and the individual firm effects, to predict the future cash flow in that group. If Aq_DD is a good measure of accruals quality, the difference in the adjusted R^2 of the two models should be greater in the groups where this variable takes lower values (good accruals quality) and lower in those where Aq_DD is higher (poor accruals quality).

$$\frac{CFO_{it}}{Avg_Tot_Ass_{it}} = \lambda_0 \frac{CFO_{i,t-1}}{Avg_Tot_Ass_{it}} + Firm\ fixed\ effects + \vartheta_{it} \quad [I]$$

$$\frac{CFO_{it}}{Avg_Tot_Ass_{it}} = \lambda_0 \frac{CFO_{i,t-1}}{Avg_Tot_Ass_{it}} + \lambda_1 \frac{NIBE_{i,t-1}}{Avg_Tot_Ass_{it}} + Firm\ fixed\ effects + \eta_{it} \quad [II]$$

¹⁵ See Schipper and Vincent (2003) for other meanings of earnings quality.

To illustrate the results of this analysis, Figure 1 graphically represents the association between the median value of Aq_DD in each of the 20 groups and the increment in the adjusted R^2 in the corresponding group. The OLS line has a negative significant slope, indicating that as the accruals quality worsens (Aq_DD increases), the ability of earnings to predict future cash flow diminishes. In fact, the difference in adjusted R^2 of the estimation of models [II] and [I] is 6% in group 1 (best accruals quality) and only 1% in group 20 (worst accruals quality)¹⁶.

5. Results

5.1. The effect of audit reputation on the association between the cost of debt and accruals quality

The analysis presented in Table 3 offers preliminary evidence of the effect of auditor reputation on the relationship between accruals quality and cost of debt. The sample is divided into quintiles of accruals quality and into three groups according to the type of auditor: international, big national, and local. The table presents the average cost of debt of the observations in each group.

Similarly to the evidence offered in the existing literature (Bharath et al., 2004 and Francis et al., 2005), the first column of Table 3 shows that the cost of debt increases as the quality of accruals worsens. Firms with the worst accruals quality

¹⁶ Although not tabulated, the coefficients λ_0 and λ_1 present consistent signs with the existing literature in this area (e.g. Dechow, 1994), indicating that current cash flow is negatively and positively correlated with previous year cash flow and earnings respectively.

(quintile 5 of *Aq_DD*) bear an average cost of debt 14 basic points higher than those with the best quality (quintile 1 of *Aq_DD*), the difference being statistically significant at standard levels. We also observe that hiring an international auditor does not necessarily entail a lower interest rate for the firm. Indeed, if accruals quality is low (quintile 5 of *Aq_DD*), no significant differences arise in the average cost of debt according to the type of auditor. Finally, we confirm the prediction made in Section 3.1., whereby auditor reputation affects the relationship between the cost of debt and accruals quality. Only for companies audited by an international firm do we observe a significant reduction of the cost of debt as accruals quality improves. The differential interest rate borne by firms with higher accruals quality (quintile 1) over those that report worse accruals quality (quintile 5) is as high as 57 basic points when the auditor belongs to an international firm, but is practically zero when the auditor is local.

5.2. Regression analysis

To control for the effect of other variables that might influence the cost of debt, we estimated models [1] and [2] presented in Section 3. The pooled OLS and the fixed effects results are shown in Table 4¹⁷. In addition to the estimations using the whole sample of 39,968 firm-year observations (unbalanced panel), the robustness of the results to variations in the composition of the sample was tested by estimating the models using a balanced panel formed by 1,154 companies with available data in all the 7 years of the sample period (1996-2002).

¹⁷ The Hausmann test allowed us to reject at 1% the null hypothesis of orthogonality between the fixed effects and the regressors of the model; we therefore discarded the random effects estimation.

The results obtained from the estimation of model [1] using the whole sample (columns i and iii) are compatible with the empirical evidence provided by Francis et al. (2005) for a broad sample of American listed companies. We observe a positive relationship between the inverse measure of accruals quality (Aq_DD) and the cost of debt, which is statistically significant regardless of the estimation procedure used. However, this result does not hold when the model is estimated in the balanced panel sample (columns v and vii), where the coefficient associated with Aq_DD is not significantly different from zero. In sum, the expected inverse relationship between accruals quality and cost of debt does not seem to be robust to changes in the composition of the sample.

On incorporating the effect of the type of auditor into the relationship between accruals quality and the cost of debt (model [2] estimation: columns ii, iv, vi and viii), we obtain the following results: 1) the variable Aq_DD becomes insignificant in all cases; 2) the coefficient associated with the variable Aq_DD_Inter is in all cases positive and statistically significant, at least at 5%; and 3) Aq_DD_Nation is positive and significant (at 10%) only for the fixed effects estimation using the balanced panel. Overall, confirming the evidence provided in Table 3, these results suggest that the relationship between accruals quality and cost of debt depends on auditor reputation. The lender demands a lower risk premium from companies that report accruals of quality only if the accounting figures are guaranteed by one of the Big international audit firms.

Regarding the control variables, 1) as expected, the coefficient corresponding to the interest coverage ratio (Int_Cov) is negative and significant in the pooled OLS

estimation, whereas in the within-firm estimation the statistical significance of the coefficient only holds for the balanced panel, 2) the level of liquidity (*Current_Ratio*) is inversely correlated with the cost of debt, as the coefficient is significant at 1% in all the estimations carried out, 3) firm size (*Size*) is also negatively correlated with the cost of debt (the parameter estimate for the variable is significant at conventional levels for both the whole sample and the balanced panel and regardless of the estimation procedure used), and 4) the coefficient associated with firm's capacity to generate collateral (*Col*) is also of the expected negative sign and is statistically significant in six out of the eight estimations performed.

6. Sensitivity tests

This section includes the results of four robustness checks that enhance the evidence reported above. Firstly, we replicate the analysis using three alternative accruals quality measures derived from the McNichols' (2002) and Ball and Shivakumar's (2006) approaches. Secondly, we control for the effect of old debt contracts in the calculation of our proxy for the borrowing cost. Thirdly, we control for the firm size effect on the relationship between accruals quality and cost of debt. Finally, we include in the analysis some determinants of accruals quality previously identified in the literature.

6.1. Alternative accruals quality metrics

To test whether our results are robust to alternative accruals quality measures, models [1] and [2] were re-estimated replacing *Aq_DD* with three accruals quality

proxies: the first two are derived from the McNichols' (2002) approach and the third is based on the one of Ball and Shivakumar (2006).

McNichols' approach combines the Dechow and Dichev (2002) model with the accruals model proposed by Jones (1991). Similarly to the Dechow and Dichev model, we estimate the McNichols (2002) model, specified in equation [ii], for each year-industry combination.

$$\frac{WCA_{it}}{Avg_Tot_Ass_{it}} = \delta_0 + \delta_1 \frac{CFQ_{i,t-1}}{Avg_Tot_Ass_{it}} + \delta_2 \frac{CFQ_{it}}{Avg_Tot_Ass_{it}} + \delta_3 \frac{CFQ_{i,t+1}}{Avg_Tot_Ass_{it}} + \delta_4 \frac{\Delta REV_{it}}{Avg_Tot_Ass_{it}} + \delta_5 \frac{PPE_{it}}{Avg_Tot_Ass_{it}} + v_{it} \quad [ii]$$

where:

ΔREV_{it} = change in revenues of firm i in year t.

PPE_{it} = gross level of property, plant and equipment of firm i in year t.

The remaining variables are defined as in the Dechow and Dichev (2002) model (see equation [i]).

Following Francis et al. (2005), our first alternative accruals quality measure for firm i in year t (σ_Aq_{it}) is computed as the standard deviation from t-4 to t of the residual of the model [ii] estimation for firm i¹⁸. The second additional accruals quality metric is calculated for firm i in year t (Aq_McN_{it}) as the absolute value of the residual

¹⁸ This approach assumes that the firm's risk premium does not depend on the overall accruals estimation error but on the unpredictable component of such an error. However, Francis et al. (2005) do not obtain qualitatively different results using the standard deviation of the residual of the McNichols model over years t to t-4 instead of the absolute value of the residual of the Jones (1991) model corresponding to year t.

of the McNichols (2002) model cross-section estimation. Similarly to Aq_DD , both σ_Aq and Aq_McN are inversely correlated to accruals quality.

Finally, following Ball and Shivakumar (2006), our third alternative accruals quality metric for firm i in year t (Aq_BS_{it}) is the absolute value of the residual of model [iii], which incorporates three additional regressors into the Dechow and Dichev (2002) model: (1) a proxy for gain or loss, which is the annual change in cash flow from operations deflated by average total assets ($\Delta CFO_{it} / Avg_Tot_Ass_{it}$)¹⁹; (2) a dummy variable (D_{it}) that equals 1 if ΔCFO_{it} is negative and 0 otherwise; and (3) the interaction between these two variables. This approach attempts to control for the effect of the asymmetrically timely gain and loss recognition (conditional conservatism) into the conventional linear accruals models²⁰. Similar to previous models, model [iii] is estimated for each year and industry combination²¹.

$$\frac{WCA_{it}}{Avg_Tot_Ass_{it}} = \varphi_0 + \varphi_1 \frac{CFO_{i,t-1}}{Avg_Tot_Ass_{it}} + \varphi_2 \frac{CFO_{it}}{Avg_Tot_Ass_{it}} + \varphi_3 \frac{CFO_{i,t+1}}{Avg_Tot_Ass_{it}} + \varphi_4 \frac{\Delta CFO_{it}}{Avg_Tot_Ass_{it}} + \varphi_5 D + \varphi_6 D \frac{\Delta CFO_{it}}{Avg_Tot_Ass_{it}} + \psi_{it} \quad [iii]$$

Panel A of Table 5 shows the results of the estimation of models [1] and [2] when Aq_DD is replaced with σ_Aq . For the sake of brevity, only estimated coefficients

¹⁹ Our results are robust to the use of the other two variables used in Ball and Shivakumar (2006) as proxies for gain or loss, the cash flow from operations deflated by average total assets and the industry adjusted cash flow from operations deflated by average total assets.

²⁰ Ball and Shivakumar (2006) provide evidence that incorporating into abnormal accruals models the asymmetry in gain and loss recognition offers a substantial specification improvement, explaining more variation in accruals than equivalent linear models that omit the loss recognition asymmetry.

²¹ Ball and Shivakumar (2006) perform pooled industry estimations. Our results remain similar using this alternative estimation approach in all the accruals models used.

of σ_Aq , σ_Aq_Nation and σ_Aq_Inter are disclosed²². Due to the limitations of the data, models using σ_Aq could not be estimated including fixed effects. The restricted sample using σ_Aq contains 9,683 firm-year observations from the two year period 2001-2002. In spite of the sample reduction, the results confirm the hypothesis that auditor reputation significantly affects the pricing of accruals, since the coefficient of σ_Aq_Inter remains positive and statistically significant at conventional levels. Panel B of Table 5 presents the results of both the pooled OLS and within-firm estimations for models [1] and [2] after replacing Aq_DD with Aq_McN . To estimate these models we use the initial sample of 39,968 firm-year observations. Again, results suggest that variations of accruals quality only affect the cost of debt when an international auditor lends credibility to the accounting figures reported by the company. As in Francis et al. (2005), when the auditor reputation is not considered, the association between accruals quality and cost of debt is significantly negative (columns iii and v). However, when the auditor reputation effect is included in the model (columns iv and vi), the coefficient of Aq_McN only remains positive and significant, at 10%, in the pool estimation and the coefficient of Aq_McN_Inter is positive and statistically significant at 1%, regardless of the estimation procedure considered. Finally, Panel C of Table 5 reports the pooled OLS and fixed effects results for models [1] and [2] using the accruals quality metric that controls for conservatism (Aq_BS) instead of Aq_DD . As previously, only coefficient estimates for Aq_BS , Aq_BS_Nation and Aq_BS_Inter are disclosed, being the results for the control variables similar to those reported in Table 4. Results of this sensitivity test are again consistent with our predictions.

²² The results for the control variables do not change from those reported in Table 4.

6.2. The effect of old debt contracts

Our proxy for the borrowing cost is an average cost of the loans subscribed by the company both in year $t+1$ and in previous years. Such an average cost of debt might depend not only on the accruals quality of year t but also on that of previous years. Descriptive statistics included in Table 2 reveal that short term debt of the sample firms is considerably higher than long term debt, since the median value of the former almost doubles that of the latter. For this reason we believe that the effect of previous years' accruals quality should be limited. However, we address here this potential limitation of the analysis by performing several robustness tests consisting of estimating models [1] and [2] after replacing Aq_DD with its average value in the two, three and four previous years ($Avg2_Aq_DD$, $Avg3_Aq_DD$ and $Avg4_Aq_DD$). The sample in these tests was reduced to 31,676, 24,411 and 17,972 firm-year observations respectively. Estimated coefficients of $Avgj_Aq_DD$, $Avgj_Aq_DD_Nation$ and $Avgj_Aq_DD_Inter$ (for $j = 2, 3$ and 4) are reported in Table 6²³. Regardless of the period considered to calculate the average accruals quality, the results are similar to our initial findings. Both the pooled OLS and the fixed effects results show that the average accruals quality measure is significantly correlated to the cost of debt only when the company is audited by an international firm. Finally, the estimated coefficient of $Avgj_Aq_DD_Inter$ (for $j = 2, 3$ and 4) is even higher than that reported in Table 4 of Aq_DD_Inter , suggesting that the inclusion of old debt in the calculation of the borrowing cost leads to the underestimation of the relationship between cost of debt and accruals quality.

²³ The results for the control variables are again similar to those presented in Table 4.

6.3. Are the results driven by the fact that international audit firms' clients are bigger?

The probability that an international auditor will be hired tends to be directly related to firm size. In our sample, the median of total assets of the companies that use an international auditor is around 18 million euros, decreasing to 10 and 7 million euros for firms with big national auditors and local auditors respectively. Hence, it could be argued that the greater sensitivity of the interest rate to changes in accruals quality observed in companies audited by international firms is actually due to the size of the company and not to auditor reputation. After all, as Berger and Udell (2005) state, financial statements are more likely to be used in assessing repayment prospects when the borrower is a large company. The sensitivity analysis carried out in this section aims to control for the effect of firm size on the relationship between accruals quality and cost of debt.

For this purpose, the variable *Aq_DD_Size*, which is the product of *Aq_DD* by *Size*, is incorporated as an additional regressor into model [2]. If the results set out in Table 4 are driven by the correlation between auditor reputation and firm size, the coefficient of *Aq_DD_Inter* should become insignificant once *Aq_DD_Size* is incorporated into the model. However, as shown in Table 7, the coefficient of *Aq_DD_Inter* remains positive and significant, at least at 5%, regardless of the estimation procedure used. Also, as expected, the variable *Aq_DD_Size* is positively signed and statistically significant at conventional levels.

6.4. Controlling for accruals quality determinants

Models [1] and [2] implicitly assume that the accruals quality variable is exogenous to the interest rate determined in debt contracts. Nevertheless, previous literature suggests that the quality of accounting information reported by the company depends on several factors that may be correlated to the variables affecting the cost of debt (e.g.: Nikolaev and van Lent, 2005; Cohen, 2005 or Larcker and Rusticus, 2005). This might bias the estimation of the coefficient associated with *Aq_DD*, *Aq_DD_Nation* and *Aq_DD_Inter* in our models.

If factors affecting accruals quality were firm specific and stationary, the within-firm estimation would control for the potential bias derived from the accruals quality endogeneity. However, empirical evidence from previous studies suggests that the accounting policy implemented by managers actually changes over time. Following Nikolaev and van Lent (2005), in this section we identify the variables that explain changes in accruals quality and incorporate them as additional regressors into model [2]²⁴.

²⁴ Another possibility to control for endogeneity consists of using instrumental variables (IV), which should be correlated to *Aq_DD* but uncorrelated to the residual of the model. Larcker and Rusticus (2005) revise the studies that use IV methods in typical accounting research settings to mitigate the inconsistency in parameter estimates caused by endogeneity, particularly those that examine the association between corporate disclosure and cost of capital. These authors conclude that the use of IV approaches in this type of studies could generate even more biased parameter estimates than those obtained from an ordinary OLS estimation.

The amount and quality of accounting information reported by the firm depends on both demand and supply factors. Among the latter, we can distinguish three types of variables related to: 1) the information production process, 2) firm performance and 3) competition in the industry. Regarding the information production process, Nikolaev and van Lent (2005) suggest that accounting information quality increases with firm size because of the economies of scale associated with the elaboration of information. On the other hand, Dechow and Dichev (2002) and Cohen (2005) claim that longer operating cycles make accruals noisy and less helpful in predicting future cash flows. Hence the length of the operating cycle should be inversely correlated to accruals quality. As to performance variables, previous literature suggests the existence of a direct correlation between information quality and profitability since the firm tends to report good news and to conceal bad news (e.g.: Verrecchia, 1983; Dye, 1985, or Lang and Lundholm,1993). Competition is also shown to affect a firm's disclosure decisions. Verrecchia (1983) predicts that firms provide less informative disclosures in more competitive markets and Piotroski (2003) finds that when barriers to entry are high the information disclosure is of higher quality.

Information disclosure is also affected by demand factors. The literature indicates that the higher the agency costs, the higher the demand for accounting information and the quality of the information reported by the company will be (Nikolaev and van Lent, 2005). In large quoted companies, information asymmetries are proxied by the degree of ownership concentration (Cohen, 2005). In smaller, frequently family owned firms, asymmetries of information are not as closely related to the ownership structure as to the nature of their relations with lenders. In this sense, a positive relationship is expected between the accruals quality and the leverage of the

firm, as the lenders' need for monitoring increases with information asymmetries. However, as stated by Berger and Udell (2005), the use of accounting information by lenders to assess the borrower's repayment prospects may not be suitable for informationally opaque firms. Indeed, soft information on the firm produced within bank relationships is more frequently used in these cases. Following previous literature, we proxy the probability of the firm being a relationship banking client by its number of banks relations.

To identify the accruals quality determinants in the sample under study we estimated model [3].

$$Aq_DD_{it} = \varphi_0 + \varphi_1 Size_{it} + \varphi_2 Cycle_{it} + \varphi_3 Mg_{it} + \varphi_4 Growth_{it} + \varphi_5 Barr_{it} + \varphi_6 Int_Cov_{it} + \varphi_7 N_Banks_{it} + \theta_{it} \quad [3]$$

(−) (+) (−) (−) (+) (+) (−)

where:

Supply determinants of accruals quality

$Size_{it}$ = size of firm i in year t , measured as the logarithm of total assets.

$Cycle_{it}$ = length of the operating cycle of firm i in year t .

Mg_{it} = margin of firm i in year t , calculated as $EBITDA_{it} / Revenues_{it}$, where $EBITDA$ is earnings before interests, taxes, depreciation and amortization.

$Growth_{it}$ = revenues growth of firm i in year t , calculated as $\ln(Revenues_{it} / Revenues_{i,t-1})$

$Barr_{it}$ = barriers of entry in year t for competitors of firm i derived from the capital intensity required to carry out the activity, measured as average tangible assets over average total assets of the period.

Demand determinants of accruals quality

Int_Cov_{it} = interest coverage ratio of firm i in year t , which proxies for information asymmetries derived from the degree of leverage.

N_Banks_{it} = number of banks that firm i deals with in year t . This variable is assumed to be directly related to the probability that the bank uses the financial statements to monitor the company.

The remaining variables are defined as in model [2].

Panel A of Table 8 shows both the pooled OLS and the fixed effects results for model [3]. Because of information availability, the sample is reduced by nearly one sixth to 33,002 firm-year observations. The pooled OLS results confirm the predictions on the correlation between accruals quality and the factors previously identified in the literature. As to the supply variables, the results confirm that firm size (*Size*), margin (*Mg*) and growth of revenues (*Growth*) are directly correlated to accruals quality (inversely correlated to *Aq_DD*), as opposed to the length of the operating cycle (*Cycle*), which inversely affects accruals quality. The degree of competition faced by the company also determines accruals quality. The coefficient associated with barriers to entry for competitors (*Barr*) is negative and statistically significant, indicating that the higher the degree of competition, the lower the quality of accruals will be. On the other hand, the parameter estimates of the demand variables are of the expected sign

and statistically significant at conventional levels. The coefficient associated with the interest coverage ratio (*Int_Cov*) is positive and significant, which confirms that leverage (and therefore information asymmetries) positively affects accruals quality. Interestingly, the number of bank relations (*N_Banks*) is also directly related to accruals quality, suggesting that the greater the number of bank relations, the more likely the lender will be to use financial statements to evaluate the company and the higher the quality of accruals issued by the borrower will be. Overall, fixed effects results are similar to those of the pooled OLS estimation, although *Cycle* and *N_Banks* are not statistically significant.

The determinants of accruals quality were incorporated into model [2] as additional regressors, giving rise to model [4]²⁵.

$$\begin{aligned}
 Cost_Debt_{i,t+1} = & \phi_0 + \phi_1 Aq_DD_{it} + \phi_2 Aq_DD_Nation_{it} + \phi_3 Aq_DD_Inter_{it} + \phi_4 Int_Cov_{it} \\
 & + \phi_5 Curent_Ratio_{it} + \phi_6 Barr_{it} + \phi_7 Size_{it} + \phi_8 Mg_{it} + \phi_9 Growth_{it} + \phi_{10} N_Banks_{it} \\
 & + \sum_{j=1}^{N-1} \phi_{10+j} Year_j + \rho_{it}
 \end{aligned} \quad [4]$$

Panel B of Table 8 reports both the pooled OLS and the within-firm results for models [2] and [4], using the reduced sample of 33,002 observations where accruals quality determinants could be calculated. In all the regressions carried out, the parameter estimate of *Aq_DD_Inter* is positive and statistically significant, while the coefficients of both *Aq_DD* and *Aq_DD_Nation* are not significantly different from zero. Again, these results enhance the evidence presented in Section five.

²⁵ Model [4] adds to model [2] all variables with a significant coefficient in the pooled OLS estimation of model [3] except for *Barr*, *Size* and *Int_Cov*, which were already regressors of model [2]. Note that the variable *Barr* is equivalent to *Col* in model [2].

7. Duration of the client-auditor contract and lender perception of audit quality

As well as reputation, other aspects linked to auditor performance may affect the credibility of accruals and therefore influence the use that investors make of them. One of the most highlighted aspects in the literature is the duration of the client-auditor relationship. Some studies point out that as the duration of the contract increases, the auditor's impartiality decreases and its independence is jeopardised (e.g. Raghunathan et al., 1994 and Giroux *et al.*, 1995). However, the profession argues that the technical competence of the auditor is strengthened with the duration of the contract, as its knowledge of the company increases. The literature has also contributed empirical evidence compatible with this hypothesis (e.g. Geiger and Raghunandan, 2002; Johnson et al., 2002; Carcello and Nagy, 2004).

As argued by Ruiz et al. (2005), the reconciliation of the results of these two groups of studies is possible if the relationship between the duration of the client-auditor contract and the audit quality is non-linear, being positive in the first years and becoming negative later on. If, as these authors find in the Spanish context, audit quality increases during the first years of the contract, the credibility of accruals could be expected to increase as the international auditor acquires experience in auditing the firm. To shed light on this question, in this section we propose an additional analysis consisting of estimating two additional models, specified in equations [5] and [6].

$$\begin{aligned} Cost_Debt_{i,t+1} = & \omega_0 + \omega_1 Aq_DD_{it} + \omega_2 Aq_DD_Nation_{it} + \omega_3 Aq_DD_Inter_D1_{it} \\ & + \omega_4 Aq_DD_Inter_D2M_{it} + \omega_5 Current_Ratio_{it} + \omega_6 Int_Cov_{it} \\ & + \omega_7 Size_{it} + \omega_8 Col_{it} + \sum_{j=1}^{N-1} \omega_{8+j} Year_j + \xi_{it} \end{aligned} \quad [5]$$

where:

$Aq_DD_Inter_D1_{it}$: is the product of $Aa_DD_Inter_{it}$ and the dummy $D1_{it}$, which equals 1 if in the year t the international auditor has been auditing the firm i for only one year and 0 otherwise.

$Aq_DD_Inter_D2M_{it}$: is the product of $Aq_DD_Inter_{it}$ and the dummy variable $D2M_{it}$, which equals 1 if in the year t the international auditor has been auditing the firm i for two or more years and 0 otherwise.

$$\begin{aligned}
 Cost_Debt_{i,t+1} = & \tau_0 + \tau_1 Aq_DD_{it} + \tau_2 Aq_DD_Nation_{it} + \tau_3 Aq_DD_Inter_D1_{it} \\
 & + \tau_4 Aq_DD_Inter_D2M_{it} + \tau_5 Current_Ratio_{it} + \tau_6 Int_Cov_{it} \\
 & + \tau_7 Size_{it} + \tau_8 Col_{it} + \sum_{j=1}^{N-1} \tau_{8+j} Year_j + \pi_{it}
 \end{aligned} \tag{6}$$

where:

$Aq_DD_Inter_D12_{it}$: is the product of $Aq_DD_Inter_{it}$ and the dummy variable $D12_{it}$, which equals 1 if in the year t the international auditor has been auditing the firm i for one or two years and 0 otherwise.

$Aq_DD_Inter_D3M_{it}$: is the product of $Aq_DD_Inter_{it}$ and the dummy variable $D3M_{it}$, which equals 1 if in the year t the international auditor has been auditing the firm i for more than two years and 0 otherwise.

Table 9 presents the pooled OLS and fixed effects results for models [5] and [6]. In model [5] (columns i and iii), the coefficient of $Aq_DD_Inter_D1$ is significantly different from zero, while that corresponding to $Aq_DD_Inter_D2M$ is positive and statistically significant, regardless of the estimation procedure used. In model [6]

(columns ii and iv), the coefficient of *Aq_DD_Inter_D12* is positive though not significant, while the coefficient associated with *Aq_DD_Inter_D3M* is always positive and statistically significant. Altogether, these results suggest that the gains in credibility of accruals associated with the presence of an international auditor begin to appear from the second year in which this type of auditor supervises the preparation of the annual accounts.

8. Conclusions

In this study we analyse the effect of auditor reputation on the credibility of accounting figures and in particular on the use of accruals made by lenders to determine the financial conditions of borrowing contracts. For this purpose we use a broad sample of Spanish firms corresponding to the period 1996-2002, especially suitable for the analysis because it includes companies audited by both national and international firms.

As in previous studies, our findings suggest that accruals quality is inversely correlated with borrowing cost, even after controlling for other factors related to the cost of debt previously identified in the literature. This study contributes to the literature by showing that the relationship between these two variables depends on the credibility of the accounting figures. If a prestigious auditor does not audit the annual accounts, increases in the quality of accruals do not translate into a lower cost of debt for the firm.

Results are robust to the introduction of firm fixed effects into the estimation of the econometric model. Moreover, the results do not change qualitatively when alternative measures of accruals quality are considered. Nor do we observe significant

changes in the results when: 1) we control for the old debt effect; 2) the size of the firm is incorporated into the econometric model as a factor associated with the credibility of the accounting figures; and 3) the potential endogeneity of accruals quality is taken into account.

The study included an additional analysis that provides relevant information on how auditor reputation enhances the credibility of accounting figures. In line with previous literature, our results indicate that the economic effects deriving from the prestige of the auditor increase notably as the latter acquires experience in supervising the firm's annual accounts. In fact, accruals quality has no effect on the cost of debt when an international auditor first audits the firm. Only after the second consecutive year in which the international auditor intervenes do lenders begin to attribute additional credibility to the accounting data issued by the firm.

This study poses other research questions related to the effect of auditor reputation on the financial conditions offered to firms. We have analysed the effect on borrowing cost, but it would also be of interest to consider the repercussions on other aspects of the financing of small and medium-sized enterprises, such as credit availability or collateral requirements.

References

Ball, R. and L. Shivakumar, 2006, The role of accruals in asymmetrically timely gain and loss recognition, *Journal of Accounting and Economics* 44 (2), 207-242.

Balvers, R., B. McDonald, and R. Miller, 1988, Underpricing of new issues and the choice of auditor as a signal of investment banker reputation, *The Accounting Review* 63 (4), 605-621.

Beatty, R., 1989, Auditor reputation and the pricing of initial public offerings, *The Accounting Review* 64 (4), 693-709.

Beatty, R. and J. Ritter, 1986, Investment banking, reputation, and the underpricing of initial public offerings, *Journal of Financial Economics* 15 (1&2), 213-233.

Becker, C., M. DeFond, J. Jiambalvo and K. Subramanyam, 1998, The effect of audit quality on earnings management, *Contemporary Accounting Research* 15 (spring), 1-24.

Berger, A. and Udell, G.F., 2005, A more complete framework for financing of small and medium enterprises, World Bank Policy Research Working Paper no.3795, December.

Bharath, S.T., Sunder, J. and Sunder, S. V., 2004, Accounting quality and debt contracting, SSRN Working paper series, July, (<http://www.ssrn.com>).

Carbó-Valverde, S., Rodríguez-Fernández, F. and Udell G.F., 2006, Bank market power and SME financing constraints, FUNCAS Working Paper, no 237 (<http://www.funcas.ceca.es>).

Carcello, J. and A. Nagy, 2004, Audit firm tenure and fraudulent financial reporting, *Auditing: A Journal of Practice & Theory* 23 (2), 55-69.

Cohen, D.A., 2005, Quality of financial reporting choice: Determinants and economic consequences, Working Paper New York University.

Craswell, A., J. Francis and S. Taylor, 1995, Audit brand name reputations and industry specializations, *Journal of Accounting and Economics* 20, 297-322.

Chung, R., M. Firth and J.B. Kim, 2003, Auditor conservatism and reported earnings, *Accounting and Business Research* 33 (1), 19-32.

Davidson, R. A. and D. Neu, 1993, A note on the association between audit firm size and audit quality, *Contemporary Accounting Research* 9 (spring), 479-488.

DeAngelo, L., 1981, Auditor size and audit quality, *Journal of Accounting and Economics* 3 (December), 183-199.

Dechow, P.M., 1994, Accounting earnings and cash flows as measures of firm performance, *Journal of Accounting and Economics* 18 (1), 3-42.

Dechow, P.M., and Dichev, I.D., 2002, The quality of accruals and earnings: The role of accruals estimation errors, *The Accounting Review* 77 (supplement), 35-59.

DeFond, M. and J. Jiambalvo, 1991, Incidence and circumstances of accounting errors, *The Accounting Review* 66 (July), 643-655.

DeFond, M. and J. Jiambalvo, 1993, Factors related to auditor-client disagreements over income-increasing accounting methods, *Contemporary Accounting Research* 9 (spring), 411-431.

Dimovski, W. and R. Brooks, 2004, Initial public offerings in Australia 1994 to 1999, recent evidence of underpricing and underperformance, *Review of Quantitative Finance and Accounting* 22, 179-198.

Dye, R.A. (1985): Disclosure of nonproprietary information, *Journal of Accounting Research* (spring), 123-145.

Ecker, F., Francis, J., Olsson, P. and Skipper, K., 2005, Comparing total and current accruals quality, Duke University working paper.

Francis, J. R. and E. R. Wilson, 1988, Auditor changes: A joint test of theories relating to agency costs and auditor differentiation, *The Accounting Review* 63 (October), 663-682.

Francis, J. R., E.L. Maydew and H.C. Sparks, 1999, The role of Big 6 auditors in the credible reporting of accruals, *Auditing: A Journal of Practice and Theory* 18 (2), 17-34.

Francis, J. R. and J. Krishnan, 1999, Accounting accruals and auditor reporting conservatism, *Contemporary Accounting Research* 16 (1) (spring), 135-165.

Francis, J.R., LaFond, R., Olsson, P. and Schipper, K., 2005, The market pricing of accruals quality, *Journal of Accounting and Economics* 39 (2), 295-327.

Geiger, M.A. and K. Raghunandan, 2002, Auditor tenure and audit reporting failures, *Auditing: A Journal of Practice & Theory* 21 (1), 68-78.

Giroux, G., D. Deis and B. Bryan, 1995, The effect of peer review on audit economies, *Research in Accounting Regulation* 9, 63-82.

Healy, P.M. and M.W. Wahlen, 1999, A review of the earnings management literature and its implications for standard setting, *Accounting Horizons* 13 (4), 365-383.

Jeong, S.W. and J. Rho, 2004, Big Six auditors and audit quality: The Korean evidence, *The International Journal of Accounting* 39 (2), 175-196.

Johnson, V, I. Khurana and J. Reynolds, 2002, Audit-Firm tenure and the quality of financial reports, *Contemporary Accounting Research* 19 (4), 637-660.

Jones, J., 1991, Earnings management during import relief investigations, *Journal of Accounting Research* 29 (2), 193-228.

Kim, J.B., R. Chung and M. Firth, 2003, Auditor conservatism, asymmetric monitoring and earnings management, *Contemporary Accounting Research* 20 (2), 323-359.

Kim, J.B., D.A Simunic, T. Stein and C.H. Yi, 2005, Voluntary audit and the cost of debt capital for privately held firms: Korean evidence, SSRN working papers series (<http://www.ssrn.com>).

Krishnan, G., 2003, Audit quality and the pricing of discretionary accruals, *Auditing: A Journal of Practise and Theory* 22, 109-126.

Lang, M.H and Lundholm, R., 1993, Cross-sectional determinants of analysts rating of corporate disclosures, *Journal of Accounting Research* 31, 246-271.

Larcker, D.F. and Rusticus, T.O., 2005, On the use of instrumental variables on accounting research, SSRN working paper series (<http://www.ssrn.com>).

Mansi, S.A., W.F. Maxwell and D.P. Miller, 2004, Does auditor quality and tenure matter to investors? Evidence from the bond market, *Journal of Accounting Research* 42 (4), 755-793.

McKinley, S., K. Pany and P.M.J. Reckers, 1985, An examination of the influence of CPA firm type, size, and MAS provision on loan officer decisions and perceptions, *Journal of Accounting Research* 23 (2), 887-896.

McNichols, M., 2002, Discussion of The quality of accruals and earnings: The role of accrual estimation errors, *The Accounting Review* 77 (supplement), 61-69.

Mitton, T., 2002, A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis, *Journal of Financial Economics* 64, 215–241.

Nikolaev, V. and van Lent, L., 2005, The endogeneity bias in the relation between cost of debt capital and corporate disclosure policy, Working Paper Tilburg University, n° 2005-67.

Palmrose, Z., 1988, An analysis of auditor litigation and audit service quality, *The Accounting Review* 63 (January), 55-73.

Pittman, J.A. and S. Fortin, 2004, Auditor choice and the cost of debt capital for newly public firms, *Journal of Accounting and Economics* 37, 113–136

Piot, C., 2001, Agency costs and audit quality: evidence from France, *The European Accounting Review* 10 (3), 461-499.

Piot, C. and R. Janin, 2005, Audit quality and earnings management in France, SSRN working papers series (July) (<http://www.ssrn.com>).

Piotroski, J., 2003, Segment reporting fineness and the precision of investors beliefs, Working Paper University of Chicago.

Raghunathan, B., B. Lewis and J. Evans, 1994, An empirical investigation of problem audits, *Research in Accounting Regulation* 8, 33-58.

Ruiz, E., N. Gómez and N. Carrera, 2005, Evidencia empírica sobre el efecto de la duración del contrato en la calidad de la auditoría: Análisis de las medidas de retención y rotación obligatoria de auditores (Empirical evidence on the effect of the auditor-client contract duration on audit quality: Analysis of the compulsory auditor rotation measures, *Investigaciones Económicas (Economics Research)*, forthcoming.

Schipper, K. and L. Vincent, 2003, Earnings quality, *Accounting Horizons*, supplement, 97-110.

St. Pierre, K. and J. Anderson, 1984, An analysis of the factors associated with lawsuits against public accountants, *The Accounting Review* 59 (April), 242-263.

Subramanyam, K.R., 1996, The pricing of discretionary accruals, *Journal of Accounting and Economics* 22, 249-281.

Teoh, S.H. and T.J. Wong, 1993, Perceived auditor quality and the earnings response coefficient, *The Accounting Review* 68, 346–366.

Verrecchia, R.E., 1983, Discretionary disclosure, *Journal of Accounting and Economics* 5, 179-195.

Weber, J, and M. Willenborg, 2003, Do expert informational intermediaries add value?, *Journal of Accounting Research* 41 (4), 681-718.

Willenborg, M., 1999, Empirical analysis of the economic demand for auditing in the initial public offering market, *Journal of Accounting Research* 37, 225-238.

Table 1
Sample composition

Panel A: Sample distribution by year and industry									
Industry group ¹	1996	1997	1998	1999	2000	2001	2002	Total	%
Agriculture	106	120	116	131	137	120	86	816	2.04%
Retail trading	1,479	1,778	1,876	2,216	2,319	2,317	1,855	13,840	34.63%
Energy	56	62	57	58	63	65	50	411	1.03%
Manufacturing	2,077	2,471	2,441	2,831	2,953	2,913	2,389	18,075	45.22%
Services	686	845	889	1,117	1,184	1,127	978	6,826	17.08%
Panel B: Sample distribution by year and type of auditor									
Type of auditor ²	1996	1997	1998	1999	2000	2001	2002	Total	%
Local	3,243	3,841	3,992	4,628	4,781	4,749	3,886	29,120	72.86%
National	112	166	171	206	238	228	198	1,319	3.30%
International	1,049	1,269	1,216	1,519	1,637	1,565	1,274	9,529	23.84%
Total	4,404	5,276	5,379	6,353	6,656	6,542	5,358	39,968	
%	11.02%	13.20%	13.46%	15.90%	16.65%	16.37%	13.41%		

¹ NACE codes included in each industry group are as follows: AGRICULTURE: 01, 14; RETAIL TRADING: 50, 51, 52; ENERGY: 40, 41; MANUFACTURING: 15, 17, 18, 19, 20, 21, 22 24, 25 26, 27, 28, 29, 31, 32, 34, 35, 36; SERVICES: 55, 60, 63, 72, 74, 85, 90, 92.

² International auditors are: Price Waterhouse, Deloitte & Touche, KPMG, Ernest &Young, Arthur Andersen and Coopers & Lybrand. National accounting firms are AUDIHISPANIA and AUDIBERIA. The rest of the audit firms are considered local.

Table 2

Summary financial information on sample firms

Financial characteristics	Mean	Q1	Median	Q3	Std Dev
<i>Tot_Ass</i> ¹	38,633	4,990	8,308	16,961	431,199
<i>Rev</i> ¹	37,657	7,081	11,609	22,013	250,087
<i>NIBE</i> ¹	1,600	63	301	882	26,933
<i>CFO</i> ¹	3,095	-29	506	1,489	73,823
<i>Long_Debt</i> ¹	8,559	186	675	1,988	162,653
<i>Short_Debt</i> ¹	5,215	574	1,379	3,041	65,045
<i>ROA</i>	4.94%	0.98%	3.86%	8.47%	8.41%
<i>Current_Ratio</i>	1.293	0.975	1.166	1.469	0.644
<i>Col</i>	0.263	0.115	0.229	0.368	0.191
<i>Cost_Debt</i>	7.55%	4.90%	6.56%	9.15%	3.94%

¹ Thousands of euros.

The number of observations available for all the variables is 39,968.

Definition of variables:

- *Tot_Ass* is total assets.
- *Rev* is revenues.
- *NIBE* is net income before extraordinary items.
- *CFO* is cash flow from operations, calculated as net income before extraordinary items (*NIBE*) minus total accruals (*TA*). Following previous research, total accruals are computed as change in current assets (*ACA*) minus change in cash (*ACASH*) minus change in current liabilities (*ACL*) plus change in current debt (*ADEBT*) minus depreciation and amortisation expense of the period (*DEP*).
- *ROA* is return on assets, calculated as net income before extraordinary items divided by average total assets of the period (*Avg_Tot_Ass*).
- *Current_Ratio* is computed as average current assets divided by average current liabilities of the period.
- *Col* measures firm capacity to generate collateral and is calculated as tangible assets (*PPE*) divided by average total assets (*Avg_Tot_Ass*).
- *Cost_Debt* is calculated as interest expense divided by the average interest-bearing debt of the year. For a given year *t* of the period analysed this variable is calculated in *t+1* because we assume that financial statements of year *t* are available for the lender in *t+1*.

Table 3

Accruals quality and the cost of debt by auditor type

	Total	Local auditor	National auditor	International auditor	Auditor type (F)
	i	ii	iii	iv	v
<i>Aq_DD</i> q1 (good quality)	7.53 %	7.71 %	7.45 %	6.96 %	(26.41) ***
<i>Aq_DD</i> q2	7.41 %	7.55 %	7.05 %	6.99 %	(16.59) ***
<i>Aq_DD</i> q3	7.56 %	7.75 %	6.97 %	7.03 %	(26.58) ***
<i>Aq_DD</i> q4	7.41 %	7.74 %	7.06 %	7.23 %	(14.15) ***
<i>Aq_DD</i> q5 (poor quality)	7.67 %	7.72 %	7.69 %	7.53 %	(1.66)
DIF (q5-q1)	14 **	1	24	57 ***	
<i>Aq_DD</i> (F)	(4.71) ***	(2.65) **	(1.88)	(8.01) ***	
<i>N</i>	39,968	29,120	1,319	9,529	

The table presents the mean of the variable cost of debt (*Cost_Debt*) by quintiles of accruals quality (*Aq_DD*) in both the whole sample and the subsamples that have local, national and international auditors. Row *Aq_DD* q1 (*Aq_DD* q5) refers to best (worse) accruals quality firms. Row DIF (q5 – q1) shows the average additional cost of debt (in basic points) that face firms with the worst level of accruals quality compared to firms with the best level of accruals quality. Row *Aq_DD* (F) and column Auditor type (F) include the results of an analysis of variance for variable cost of debt classified by quintiles of *Aq_DD* and by the type of auditor respectively.

***, **, * indicate statistical significance at 1%, 5% and 10% respectively.

Table 4

The effect of auditor reputation on the pricing of accruals. Regression analysis including control variables

Variables	Expected Sign	Unbalanced panel				Balanced panel			
		Pool		Fixed effects		Pool		Fixed effects	
		i	ii	iii	iv	v	vi	vii	viii
<i>Intercept</i>		0.1014*** (54.74)	0.1031*** (53.92)	- -	- -	0.0945*** (26.82)	0.0963*** (26.75)	- -	- -
<i>Aq_DD</i>	+	0.0112*** (2.71)	0.0036 (0.73)	0.0079** (2.09)	-0.0011 (-0.26)	0.0018 (0.21)	-0.0089 (-0.89)	-0.0040 (-0.54)	-0.0131 (-1.56)
<i>Aq_DD_Nation</i>	+	- -	-0.0012 (-0.07)	- -	0.0063 (0.32)	- -	0.0239 (0.63)	- -	0.0667* (1.71)
<i>Aq_DD_Inter</i>	+	- -	0.0251*** (3.56)	- -	0.0313*** (4.05)	- -	0.0355** (2.40)	- -	0.0293* (1.90)
<i>Int_Cov</i>	-	-0.00004*** (-9.23)	-0.00004*** (-9.29)	-0.0000 (-0.75)	-0.0000 (-0.74)	-0.0004*** (-11.87)	-0.0004*** (-11.92)	-0.0001** (-2.50)	-0.0001** (-2.51)
<i>Current_Ratio</i>	-	-0.0011*** (-3.65)	-0.0011*** (-3.65)	-0.0029*** (-6.45)	-0.0029*** (-6.47)	-0.0024*** (-3.52)	-0.0024*** (-3.48)	-0.0029*** (-3.29)	-0.0029*** (-3.32)
<i>Size</i>	-	-0.0036*** (-19.62)	-0.0037*** (-19.86)	-0.0105*** (-13.47)	-0.0106*** (-13.59)	-0.0035*** (-10.12)	-0.0037*** (-10.41)	-0.0125*** (-9.83)	-0.0126*** (-9.93)
<i>Col</i>	-	-0.0210*** (-18.32)	-0.0211*** (-18.38)	-0.0121*** (-4.64)	-0.0122*** (-4.68)	-0.0195*** (-8.60)	-0.0196*** (-8.66)	-0.0018 (-0.41)	-0.0020 (-0.45)
Year dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects		No	No	Yes	Yes	No	No	Yes	Yes
Industry dummies		Yes	Yes	No	No	Yes	Yes	No	No
<i>N</i>		39,968	39,968	39,968	39,968	8,078	8,078	8,078	8,078
Adjusted R²		12.91%	12.93%	66.55%	66.66%	21.50%	21.54%	62.82%	62.84%
F statistic		114.91***	110.92***	7.95***	7.96***	47.09***	45.35***	12.73***	12.72***

The table reports the pooled OLS and fixed effects results for models [1] and [2]. The first four columns (unbalanced panel) contain the results of estimations carried out using the whole sample. The last four columns (balance panel) contain results of estimations carried out in a sample of 8,078 firm-year observations corresponding to 1,154 companies with available data in all the 7 years of the sample period (1996-2002).

Table 5

The effect of auditor reputation on the pricing of accruals

Sensitivity tests using alternative accruals quality metrics

Panel A: Accruals quality computed as the standard deviation of the residual of the McNichols (2002) model from $t-4$ to t

	Pool	
	i	ii
Σ_{Aq}	0.0090 (0.59)	-0.0025 (-0.15)
Σ_{Aq_Nation}	-	0.0008 (0.02)
Σ_{Aq_Inter}	-	0.0375* (1.86)
<i>N</i>	9,683	9,683
Adjusted R ²	10.57%	10.58%
F statistic	24.35***	23.46***

Panel B: Accruals quality computed as the absolute value of the residual of the McNichols (2002) model

	Pool		Fixed effects	
	iii	iv	v	vi
Aq_{McN}	0.0171*** (3.72)	0.0090* (1.71)	0.0096** (2.43)	0.0005 (0.10)
Aq_{McN_Nation}	-	0.0060 (0.32)	-	0.0141 (0.67)
Aq_{McN_Inter}	-	0.0240*** (3.23)	-	0.0310*** (3.80)
<i>N</i>	39,968	39,968	39,968	39,968
Adjusted R ²	12.92%	12.94%	66.65%	66.66%
F statistic	115.05***	111.00***	7.95***	7.96***

Panel C: Accruals quality computed as the absolute value of the residual of the Ball and Shivakumar (2006) model

	Pool		Fixed effects	
	iii	iv	v	vi
Aq_{BS}	0.0144*** (3.11)	0.0039 (0.74)	0.0070* (1.78)	-0.0031 (-0.67)
Aq_{BS_Nation}	-	0.0028 (0.15)	-	0.0078 (0.39)
Aq_{BS_Inter}	-	0.0321*** (4.30)	-	0.0356*** (4.36)
<i>N</i>	41,064	41,064	41,064	41,064
Adjusted R ²	12.48%	12.52%	66.71%	66.73%
F statistic	113.65***	109.83***	8.07***	8.07***

Panel A reports the pooled OLS results for the following models:

$$Cost_Debt_{i,t+1} = \beta_0 + \beta_1 \sigma_Aq_{it} + \beta_2 Int_Cov_{it} + \beta_3 Current_Ratio_{it} + \beta_4 Size_{it} + \beta_5 Col_{it} + \sum_{j=1}^{N-1} \beta_{6+j} Year_j + \xi_{it}$$

$$Cost_Debt_{i,t+1} = \alpha_0 + \alpha_1 \sigma_Aq_{it} + \alpha_2 \sigma_Aq_Nation_{it} + \alpha_3 \sigma_Aq_Inter_{it} + \alpha_4 Int_Cov_{it} + \alpha_5 Current_Ratio_{it} + \alpha_6 Size_{it} + \alpha_7 Col_{it} + \sum_{j=1}^{N-1} \alpha_{8+j} Year_j + \psi_{it}$$

where σ_Aq_{it} is the standard deviation from $t-4$ to t of the residual of the McNichols (2002) model cross-section estimation for firm i .

Panel B reports the pooled OLS and fixed effects results for the following two models:

$$Cost_Debt_{i,t+1} = \beta_0 + \beta_1 Aq_McN_{it} + \beta_2 Int_Cov_{it} + \beta_3 Current_Ratio_{it} + \beta_4 Size_{it} + \beta_5 Col_{it} + \sum_{j=1}^{N-1} \beta_{6+j} Year_j + \xi_{it}$$

$$Cost_Debt_{i,t+1} = \alpha_0 + \alpha_1 Aq_McN_{it} + \alpha_2 Aq_McN_Nation_{it} + \alpha_3 Aq_McN_Inter_{it} + \alpha_4 Int_Cov_{it} + \alpha_5 Current_Ratio_{it} + \alpha_6 Size_{it} + \alpha_7 Col_{it} + \sum_{j=1}^{N-1} \alpha_{8+j} Year_j + \psi_{it}$$

where Aq_McN_{it} is the absolute value of the residual of the McNichols (2002) model cross-section estimation for firm i and year t .

Panel C reports the pooled OLS and fixed effects results for the following two models:

$$Cost_Debt_{i,t+1} = \beta_0 + \beta_1 Aq_BS_{it} + \beta_2 Int_Cov_{it} + \beta_3 Current_Ratio_{it} + \beta_4 Size_{it} + \beta_5 Col_{it} + \sum_{j=1}^{N-1} \beta_{6+j} Year_j + \xi_{it}$$

$$Cost_Debt_{i,t+1} = \alpha_0 + \alpha_1 Aq_BS_{it} + \alpha_2 Aq_BS_Nation_{it} + \alpha_3 Aq_BS_Inter_{it} + \alpha_4 Int_Cov_{it} + \alpha_5 Current_Ratio_{it} + \alpha_6 Size_{it} + \alpha_7 Col_{it} + \sum_{j=1}^{N-1} \alpha_{8+j} Year_j + \psi_{it}$$

where Aq_BS_{it} is the absolute value of the residual of the Ball and Shivakumar (2006) model for firm i and year t .

Only the estimated coefficients of σ_Aq , σ_Aq_Nation and σ_Aq_Inter in panel A, of Aq_McN , Aq_McN_Nation and Aq_McN_Inter in panel B and of Aq_BS , Aq_BS_Nation and Aq_BS_Inter in panel C are disclosed. In all cases the coefficients and significance level of the control variables are similar to those reported in table 4.

Table 6

The effect of auditor reputation on the pricing of accruals

Sensitivity tests controlling for the effect of old debt contracts

Panel A: Accruals quality computed as the mean of <i>Aq_DD</i> of <i>t-1</i> and <i>t</i>				
	Pool		Fixed effects	
	i	ii	iii	iv
<i>Avg2_Aq_DD</i>	0.0133** (2.24)	0.0035 (0.52)	0.0089 (1.50)	-0.0036 (-0.53)
<i>Avg2_Aq_DD_Nation</i>	-	-0.0175 (-0.82)	-	-0.0043 (-0.16)
<i>Avg2_Aq_DD_Inter</i>	-	0.0302*** (3.47)	-	0.0466*** (4.06)
<i>N</i>	31,676	31,676	31,676	31,676
Adjusted R ²	10.15%	10.19%	67.38%	67.41%
F statistic	71.20***	68.79***	7.89***	7.90***
Panel B: Accruals quality computed as the mean of <i>Aq_DD</i> of <i>t-2</i> , <i>t-1</i> and <i>t</i>				
	Pool		Fixed effects	
	v	vi	vii	viii
<i>Avg3_Aq_DD</i>	0.0101 (1.34)	-0.0010 (-0.11)	0.0049 (0.53)	-0.0095 (-0.92)
<i>Avg3_Aq_DD_Nation</i>	-	-0.0184 (-0.75)	-	-0.0192 (-0.56)
<i>Avg3_Aq_DD_Inter</i>	-	0.0333*** (3.23)	-	0.0558*** (3.46)
<i>N</i>	24,411	24,411	24,411	24,411
Adjusted R ²	9.58%	9.62%	69.24%	69.27%
F statistic	51.73***	50.02***	7.87***	7.87***
Panel C: Accruals quality computed as the mean of <i>Aq_DD</i> of <i>t-3</i> , <i>t-2</i> , <i>t-1</i> and <i>t</i>				
	Pool		Fixed effects	
	ix	x	xi	xii
<i>Avg4_Aq_DD</i>	-0.0005 (-0.05)	-0.0148 (-1.37)	-0.0127 (-0.86)	-0.0297* (-1.80)
<i>Avg4_Aq_DD_Nation</i>	-	-0.0028 (-0.09)	-	0.0243 (0.51)
<i>Avg4_Aq_DD_Inter</i>	-	0.0388*** (3.13)	-	0.0549** (2.41)
<i>N</i>	17,972	17,972	17,972	17,972
Adjusted R ²	9.52%	9.56%	71.63%	71.64%
F statistic	38.05***	38.83***	7.70***	7.70***

The table presents the pooled OLS and fixed effects results for the following two models:

$$\begin{aligned}
 Cost_Debt_{i,t+1} &= \beta_0 + \beta_1 Avgj_Aq_DD_{it} + \beta_2 Int_Cov_{it} + \beta_3 Current_Ratio_{it} + \beta_4 Size_{it} + \beta_5 Col_{it} + \sum_{j=1}^{N-1} \beta_{6+j} Year_j + \xi_{it} \\
 Cost_Debt_{i,t+1} &= \alpha_0 + \alpha_1 Avgj_Aq_DD_{it} + \alpha_2 Avgj_Aq_DD_Nation_{it} + \alpha_3 Avgj_Aq_DD_Inter_{it} + \alpha_4 Int_Cov_{it} \\
 &+ \alpha_5 Current_Ratio_{it} + \alpha_6 Size_{it} + \alpha_7 Col_{it} + \sum_{j=1}^{N-1} \alpha_{8+j} Year_j + \psi_{it}
 \end{aligned}$$

where $Avgj_Aq_DD$ is the mean of Aq_DD from t to $t-j+1$. Only the coefficients of $Avgj_Aq_DD$, $Avgj_Aq_DD_Nation$ and $Avgj_Aq_DD_Inter$ are disclosed. The results for the control variables are similar to those reported in Table 4.

Table 7

The effect of auditor reputation on the pricing of accruals

Sensitivity test controlling for the firm size effect on the accruals quality and cost of debt relationship

	Pool	Fixed Effects
	i	ii
<i>Aq_DD</i>	-0.1091*** (-2.89)	-
<i>Aq_DD_Nation</i>	-0.0048 (-0.27)	0.0033 (0.17)
<i>Aq_DD_Inter</i>	0.0191*** (2.60)	0.0261*** (3.16)
<i>Aq_DD_Size</i>	0.0126*** (3.01)	0.0070* (1.86)
<i>N</i>	39,968	39,968
Adjusted R²	12.95%	66.67%
F statistic	109.09***	7.96***

The table reports the pooled OLS and fixed effects results for the following model:

$$Cost_Debt_{i,t+1} = \alpha_0 + \alpha_1 Aq_DD_{it} + \alpha_2 Aq_DD_Nation_{it} + \alpha_3 Aq_DD_Inter_{it} + \alpha_4 Aq_DD_Size_{it} + \alpha_5 Int_Cov_{it} + \alpha_6 Current_Ratio_{it} + \alpha_7 Size_{it} + \alpha_8 Col_{it} + \sum_{j=1}^{N-1} \alpha_{9+j} Year_j + \psi_{it}$$

where *Aq_DD_Size* is the product of *Aq_DD* by *Size*. For the sake of brevity, only the estimated coefficients of *Aq_DD*, *Aq_DD_Nation*, *Aq_DD_Inter* and *Aq_DD_Size* are disclosed. The coefficients and significance level of the control variables are similar to those reported in Table 4.

Table 8

The effect of auditor reputation on the pricing of accruals
Sensitivity test controlling for accruals quality determinants

Panel A: Determinants of accruals quality				
	Expected sign	Pool		Fixed effects
		i		ii
<i>Intercept</i>		0.0554 ***		-
		(24.26)		-
<i>Size</i>	(-)	-0.0013 ***		-0.0164 ***
		(-5.71)		(-12.26)
<i>Cycle</i>	(+)	0.000001 ***		-0.0000
		(2.65)		(-1.02)
<i>Mg</i>	(-)	-0.0031 ***		-0.0026 ***
		(-4.81)		(-3.71)
<i>Growth</i>	(-)	-0.0022 **		-0.0030 ***
		(-2.16)		(2.75)
<i>Barr</i>	(-)	-0.0123 ***		-0.0097 **
		(-8.55)		(-2.20)
<i>Int_Cov</i>	(+)	0.0001 ***		0.0001 ***
		(7.03)		(3.15)
<i>N_Banks</i>	(-)	-0.0006 ***		0.0002
		(-5.52)		(0.59)
Year dummies		Yes		Yes
Industry dummies		Yes		No
Fixed effects		No		Yes
<i>N</i>		33,002		33,002
Adjusted R²		2.10 %		30.15 %
F statistic		14.08 ***		2.47 ***
Panel B: Accruals quality determinants effect				
		Pool		Fixed effects
		iii	iv	v
				vi
<i>Aq_DD</i>		0.0069	0.0071	-0.0007
		(1.28)	(1.32)	(-0.15)
<i>Aq_DD_Nation</i>		-0.0072	-0.0066	0.0048
<i>n</i>		(-0.35)	(-0.32)	(0.22)
<i>Aq_DD_Inter</i>		0.0334 ***	0.0343 ***	0.0313 ***
		(4.29)	(4.40)	(3.63)
<i>N</i>		33,002	33,002	33,002
Adjusted R²		13.96 %	13.97 %	66.59 %
F statistic		100.17 ***	93.39 ***	7.76 ***

Panel A reports the pooled OLS and fixed effects results for model [3]

Panel B reports the pooled OLS and fixed effects results for models [2] and [4], using the same sample as in panel A.

For the sake of brevity, only the parameter estimates of *Aq_DD*, *Aq_DD_Nation* and *Aq_DD_Inter* are disclosed. The results for the control variables are similar to those reported in Table 4.

Table 9

Auditor-client relationship duration and the auditor reputation effect on the pricing of
accruals

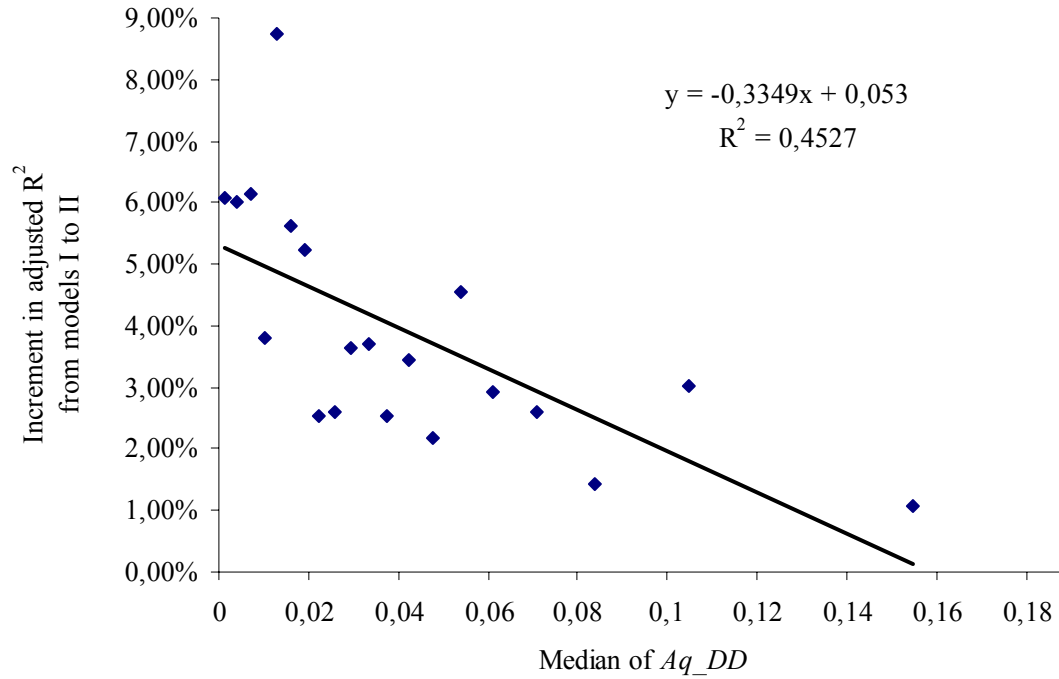
	Pool		Fixed effects	
	i	ii	iii	iv
<i>Aq_DD</i>	0.0090 (1.55)	0.0109 (1.55)	-0.0025 (-0.49)	0.0020 (0.33)
<i>Aq_DD_Nation</i>	0.0031 (0.14)	-0.0031 (-0.12)	0.0126 (0.57)	0.0134 (0.47)
<i>Aq_DD_Inter_D1</i>	-0.0160 (-0.65)	-	-0.0308 (-1.60)	-
<i>Aq_DD_Inter_D2M</i>	0.0359*** (4.20)	-	0.0488*** (5.06)	-
<i>Aq_DD_Inter_D12</i>	-	-0.125 (0.53)	-	0.0272 (1.29)
<i>Aq_DD_Inter_D3M</i>	-	0.0273** (2.57)	-	0.0512*** (4.16)
<i>N</i>	26,537	17,584	26,537	17,584
Adjusted R²	10.53%	10.23%	67.76%	70.58%
F statistic	59.93***	39.55***	7.59***	7.70***

The table presents the pooled OLS and fixed effects results for models [5] and [6].

For the sake of brevity, only the estimated coefficients of *Aq_DD*, *Aq_DD_Nation*, *Aq_DD_Inter_D1*, *Aq_DD_Inter_D2M*, *Aq_DD_Inter_D12*, *Aq_DD_Inter_D3M* are disclosed. The results for the control variables are similar to those reported in Table 4.

Figure 1

Preliminary analysis of the accruals quality metric



Sample observations were classified in twenty groups after sorting by Aq_DD . The figure represents the relationship between the median value of Aq_DD in each group and the increase in the adjusted R^2 when estimating models I and II in the corresponding group.

$$\frac{CFO_{it}}{Avg_Tot_Ass_{it}} = \lambda_0 \frac{CFO_{i,t-1}}{Avg_Tot_Ass_{it}} + Firm\ fixed\ effects + \mathcal{G}_{it} \quad [I]$$

$$\frac{CFO_{it}}{Avg_Tot_Ass_{it}} = \lambda_0 \frac{CFO_{i,t-1}}{Avg_Tot_Ass_{it}} + \lambda_1 \frac{NIBE_{i,t-1}}{Avg_Tot_Ass_{it}} + Firm\ fixed\ effects + \eta_{it} \quad [II]$$