

Mandatory Audit Firm Rotation and Audit Quality: Evidence from the Italian Setting

Authors:

Mara Cameran
Università Bocconi, Milan, Italy
mara.cameran@unibocconi.it

Annalisa Prencipe
Università Bocconi, Milan, Italy
annalisa.prencipe@unibocconi.it

Marco Trombetta
IE Business School, Spain
Marco.Trombetta@ie.edu

Mandatory Audit Firm Rotation and Audit Quality: Evidence from the Italian Setting

Abstract

Using a setting where mandatory audit firm rotation has been effective for more than 20 years (i.e., Italy), we analyze how audit quality changes during the auditor engagement period. In our research setting, auditors are appointed for a 3-year period and their term can be renewed twice up to a maximum of 9 years. Since the auditor has incentives to be reappointed at the end of the first and the second 3-year periods, we expect audit quality to be higher in the third (i.e. the last) term compared to the previous two. Assuming that a better audit quality is associated to a higher level of reporting conservatism and using abnormal working capital accruals (AWCA), we find that the auditor becomes more conservative in the last 3-year period, i.e. the one preceding the mandatory rotation. The well-known Basu (1997) model on timely loss recognition, used as a robustness test, confirms our main results. In an additional analysis, we use earnings response coefficients as a proxy for investor perception of audit quality, and we observe results consistent with an increase in audit quality perception in the last engagement period.

Keywords: mandatory rotation, audit firm rotation, audit quality, auditor tenure, reporting conservatism.

JEL codes: M41, M42.

1. Introduction

The debate on the desirability of Mandatory Auditor Rotation (MAR) is far from being resolved. Periodically we observe it resurfacing in policy documents that discuss the way forward in terms of audit regulation. A MAR rule—which sets a limit on the maximum number of years an audit firm can audit a given company’s financial statements—has often been proposed as a means to preserve auditor independence and possibly to increase investors’ confidence in financial reports. In the US, the Government Accounting Office (GAO), which was delegated by the SEC to study the issue of MAR, concluded that there is no clear evidence regarding the potential benefits of a MAR rule (GAO 2008). However, more recently the PCAOB issued a concept release "on auditor independence and audit firm rotation" (PCAOB, 2011) in which the Board solicits public comments on the advantages and disadvantages of mandatory audit firm. Public hearings were subsequently held in 2012. In Europe, the European Commission has recently proposed mandatory rotation for all European listed companies (European Commission, 2011).

Notwithstanding the relevance of the issue, there is no clear and direct empirical evidence that supports or rejects the introduction of a MAR rule to date. Hence, research on this topic is of the utmost importance.

The current paper contributes to the debate surrounding the MAR rule. In particular, we investigate the effects of mandatory audit firm rotation on audit quality while taking advantage of the unique institutional setting provided by the Italian experience, where a

MAR policy has been in place for more than 20 years. This allows us to test the effects of MAR on auditor behavior in a *real* mandatory audit firm rotation environment. Several prior studies have attempted to draw conclusions about the effectiveness of MAR in terms of audit quality. The majority of the published empirical papers are based on settings where mandatory rotation is not in place, with few exceptions which are characterized, however, by some relevant limitations (Ruiz-Barbadillo et al., 2009; Kim and Yi, 2009; Firth et al., 2012).

It is very important to test the effects of MAR in a real setting, as the incentives of the auditor may be affected by the potential future re-appointments. In a voluntary rotation setting there is no limit to future reappointments. Differently, in a mandatory rotation setting, there is a maximum limit to future re-appointments, causing the auditor incentives to change as such maximum limit gets closer. Hence, it is only in a mandatory setting (such as the Italian one) that we can properly observe this change in the auditor incentives and check how the auditor behavior is affected. Indeed, in our research setting, the auditor term can be renewed every three years and can be extended up to a maximum tenure of nine years. This rule was issued to preserve auditor independence and was based on the assumption that such independence could be compromised by a long-term relationship between the auditor and the auditee. Therefore, the Italian institutional setting allows us to test the effects of MAR directly in an actual mandatory rotation environment.

In this paper, we investigate how audit quality evolves over the allowed engagement period. We expect auditor's incentives and behavior to change as the maximum

engagement term gets closer. In particular, as the auditor has incentives to be reappointed at the end of the first and the second 3-year periods, we hypothesize that audit quality is higher in the third (i.e. the last) 3-year period, as there is no more possibility to be reappointed and the possible litigation issues become more relevant (Imhoff, 2003; PCAOB, 2011).

We test this hypothesis on a sample of non-financial Italian listed companies in the period spanning from 1985 to 2004, using abnormal working capital accruals as the main proxy for audit quality.

Assuming that better audit quality is associated to a higher level of reporting conservatism as suggested by several prior papers (e.g., Basu, 1997; Watts, 2003), our findings show that auditors become more conservative in the third (i.e. the last) 3-year period compared to the previous two. These results, based on abnormal working capital accruals, are also confirmed by the Basu model, which shows that losses are more timely recognized in the last 3-year period than in the first two periods.

The above-mentioned results are complemented by an earnings-returns association test, which documents that the investors tend to perceive a better earnings quality in the last 3-year engagement period.

Our findings contribute to a better understanding of how auditors behave in the presence of a real MAR rule.

The paper is structured as follows. In Section 2, we describe the Italian auditing environment. In Section 3, we review prior literature, and in the following Section we

develop our hypothesis. In Section 5, we describe the research method and findings of our main accrual-based analysis. In Section 6, the research method and results related to conditional conservatism analysis are reported. In Section 7, the results of the market perception of audit quality are reported. We draw conclusions in the final Section.

2. The Italian auditing environment

The Italian institutional setting has some distinctive characteristics that make it an appropriate research site with respect to mandatory audit firm rotation.

First, a MAR rule was enforced in Italy in 1975 by Presidential Decree D.P.R. 136/1975. The rule became effective for all listed companies in the mid-Eighties¹. The original version of the regulation (which was the one in place in the period used for the empirical analysis in this paper) allowed an auditor term to be renewed every three years up to a maximum tenure of nine years. This rule implied that Italian listed companies were subject to both a retention and a rotation rule. That is, once appointed, the audit firm was retained for at least three years. At the end of each three-year period, the auditee had the option to reappoint the auditor for an additional term. At the end of nine consecutive years of engagement, a change of the audit firm was mandatory. Notwithstanding the option to replace the auditor at the end of each three-year period, a preliminary analysis of our sample shows that the large majority of listed companies have reappointed the incumbent auditor up to the maximum period allowed by the regulation, i.e. nine years. Recently, the Italian regulation on mandatory auditor rotation has been revised. The latest version of the rule (Legislative Decree 303/2006) drops the option to replace the

incumbent auditor at the end of each three-year period. That is, once appointed, the auditor is retained for the maximum engagement period, i.e., nine years.

The time limit set in Italy is not far from the one indicated by the PCAOB in its recent concept release where the Board seeks comments on a number of specific questions regarding MAR, including whether it "should consider a rotation requirement only for audit tenures of more than 10 years" (PCAOB, 2011, p.3). In addition, in 2003 the Conference Board Commission on Public Trust and Private Enterprise recommended that audit committees consider rotation when "the audit firm has been employed by the company for a substantial period of time – e.g., over 10 years." (Commission on Public Trust and Private Enterprise, 2003). Therefore, the time limit set by the Italian regulation (i.e. 9 years) seems to be particularly suitable to test the effects of a MAR implementation.

Second, to preserve auditor independence, Italian audit firms are required to shy away from providing many types of non-auditing services to listed client firms². This implies that the results obtained using Italian data are less likely to be contaminated by the delivery of non auditing services, which is another useful feature of the Italian setting for our research purposes. Moreover, Cameran (2007) reports that auditing services account for about 90% of revenues of Big audit firms in Italy. Considering the fact that more than 90% of Italian listed companies are audited by Big audit firms (Cameran, 2005), we can assert that financial reporting represents the primary concern of auditors in charge of auditing Italian listed companies.

Third, as regards the legal framework, Italy is a civil law country that, according to Choi and Wong (2007), is generally considered to be characterized by weaker legal enforcement and weaker investor protection than a typical Anglo-Saxon country. Specifically, Italy belongs to the group of code law regime countries with a French civil law origin: this group provide weaker investors' legal protection in comparison with German and Scandinavian civil law countries (La Porta et al., 1998). About litigation risk for auditors, based on the Wingate (1997) index – a widely accepted measure of such risk at a country level (e.g. Chung et al. 2004, Francis and Wang 2008) – Italy is characterized by a lower litigation risk environment than typical Anglo-Saxon countries. Indeed, Italy is assigned a litigation risk score of 6.22, while Anglo-Saxon countries generally report scores above 10, with a maximum score of 15 for the US. Interestingly, the score assigned to Italy is equal to the one assigned to the most important (non Anglo-Saxon) European countries like France and Germany, and to the one assigned to Netherlands, Norway, and Switzerland (and higher, for example, than Belgium and Spain). Therefore, in the light of the EU announced reform on audit market (European Commission, 2011), the Italian data can be considered particularly interesting as the Italian audit setting - especially with reference to the litigation risk for auditors - seems to be similar not only to other code law regime countries with a French civil law origin, but also to many (and the most important) European Countries.

Finally, the Italian Stock Exchange Supervisory Commission (Consob) carries out periodic controls on the quality of the auditing activity performed by audit firms, sanctioning audit partners when irregularities in their activity are found. In particular,

Consob issues partner suspensions when there is a suspicion that auditing standards are not properly applied. Over the period between 1992 and 2004, the rate of suspended audit partners sanctioned by Consob is 1.42% for the population of listed companies. Although lower than the 1.49% calculated with reference to the US market (based on the data reported by Francis, 2004), this rate is quite significant. What is interesting to the purpose of our study is that 58% of such disciplinary measures in Italy relate to auditors in the first three-year period of engagement, with an incrementally decreasing rate in the following three-year periods (Cameran and Pettinicchio, 2011).

In conclusion, the Italian institutional setting seems to be particularly suitable to test our hypothesis on the MAR rule not only because such a rule is actually in place, but also due to its similarities to other major European (and non European) countries.

3. Literature review

Mandatory audit firm rotation has been proposed as a potential solution to the possibility that long auditor tenure (i.e., long auditor-client relationship) may lead to a deterioration of audit quality.

There are quite many published papers that deal with MAR. The majority of them are based on settings where the rule is not effective, with the few following exceptions. Ruiz-Barbadillo et al. (2009) analyze the Spanish setting comparing a MAR period (1991-1994) to a voluntary rotation period (1995-2000), and find no evidence of any significant audit quality change between the two periods. However, in the Spanish setting MAR was never actually implemented because the rule was dropped before the first mandatory

rotations could take place. In Korea, an auditor change can be imposed by a Financial Supervisory Commission on Korean companies deemed as having high potential to manipulate accounting results. In this setting, Kim and Yi (2009) find that there is less earnings management following a regulator-imposed auditor change. However, Kim and Yi (2009: p. 207) recognize the uniqueness of the Korean auditor replacement rule and note that their conclusions cannot be generalized to a mandatory rotation setting. More recently, Firth et al. (2012) focus on China, a setting where different kinds of rotations (i.e. audit firm and audit partner) are mandatory. Using modified audit opinions, the authors document a positive effect of mandatory audit partner rotation on audit quality for firms located in regions with weak legal institutions. Instead, mandatory audit firm rotation does not seem to have clear benefits. However, Firth et al. (2012: p.118) clarify that they "classify an audit firm rotation as mandatory if the preceding audit firm changes because of its inability to provide audit services for the client".³ In other words, most of MAR cases in their study are not related to the typically-debated type of mandatory audit firm rotation which operates on a periodic basis. Therefore, Firth et al. (2012) results cannot be easily extended to a typical MAR setting.

Other studies use the U.S. Arthur Andersen (AA) collapse in 2002 as a mandatory audit-firm rotation setting. Their results are conflicting. For example, some find that forced audit firm rotation following AA collapse is associated with better audit quality (Cahan and Zhang, 2006, Krishnan, 2007; Nagy, 2005), while others document the opposite (Blouin et al., 2007; Krishnan et al., 2007). However, the forced auditor change following the AA demise shows at least two clear differences from a real mandatory rotation

environment. First, the length of the tenure is not limited since the beginning of the engagement. Second, the level of control of the new auditor is presumably much deeper than ordinarily. Actually, the new audit firm is motivated to audit the new auditee with greater care, as the previous auditor has not had a good reputation for the quality of its activity. For example, Cahan and Zhang (2006) show that the successor auditors viewed AA audit as a unique source of litigation risk.

Apart from the above mentioned exceptions, the majority of other prior studies infer results about MAR simply using data from settings where audit firm rotation is voluntary. These studies mainly focus on how *auditor tenure* affects audit quality, where the latter is measured in several different ways. Once again, the results are mixed. For example, considering audit failure as an audit quality measure, Geiger and Raghunandan (2002) document that US firms entering bankruptcy are less likely to have been issued a going concern audit opinion from audit firms with shorter tenure. Also in the US setting, Carcello and Nagy (2004) find that fraudulent financial reporting is more likely when audit firm tenure is three years or less. Differently, using a sample of private Belgian companies, Knechel and Vanstraelen (2007) show that the decision of the auditor to issue a going concern opinion is not affected by the tenure in their bankrupt sample. In the non-bankrupt sample, they document some evidence of a negative association between auditor tenure and the issuance of a going concern opinion. Using earnings quality as a surrogate for audit quality, Chung and Kallapur (2003) and Myers et al. (2003) find that discretionary accruals are negatively related to auditor tenure. Similarly, Johnson et al. (2002), and Gul et al. (2007) find evidence of higher discretionary accruals in the early

years of the audit firm's tenure. Jenkins and Velury (2008) document a positive association between the conservatism in reported earnings and the length of the auditor–client relationship, and an increase in conservatism between short and medium tenure that does not deteriorate over long tenure. Differently, Kramer et al. (2011) show that conservatism in reported earnings decreases as the tenure of the audit firm lengthens. Other studies (Chi and Huang 2005; Davis et al. 2009) find that earnings quality increases in the early years of audit firm tenure, and later deteriorates. Finally, there are studies that suggest that the relation between audit quality and auditor tenure is not homogeneous for all firms (e.g. Li, 2010; Gul et al., 2009).

As the operational and economic settings are different, conclusions drawn from voluntary replacement environments cannot be easily extended to mandatory rotation settings (see also Section 4). In an attempt to overcome this limitation, some papers have tried to model a MAR setting on a theoretical basis, with conflicting conclusions. For example, in a multiperiod model, Elitzur and Falk (1996) show that planned audit quality level diminishes over time and the level of the last period is the lowest, concluding that planned audit quality is negatively affected by the policy of mandatory rotation. Arruñada and Paz-Ares (1997) focus on the expected financial consequences of the auditor's reporting decision. They conclude that the rotation rule does not modify the transaction costs of collusion and reduces both the probability of detecting 'non reporting auditors' (i.e. auditors who do not report irregularities after detecting them) and the amount of sanctions associated with such detection. Gietzmann and Sen (2002) find that MAR should only be imposed in thin markets where a few clients are very important to the

auditor, as in these markets the resulting improved incentives for independence outweigh the associated costs. In an unpublished paper, Lu and Sivaramakrishnan (2010) show that the optimal attestation strategy of the auditor will depend on the trade-off between securing rents from future reappointments with the same client and risking liabilities for potential misstatements in the audited report. They predict that auditor attestation strategy in a MAR setting will go from more aggressive in the early years of tenure to more conservative in the subsequent years.

Studies about partner tenure/partner rotation are also used in the debate surrounding mandatory audit firm rotation. However, as clearly pointed out by Bamber and Bamber (2009), audit *partner* rotation is likely to have a much smaller effect than audit *firm* rotation. When the partner changes, audit technology and audit strategy are very likely to remain unchanged. Moreover, not only the results of this stream of literature are mixed/conflicting, but also many of them infer their conclusions from *voluntary* partner rotation settings. For example, using Australian data (voluntary partner rotation regime), Carey and Simnett (2006) do not find sign of deterioration of the reporting quality (measured through abnormal working capital accruals) for long partner tenure. However, they find evidence consistent with adverse effects of long partner tenure on audit opinions and meeting or missing earnings targets. Always in the Australian setting, Fargher et al. (2008) find results consistent with a positive effect of partner rotations. In Taiwan, Chi and Huang (2005) document that discretionary accruals are initially negatively associated with audit partner tenure and audit firm tenure, but the associations become positive when tenure exceeds five years. Chen et al. (2008) find a positive

relation between reporting quality and partner tenure (in a period where audit partner change was voluntary). Once again in the Taiwanese setting, Chih-Ying et al. (2008) results are not consistent with the arguments that earnings quality decreases with extended audit partner tenure and that requiring audit firm rotation in addition to partner rotation improves earnings quality. Chi et al. (2009) address this issue following the implementation of mandatory partner rotation in Taiwan (while previous cited studies on the Taiwanese setting use data before 2004) and find results consistent with Chen et al. (2008). Using a small sample of US proprietary data, Manry et al. (2008) show that audit quality increases with partner tenure but only for some types of auditees (relatively small clients having fairly lengthy partner tenure). Finally again on the basis of US proprietary data, Bedard and Johnstone (2010) show that the level of planned effort (as a proxy for audit quality) does not differ for clients having longer versus shorter tenure partners.

Another stream of research that indirectly relates to the rotation issue is the one focused on the relation between *perceived* audit quality and audit firm tenure. This research suffers from the same limitations mentioned above (i.e., evidence drawn from non-MAR settings and with conflicting results). For example, using earnings response coefficients as a proxy for investor perceptions of earnings quality, Gosh and Moon (2005) document a positive association between perceived earnings quality and audit firm tenure. Their results are consistent with the hypothesis that investors and information intermediaries perceive auditor tenure as improving audit quality. A related study by Mansi et al. (2004) find a negative relation between cost of debt and audit firm tenure, suggesting that perceived audit quality increases with audit firm tenure. This relation is not confirmed by

Boone et al. (2008). They investigate whether investors price audit firm tenure for Big Five audits by examining the relation between tenure and the ex ante equity risk premium. Their results show that the equity risk premium decreases in the early years of tenure but increases with additional years of tenure. Mai et al. (2008) use shareholder votes on auditor ratification as a proxy for investor perception about audit quality. They find that shareholders' votes against or abstaining from auditor ratification are positively correlated with auditor tenure, suggesting that shareholders view long auditor tenure as adversely affecting audit quality.

In summary, so far the extant literature – although very broad – was unable to provide direct and univocal empirical evidence in support or against the introduction of a MAR rule. There is a clear need to research this issue further in settings where the MAR rule is already in place and where the actual incentives of the auditor become more evident. Our paper aims at partially filling this gap.

4. Hypothesis development

From the point of view of the auditor, a MAR setting is significantly different from a voluntary replacement environment. In a voluntary auditor replacement setting, the number of possible future re-appointments for the auditor is ideally equal to infinity. On the contrary, in a mandatory rotation setting, the number of potential re-appointments from the existing client declines up to zero as the maximum tenure gets closer, causing the auditor incentives to change with tenure. Quoting PCAOB (2011: p.12), “had Arthur

Andersen in 1996 known that Peat Marwick was going to come in 1997, there would have a very different kind of relationship between them and Enron.”

Prior literature suggests that incumbent auditors are incentivized to retain the client in order to protect their investment in client-specific expertise, with effects on audit quality. In her seminal paper, DeAngelo (1981) assumed that incumbent auditors have economic incentives not to disclose material errors or breaches in view of retaining their client, thus reducing audit quality. On the same line, Acemoglu and Gietzmann (1997) show – through an analytical model – that, if the manager can credibly threaten to dismiss the auditor, then the auditor will choose a low duty of care and will not report discovered errors or breaches in the client’s accounting system. In a more recent paper, Wang and Tuttle (2009) suggest that audit firms would be willing to concede some items in the short-term in order to preserve the long-term relationship with their clients, i.e. audit firms have an incentive to bond with their clients to ensure profits from future audits (Imhoff, 2003; Kaplan and Mauldin, 2008).

In a MAR setting, things change. Mandatory rotation affects the auditor’s incentives by diminishing the expected future benefits arising from the relationship with the client as the maximum engagement term comes closer. As a consequence, one may expect that audit quality will change over the engagement period. In particular, as long as there is the chance to be re-appointed, audit quality is expected to be lower compared to the last term, the one preceding the mandatory rotation, when the auditor – free from re-appointment concerns and knowing that another audit firm will soon take over the audit and might discover any negligence of the previous audit firm – is incentivized to do her job at best

(Imhoff, 2003). This is consistent with what reported by PCAOB (2011: p.17): “an auditor that knows its work will be scrutinized at some point by a competitor may have an increased incentive to ensure that the audit is done correctly.”

In our research setting (i.e. Italy), auditors are appointed for a 3-year period and their term can be renewed twice up to a maximum of 9 years. In the first two 3-year periods, the auditor has the chance to be re-appointed, while in the third 3-year period she knows in advance that her engagement will end. Following the line of reasoning described above, we expect audit quality to be higher in the third (i.e. the last) term compared to the previous two.

Assuming that a better audit quality is associated to a higher level of reporting conservatism, we expect in particular the auditor to be more conservative in the last 3-year period. The association between audit quality and reporting conservatism is well established in the accounting literature. For example, Basu (1997) and Watts (2003) argue that the conservatism principle evolved in conjunction with audited financial statements to the purpose of limiting management ability to exploit information asymmetry. Ruddock et al. (2006) state that conservatism is an important accounting attribute that the auditor is expected to influence. Other studies have shown that reporting conservatism (in particular, conditional conservatism⁴) is positively related to audit quality, as proxied by the type of auditor (e.g., Basu et al., 2001; Chung et al., 2003; Francis and Wang, 2008), while several recent papers directly associate audit quality to reporting conservatism (e.g., Cano-Rodriguez, 2010; Li, 2010; Kramer et al., 2011).

Potential litigation concerns generally motivate the auditors to prefer conservative reporting (e.g., DeFond and Subramanyam, 1998; Lys and Watts 1994; Kim et al., 2003). However, while reducing the risk of litigation, a higher conservatism increases the likelihood for an incumbent auditor to be replaced (e.g., Krishnan, 1994; DeFond and Subramanyam, 1998). Therefore, we expect that in the first and second 3-year periods – when the auditor has still the incentive and the chance to be re-appointed – the level of audit quality in terms of reporting conservatism is lower than in the third (i.e. the last) 3-year engagement period.

In the light of the above, we formulate our hypothesis as follows:

Hypothesis: Audit quality (in terms of reporting conservatism) is higher in the third 3-year engagement period.

Being abnormal working capital accruals (AWCA) our main proxy for audit quality, therefore, we expect AWCA to be more conservative in the third 3-year engagement period.

5. Accrual-based analysis

5.1 Sample

Our sample for the accrual-based analysis is composed of non-financial Italian companies listed on the Milan Stock Exchange. The sample period spans the 20 years from 1985 to

2004. The period post-2004 was excluded in order to avoid the impact of the IFRS adoption.⁵

The data were collected from consolidated financial statements retrieved from two sources: the *Calepino dell'azionista* for the period from 1985 to 1995; and the *Aida* database⁶ for the period from 1996 to 2004. For each of the companies included in the sample, the audit firm and the related tenure were traced either from the above data sources or from the *Taccuino dell'azionista*, a periodical publication edited by *Il Sole 24 Ore* (the most popular economic and financial newspaper in Italy).

Only observations with complete financial statements and auditing data were included in the sample. Observations without prior year data were also eliminated to meet the requirement of two consecutive financial statements that are necessary to compute accrual measures.⁷

Moreover, since our purpose is to test whether MAR affects audit quality, we excluded the observations related to companies that did not experience a mandatory audit firm rotation.⁸ In addition, firms audited by non-Big audit firms were eliminated in order to ensure that our results not be affected by differential audit quality related to different types of audit firms.⁹

The final sample consists of 1,184 firm-year observations, corresponding to 171 unique firms. On average, each company is included in the sample for around 7 years. A description of the final sample is provided in Table 1.

[Insert Table 1 around here]

The sample covers a wide number of industries and is spread among the different Big-N auditors. It represents 62% of the population of non-financial firms traded on the Milan Stock Exchange during the years under consideration (Borsa Italiana, 2009).^{10 11}

5.2 Accrual- based proxy for audit quality

Jones-type abnormal accrual measures (Jones 1991; Dechow et al. 1995; Kothari et al. 2005) cannot be applied in our case as the number of observations per year/industry is limited (Wysocki 2004; Meuwissen et al. 2007; Francis and Wang 2008). Therefore, we measure abnormal working capital accruals (AWCA) as an estimate of abnormal accruals as suggested by DeFond and Park (2001). Accordingly, AWCA is defined as the difference between realized working capital and the working capital required to support the current sales level. Expected working capital is estimated by the historical relationship between working capital and sales. That is:

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

where S_t designates total sales during year t and WC_t is noncash working capital, computed as [(current assets – cash and short-term investments) – (current liabilities – short-term debt)].

AWCA is then deflated by the year's total sales.

We apply three versions of AWCA: raw (signed) AWCA values, positive AWCA values, and negative AWCA values. We use these three measures as each of these may provide different insights. Our main audit quality measure—raw (signed) AWCA values—allows

us to use the entire sample and it is well suited to test our hypothesis because it is able to detect a shifts from less conservative to more conservative accounting policies and *vice versa*. The subsamples of only positive or only negative accruals permit the detection of trends within each of the two possible accounting policies: income increasing and income decreasing.

5.3 Explanatory variables

Our main explanatory variable is audit firm tenure. In order to operationalize this variable, we first divide the maximum allowed engagement period (nine years) into three 3-year periods. Our decision to focus on the 3-year periods is a consequence of the Italian regulation, which defines a retention period of three years once the auditor is appointed. As mentioned before, at the end of each 3-year period, the auditor can be reappointed up to a maximum of nine years. Therefore, we introduce three dummy variables (PERIOD_1, PERIOD_2 and PERIOD_3). Each firm-year observation is assigned to one of the three periods based on the service duration of the audit firm. Specifically, PERIOD_1 includes firm-year observations in which audit firm have one to three years of tenure; PERIOD_2 includes firm-year observations related to four to six years of audit firm tenure; and PERIOD_3 includes observations with seven to nine years of audit firm tenure.

To overcome other related effects, we incorporate additional control variables into the AWCA multivariate models. These control variables are chosen in accordance with prior related studies such as Becker et al. (1998), Francis et al. (1999), Frankel et al. (2002), Myers et al. (2003), or Francis and Wang (2008). In particular, firm size (SIZE, measured

as the natural logarithm of total sales in year t) is used as a control variable because larger firms tend to have lower levels of accruals than do smaller firms, therefore a negative sign is expected. Cash flow from operations (CFO, calculated as operating cash flow deflated by total assets) is used because there is a well-documented negative relationship between such variables and accruals, therefore a negative sign is expected. Leverage (LEV, measured as the ratio of total liabilities to total assets in year t) is used as a proxy for the possibility of debt covenant violations that may create an incentive to increase earnings through higher abnormal accruals, therefore a positive coefficient is expected. According to Johnson et al. (2002) and Carey and Simnett (2006), accruals are likely to be correlated with a company's growth opportunities. Hence, sales growth (SALEGR, calculated as the sales in year t minus sales in $t-1$ and scaled by sales in year $t-1$) is also used as a control variable with an expected positive coefficient. Moreover Dechow et al. (1995) and Kothari et al. (2005) argue that accrual estimation models are generally unable to capture the entire extent of a company's nondiscretionary accruals, and suggest the inclusion of return on assets (ROA, calculated as the ratio of net income over total assets) as an additional variable to control for the accruals' nondiscretionary component that is not extracted by our accrual model. However, as the effect of profitability on accruals is not univocal, no prediction is made about the expected sign of the coefficient. The existence of a loss in the prior year (LAGLOSS, dummy variable assuming value 1 if the firm reported negative income in year $t-1$, and 0 otherwise) is another proxy for financial distress and is therefore an incentive to increase reported earnings in the following year (the expected coefficient is positive). The variable IPO (dummy variable

assuming value 1 if the firm is classified as an IPO in year t , and 0 otherwise) is included, as prior studies show that firms tend to use accruals to increase reported earnings prior to their initial listing to improve the offering's marketability and to obtain a better price for the new issue, and to experience a reversal of such accruals in the early years following the IPO. Thus, a positive coefficient is expected. Similarly, a company's listing age (AGE, calculated as the number of years since the firm's IPO) captures the fact that younger companies are less stable and more likely to encounter financial distress and, consequently, more likely to use accruals to achieve better profitability levels. Therefore, a negative coefficient is expected. Finally, due to the particular feature of the Italian setting where concentrated ownership is common even among listed companies, we include an additional variable (DSHR) to control for the presence of a dominant shareholder who owns the majority (i.e., more than 50%) of the voting share capital. The variable is calculated as a dummy variable assuming value 1 if the largest shareholder owns more than 50% of the voting shares, and 0 otherwise. We expect companies with a high level of ownership concentration to be less concerned about increasing earnings to achieve short-term market goals (e.g., Prencipe et al., 2011), therefore a negative sign is predicted.

The sources used to calculate all variables based on financial statement data are the *Calepino dell'azionista* and the AIDA database. Data about IPOs and ownership structure were collected through the CONSOB website.

5.4 Descriptive statistics

Descriptive statistics for the sample data used for the accrual-based analysis are presented in Table 2.

[Insert Table 2 around here]

Raw AWCA are on average slightly positive. It is useful to note that our sample is somewhat balanced between income increasing (612) and income decreasing (572) AWCA. The slight predominance of positive AWCA is consistent with the sample's positive mean and median of the raw (signed) values of AWCA.

About 39% of the sample observations belong to the first three-year audit tenure period, 38% belong to the second three-year tenure period, and 23% belong to the third three-year tenure period, with average auditor tenure (TENURE) of around 4.5 years.

All other variables reported in Table 2 exhibit a sufficient degree of variation within the sample. Interestingly, LEV indicates that Italian companies are on average financed for more than 50% by creditors. Also, in over 80% of the sample companies there is a dominant shareholder who owns more than 50% of the share capital, indicating that ownership is quite concentrated among Italian listed companies.¹² On average, in the sample period, companies report a positive profitability (mean ROA = 0.02) and a positive growth rate (mean sales growth = 0.11). Over 6% of the sample observations went through an IPO in the sample period.

5.5 Univariate analysis

As a preliminary analysis, we compare the mean of raw, positive, and negative AWCA in the three tenure periods. The results are reported in Table 3.

[Insert Table 3 around here]

Table 3 shows that, except for the negative AWCA, there is a clear decrease in the level of accruals moving from period 1 to period 3. The t-test of equality of means indicates that, in period 1, the level of accruals is significantly larger than in period 3. Also, while there is no significant difference between period 1 and period 2, the difference between period 2 and period 3 is (marginally) statistically significant for the positive accruals proxy. These preliminary results suggest that as auditor tenure increases, companies tend to reduce income increasing accounting policies. Put differently, these results confirm our hypothesis because they are in line with the idea that companies tend to report more conservatively as auditor tenure increases.

5.6 Multivariate analysis

We now turn to our multivariate analysis. For each of the three estimates of accruals, the following multiple regression model is estimated:

$$\begin{aligned} \text{Accruals}_{i,t} = & \beta_0 + \beta_1 \text{PERIOD_2}_{i,t} + \beta_2 \text{PERIOD_3}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{CFO}_{i,t} + \beta_5 \text{LEV}_{i,t} + \\ & \beta_6 \text{SALEGR}_{i,t} + \beta_7 \text{ROA}_{i,t} + \beta_8 \text{LAGLOSS}_{i,t-1} + \beta_9 \text{IPO}_{i,t} + \beta_{10} \text{AGE}_{i,t} + \beta_{11} \\ & \text{DSHR}_{i,t} + \text{fixed effects}_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad (2)$$

where:

the subscripts i and t indicate firm and year, respectively;

Accruals_{i,t} is the accrual estimate (raw, positive, or negative AWCA), scaled by total sales;

PERIOD_2_{i,t} is a dummy variable = 1 if the audit firm tenure is within the second three-year period (i.e., years 4 to 6), = 0 otherwise;

PERIOD_3_{i,t} is a dummy variable = 1 if the audit firm tenure is within the third three-year period (i.e., years 7 to 9), = 0 otherwise;

SIZE_{i,t} designates the natural logarithm of total sales in year t;

CFO_{i,t} represents the operating cash flow in year t (deflated by lagged total assets);

LEV_{i,t} is the financial leverage ratio in year t (estimated as the ratio of total liabilities to total assets);

SALEGR_{i,t} is the company sales growth rate, computed as the sales in year t minus sales in t-1 and scaled by sales in year t-1;

ROA_{i,t} is the return on assets in year t, calculated as the ratio of net income over total assets;

LAGLOSS_{i,t-1} is a dummy variable = 1 if the firm reported negative income in year t-1, = 0 otherwise;

IPO_{i,t} is a dummy variable = 1 if the firm is classified as an IPO in year t, = 0 otherwise;

AGE_{i,t} is the number of years since the firm's IPO;

DSHR_{i,t} is a dummy variable = 1 if the largest shareholder owns more than 50% of the voting shares, = 0 otherwise;

Fixed effects are firm and year fixed effects; and

$\varepsilon_{i,t}$ is the error term.

The results are presented in Table 4, where each of the three definitions of AWCA is used as a dependent variable.

[Insert Table 4 around here]

To make sure that our results are not driven by abnormal observations (outliers), we follow the following procedure. First, we run each regression on the whole sample. For each of these (untabulated) preliminary regressions we compute DFIT statistics, which allow to identify all those observations that had an abnormally high weight on the original estimation of the coefficients. Then, we rerun each regression on the reduced sample without the respective influential observations. This technique is applied regression by regression. As a consequence, the influential observations may be different for each regression. This explains why the sum of the observations used for negative and positive accruals does not coincide with the number of observations used in the raw accruals regression¹³.

Our main variable PERIOD_3 shows a significant and negative sign. This result is consistent with our hypothesis. As mandatory rotation approaches (the third last three-year period does not admit reappointment), companies' accounting policies become more conservative with respect to the initial tenure periods. Moreover, the magnitude of the coefficient of PERIOD_3 in the raw AWCA regression implies that AWCA is reduced on

average by 1.2% of sales during the third engagement period compared with AWCA during the first engagement period. Therefore, the results are economically significant.

The analysis of positive and negative AWCA shows that in both cases PERIOD_3 has a negative and significant coefficient (although the significance is marginal in the case of positive AWCA). Again, these results support the validity of our hypothesis, confirming that – in a MAR setting – the financial reporting policy of companies moves from less conservative in the early years of engagement to more conservative in the last period preceding rotation.

With regard to the control variables, we find that newly listed companies tend to apply less conservative accounting policies as evidenced by the positive and significant coefficients of IPO in the regressions reported in Table 4. It is also useful to note that the sign of cash flow from operations (CFO) is negative and significant in all regressions, consistent with previously reported results that operating cash flows tend to affect accruals in a negative direction. On the other hand, profitability (ROA) tends to increase abnormal accruals, as suggested by the positive coefficient of both negative and positive AWCA, whereas leverage does not systematically affect AWCA. Sales growth (SALEGR) and AGE are negatively correlated with negative AWCA, while – differently from expectations - previous year negative earnings (LAGLOSS) are associated with a more conservative level of accruals, suggesting the tendency to “take a big bath” rather than increasing earnings in the period immediately following the loss. This might be the consequence of an increased audit risk following a company loss which translates into a

more conservative reporting. Finally, SIZE seems to reduce the extent of negative accruals, suggesting a less conservative attitude by larger companies.

To examine the robustness of the results in Table 4, we also estimate the following alternative model:

$$\begin{aligned} \text{Accruals}_{i,t} = & \beta_1 + \beta_2 \text{TENURE}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{CFO}_{i,t} + \beta_5 \text{LEV}_{i,t} + \beta_6 \text{SALEGR}_{i,t} + \beta_7 \\ & \text{ROA}_{i,t} + \beta_8 \text{LAGLOSS}_{i,t-1} + \beta_9 \text{IPO}_{i,t} + \beta_{10} \text{AGE}_{i,t} + \beta_{11} \text{DSHR}_{i,t} + \text{fixed} \\ & \text{effects}_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

where the variable TENURE indicates the number of years of tenure with the same audit firm.

The results are reported in Table 5¹⁴.

[Insert Table 5 around here]

The variable TENURE shows a negative and significant coefficient when raw AWCA are used as a dependent variable. This is mainly driven by negative AWCA, which show a negative and significant coefficient. Once again, these results support our hypothesis, suggesting that accounting policies shift from less conservative to more conservative as the tenure increases.

As an additional robustness test, we replace the AWCA measure with current accruals. The results (untabulated) do not change qualitatively, although they show slightly lower levels of significance.

Finally, as a further robustness test, the variable DSHR was re-calculated, using 30% or 40% of voting shares as thresholds to define the presence of dominant shareholders. The results (untabulated) remain qualitatively unchanged and DSHR confirms not to be systematically related to the dependent variable.

By and large, one may conclude that our hypothesis that audit quality - measured in terms of conservatism and proxied by AWCA - improves as the mandatory rotation gets closer is validated.

In the following sections we test the robustness of our results on the basis of the Basu (1997) model on timely loss recognition, which is commonly used as another proxy for reporting conservatism. Subsequently, we report the results of an additional analysis based on the earnings response coefficient as a proxy for the investors' perception of audit quality.

6. Robustness test: conditional conservatism analysis

In order to test better the validity of our hypothesis, we turn now to a different definition of conservatism, i.e. the conditional conservatism proposed by Basu (1997).

Basu (1997) defines conservatism as “earnings reflecting ‘bad news’ more quickly than ‘good news’”. To implement this definition empirically he uses positive market returns as proxy for ‘good news’ and negative market returns as proxy for ‘bad news’. Our purpose

is to test whether, in a MAR setting, this conditional conservatism is more pronounced in the last (i.e. third) 3-year period. In order to do that, we estimate the following model:

$$\begin{aligned} \text{EARN}_{i,t} = & \beta_1 + \beta_2 \text{RET}_{i,t} + \beta_3 \text{DRET}_{i,t} + \beta_4 \text{DRET}_{i,t} * \text{RET}_{i,t} + \beta_5 \text{PERIOD_2}_{i,t} + \beta_6 \\ & \text{PERIOD_2}_{i,t} * \text{RET}_{i,t} + \beta_7 \text{PERIOD_2}_{i,t} * \text{DRET}_{i,t} * \text{RET}_{i,t} + \beta_8 \text{PERIOD_3}_{i,t} + \beta_9 \\ & \text{PERIOD_3}_{i,t} * \text{RET}_{i,t} + \beta_{10} \text{PERIOD_3}_{i,t} * \text{DRET}_{i,t} * \text{RET}_{i,t} + \text{fixed effects}_{i,t} + \varepsilon_{i,t}. \quad (4) \end{aligned}$$

Where

$\text{EARN}_{i,t}$ = earnings calculated as EPS (earnings per share before extraordinary items) in year t scaled by stock price at the end of t-1.

$\text{RET}_{i,t}$ = market-adjusted return, calculated as the difference between the stock return and the market return. Both returns are computed over a period of 12 months, starting nine months before the end of financial year t (i.e., the financial statements date) and ending three months following it.

$\text{DRET}_{i,t}$ is a dummy variable = 1 if $\text{RET}_{i,t} < 0$, 0 otherwise

$\text{PERIOD_2}_{i,t}$ is a dummy variable = 1 if the audit firm engagement tenure is within the second three-year period (i.e., years 4 to 6), 0 otherwise;

$\text{PERIOD_3}_{i,t}$ is a dummy variable = 1 if the audit firm engagement tenure is within the third three-year period (i.e., years 7 to 9), 0 otherwise;

Our hypothesis states that conservatism increases as the final engagement term gets closer. In model (4) this means that coefficient β_{10} is expected to be positive.

Market data used for our estimations were retrieved from *Compustat Global*. Due to missing data, our sample for this analysis is reduced to 784 observations.

Table 6 reports the descriptive statistics of the test variables used for the conditional conservatism analysis and for the market perception analysis, which will be discussed in the following section.

[Insert Table 6 around here]

The descriptives show that market-adjusted returns, earnings, and change in earnings are on average positive over the period under analysis.

The results of estimating model (4) are presented in Table 7

[Insert Table 7 around here]

Consistently with our expectation, coefficient β_{10} is positive and statistically significant, providing more evidence in support to our hypothesis. Conditional conservatism tends to be higher in the third three-year engagement period, i.e. the one preceding the mandatory audit firm rotation.

7. Additional analysis: investor perception of audit quality

In order to further validate our hypothesis that audit quality improves as the final engagement period gets closer, we perform an additional analysis, using a different definition for audit quality. In particular, we focus on the audit quality as perceived by the market.

Ghosh and Moon (2005) and Chi et al. (2009), among others, use the Earnings Response Coefficient (ERC) as a proxy for perceived audit quality. The assumption behind the use of such a measure is that the higher the perceived audit quality, the stronger the expected reaction by the market to the earnings released by the firm. In particular, the ERC is estimated from an earnings-returns association test based on the following regression:

$$RET_{i,t} = \beta_0 + \beta_1 EARN_{i,t} + \beta_2 \Delta EARN_{i,t} + SIZE_{i,t} + LEV_{i,t} + Fixed\ effects_{i,t} + \varepsilon_{i,t} \quad (5)$$

Where all the variables have been defined before (see Section 6) apart from $\Delta EARN$ which indicates the change in earnings and it is calculated as EPS in year t minus EPS in year t-1 scaled by stock price in year t-1.

The ERC is given by the sum of the two coefficients ($\beta_1 + \beta_2$) and indicates how sensitive the market is to accounting earnings.

In order to observe the change in ERC as the final engagement term gets closer, we extend model (5) by including our period dummies and interacting them with each of the basic variables as follows:

$$RET_{i,t} = \beta_0 + \beta_1 EARN_{i,t} + \beta_2 \Delta EARN_{i,t} + \beta_3 SIZE + \beta_4 LEV + \beta_5 PERIOD_2_{i,t} + \beta_6 PERIOD_2 * EARN_{i,t} + \beta_7 PERIOD_2 * \Delta EARN_{i,t} + \beta_8 PERIOD_3_{i,t} + \beta_9 PERIOD_3 * EARN_{i,t} + \beta_{10} PERIOD_3 * \Delta EARN_{i,t} + Fixed\ effects_{i,t} + \varepsilon_{i,t}, \quad (6)$$

An increase in the perceived audit quality should be reflected in positive values for both β_9 and β_{10} .

The ERC results are presented in Table 8.

[Insert Table 8 around here]

The coefficients β_9 and β_{10} show positive and significant values. In particular, the model shows that in Period 3 we have a marginal increase in the ERC compared to the first three-year period of 1.583 (significant at the 1% level).

These results show that investor perception of audit quality tends to improve as the final engagement period gets closer. Once more, the results found are supporting (indirectly) our hypothesis.

8. Concluding remarks

A crucial issue in audit regulation is whether a periodic change of the audit firm should be mandated. The current study contributes to the ongoing debate surrounding this issue by testing how audit quality changes over the engagement term in a *real* mandatory audit firm rotation setting, where regulation requires mandatory audit firm rotation on a periodical basis.

We hypothesize that audit quality (in terms of conservatism) tends to improve as the final engagement period gets closer. In our main analysis, we use AWCA to proxy for audit quality, and we expect that auditor conservatism increases in the last three-year engagement period compared to the previous ones.

Our empirical results confirm that audit quality tends to improve in the last engagement period (preceding mandatory audit firm rotation). This results is also confirmed when the Basu (1997) measure of conditional conservatism is used (i.e. auditors tend to become more conservative in the third - i.e. last - engagement period).

Additionally, using ERC as a proxy for investor perception of audit quality, we find consistent results. Perceived audit quality tends to be higher in the third (i.e. last) three-year period of engagement.

It is interesting to note that recently, in Italy, the option to replace the incumbent auditor at the end of each three-year period has been dropped. This implies that, once appointed, the auditor is now retained for the maximum engagement period, i.e., nine years. In the light of our empirical results, this change seems to move in the right direction to improve audit quality in the early years of the audit firm engagement, because there is no longer the incentive to reduce audit quality with the aim to get a renewal of the mandate, even if the possible litigation risk issue become more relevant as the mandate term gets closer. So further research is needed.

We are aware that our conclusions are not easy to generalize to other settings, due to some peculiar characteristics of the Italian environment. In particular, the Italian setting is characterized by relatively weaker legal environment and lower litigation risk for auditors, which might limit the generalizability of our results to stronger legal environments characterized by a higher risk of litigation for auditors, such as the Anglo-Saxon ones. Such higher risk of litigation might reduce the incentive to compromise on audit quality to the purpose of retaining the client in the earlier engagement periods.

However, the Italian setting is similar from the institutional point of view to several other European and non-European countries, therefore we believe that our conclusions may still be useful to regulators who intend to evaluate costs and benefits related to the implementation of a mandatory audit firm rotation rule.

References

- Acemoglu, D. and Gietzmann, M. B. (1997) Auditor independence, incomplete contracts and the role of legal liability, *European Accounting Review*, 6(3), pp. 355-375.
- Arrunada, B. and Paz-Ares, C. (1997) Mandatory rotation of company auditors: a critical examination, *International Review of Law and Economics*, 17(1), pp. 31-61.
- Bamber, E. M. and Bamber, L. S. (2009) Discussion of Mandatory Audit Partner Rotation, Audit Quality, and Market Perception: Evidence from Taiwan, *Contemporary Accounting Research*, 26(2), pp. 393-402.
- Basu, S. (1997) The conservatism principle and the asymmetric timeliness of earnings, *Journal of Accounting and Economics*, 24(1), pp. 3-37.
- Basu, S., Hwang, L. S. and Jan C. L. (2001) Differences in conservatism between Big Eight and non-Big Eight auditors, *Working paper* (City University of New York and California State University-Hayward).
- Becker, C. L., DeFond, M. L., Jiambalvo, J. and Subramanyam, K. R. (1998) The effect of audit quality on earnings management, *Contemporary Accounting Research*, 15(Spring), pp. 1-24.
- Bedard, J. C., and Johnstone, K. M. (2010) Audit Partner Tenure and Audit Planning and Pricing, *Auditing: A Journal of Practice & Theory*, 29(2), pp. 45-70.
- Blouin, J., Grein, B. and Rountree, B. (2007) An Analysis of forced auditor change: The case of former Arthur Andersen clients, *The Accounting Review*, 82(3), pp. 621-650.
- Boone, J. P., Khurana, I. K. and Raman, K. K. (2008) Audit firm tenure and the equity risk premium, *Journal of Accounting, Auditing & Finance*, 23(1), pp. 115-140.
- Borsa Italiana (2009) *Statistics*. Available at: www.borsaitaliana.it
- Cahan, S. F. and Zhang, W. (2006) After Enron: Auditor conservatism and ex-Andersen clients, *The Accounting Review*, 81(1), pp. 49-82
- Cameran M. (2005) Audit Fees and the Large Auditor Premium in the Italian Market, *International Journal of Auditing*, 9(2), pp. 129-146.

- Cameran, M. (2007) Auditing in Italy: The Development of a Highly-Regulated Setting before and after the Parmalat Case, in: R. Quick, S. Turley, and M. Willekens (Eds) *Auditing, Trust and Governance: Developing regulation in Europe* (Routledge).
- Cameran, M. and Pettinicchio, A. (2011) The Effect of Audit Firm Mandatory Rotation Rule, in: Frison-Roche M. A. (Eds.) *Vers quelle régulation de l'audit faut-il aller?* (Lextenso Edition).
- Cano-Rodriguez, M. (2010) Big Auditors, Private Firms and Accounting Conservatism: Spanish Evidence, *The European Accounting Review*, 19(1), pp. 131–159.
- Carcello, J. V. and Nagy, A. L. (2004) Audit firm tenure and fraudulent financial reporting, *Auditing: A Journal of Practice & Theory*, 23(2), pp. 55–69.
- Carey, P. and Simnett, R. (2006) Audit partner tenure and audit quality, *The Accounting Review*, 81(3), pp. 653-676.
- Chen, C. Y., Lin, C. J. and Lin, Y. C. (2008) Audit partner tenure, ~~firm~~ audit tenure, and discretionary accruals: Does long auditor tenure impair earnings quality?, *Contemporary Accounting Research*, 25(2), pp. 415– 445.
- Chi, W. and Huang, H. (2005) Discretionary Accruals, audit-Firm Tenure and audit-Partner Tenure: Empirical Evidence from Taiwan, *Journal of Contemporary Accounting and Economics*, 1(1), pp.65-92.
- Chi, W., Huang, H., Liao, Y. and Xie, H. (2009) Mandatory Audit Partner Rotation, Audit Quality, and Market Perception: Evidence from Taiwan, *Contemporary Accounting Research*, 26(2), pp. 359-391.
- Chih-Ying, C., Chan-Jane, L. and Yu-Chen, L. (2008) Audit Partner Tenure, Audit Firm Tenure, and Discretionary Accruals: Does Long Auditor Tenure Impair Earnings Quality?, *Contemporary Accounting Research*, 25(2), pp. 415-445.
- Choi, J. and Wong, T. (2007) Auditors' Governance Functions and Legal Environments: An International Investigation, *Contemporary Accounting Research*, 24(1), pp. 13-46.
- Chung, R., Firth, M. and Kim, J. (2004) Big 6 Conservatism around the World, *Working Paper*, (Hong Kong Polytechnic University).
- Chung, R., Firth, M. and Kim, J.-B. (2003) Auditor conservatism and reported earnings, *Accounting and Business Research*, 33(1), pp. 19–32.
- Chung, H. and Kallapur, S. (2003) Client Importance, Nonaudit Services, and Abnormal Accruals, *The Accounting Review*, 78(4), pp. 931-955.

- Commission on Public Trust and Private Enterprise (2003) *Findings and Recommendations Part 2: Corporate Governance Part 3: Audit and Accounting* (New York, NY: The Conference Board).
- Consob (1992) *Il sistema della revisione e certificazione dei bilanci. Attualità e ipotesi di modifica* (Consob, Roma).
- Davis, L. R., Soo, B. S. and Trompeter, G. M. (2009) Auditor Tenure and the Ability to Meet or Beat Earnings Forecasts, *Contemporary Accounting Research*, 26(2), pp. 517-548.
- DeAngelo, L. (1981) Auditor independence, 'low balling' and disclosure regulation, *Journal of Accounting and Economics*, 3(2), pp. 113–127.
- Dechow, P. M., Sloan, R. G. and Sweeney, A. P. (1995) Detecting earnings management, *The Accounting Review*, 70(April), pp. 193–226.
- DeFond, M. L. and Park, C. W. (2001) The reversal of abnormal accruals and the market valuation of earnings surprises, *The Accounting Review*, 76(July), pp. 375–404.
- DeFond, M. L. and Subramanyam, K. R. (1998) Auditor changes and discretionary accruals, *Journal of Accounting and Economics*, 25(1), pp. 35-67.
- Elitzur, R. and Falk, H. (1996) Planned audit quality, *Journal of Accounting and Public Policy*, 15(3), pp. 247–269.
- European Commission (2011) *Proposal for a Regulation of the European Parliament and of the council on specific requirements regarding statutory audits of public-interest entities*, November 30, 2011. Available at: http://ec.europa.eu/internal_market/auditing/docs/reform/regulation_en.pdf
- Fargher, N., Lee, H. Y. and Mande, V. (2008) The effect of audit partner tenure on client managers' accounting discretion, *Managerial Auditing Journal*, 23(2), pp. 161–186.
- Federation of European Securities Exchanges (FESE) (2000-2004) *European Securities Exchange Statistics*, Available at: <http://www.fese.be/en/?inc=art&id=4>.
- Firth, M., Rui, O. M. and Wu, X. (2012) How Do Various Forms of Auditor Rotation Affect Audit Quality? Evidence from China, *The International Journal of Accounting*, 47(1), pp. 109-138.
- Francis, J. R. and Wang, D. (2008) The joint effect of investor protection and Big 4 audits on earnings quality around the world, *Contemporary Accounting Research*, 25(1), pp.157–191.

- Francis, J. R. (2004) What do we know about audit quality?, *The British Accounting Review*, 36(4), pp. 345–368.
- Francis, J. R., Mydew, E. L. and Sparks, H. C. (1999) The role of Big 6 auditors in the credible reporting of accruals, *Auditing: A Journal of Practice and Theory*, 18(Fall), pp. 17–34.
- Frankel, R. M., Johnson, M. F. and Nelson, K. K. (2002) The relation between auditors' fees for nonaudit services and earnings management, *The Accounting Review*, 77(Supplement), pp. 71–105.
- Geiger, M. A. and Raghunandan, K. (2002) Auditor tenure and audit reporting failures, *Auditing: A Journal of Practice & Theory*, 21(1), pp. 67–78.
- Ghosh, A. and Moon, D. (2005) Auditor tenure and perceptions of audit quality, *The Accounting Review*, 80(2), pp. 585–612.
- Gietzman, M. B. and Sen, P. K. (2002) Improving auditor independence through selected mandatory rotation, *International Journal of Auditing*, 6(2), pp. 183–210.
- Government Accounting Office (GAO) (2008) *Continued concentration in audit market for large public companies does not call for immediate action*, Available at: <http://www.gao.gov/products/GAO-08-163>.
- Gul, F. A., Jaggi, B. L. and Krishnan, G. V. (2007) Auditor Independence: Evidence on the Joint Effects of Auditor Tenure and Nonaudit Fees, *Auditing: A Journal of Practice & Theory*, 26(2), pp. 117-142.
- Gul, F. A., Fung, S. Y. K. and Jaggi, B. (2009) Earnings Quality: Some Evidence on the Role of Auditor Tenure and Auditors' Industry Expertise, *Journal of Accounting and Economics*, 47(3), pp. 265-287.
- Jenkins, D. S. and Velury, U. (2008) Does auditor tenure influence the reporting of conservative earnings?, *Journal of Accounting and Public Policy*, 27(2), pp. 115–132.
- Johnson, V., Khurana, I. K. and Reynolds, J. K. (2002) Audit-firm tenure and the quality of financial reports, *Contemporary Accounting Research*, 19(4), pp. 637–660.
- Jones, J. (1991) Earnings management during import relief investigations, *Journal of Accounting Research*, 29(Autumn), pp. 193–228.
- Imhoff, E. A. (2003) Accounting Quality, Auditing, and Corporate Governance, *Accounting Horizons*, Supplement, pp. 117-128.

- Kaplan, S. and Mauldin, E. (2008) Auditor rotation and the appearance of independence: Evidence from non- professional investors, *Journal of Accounting and Public Policy*, 27(2), pp. 177-192.
- Kim, J.-B., Chung, R. and Firth, M. (2003) Auditor conservatism, asymmetric monitoring, and earnings management, *Contemporary Accounting Research*, 20(2), pp. 323–359.
- Kim, J.-B. and Yi, C. H. (2009) Does auditor designation by the regulatory authority improve audit quality? Evidence from Korea, *Journal of Accounting and Public Policy*, 28(3), pp. 207-230.
- Knechel, W. R. and Vanstraelen, A. (2007) The Relationship between Auditor Tenure and Audit Quality Implied by Going Concern Opinions, *Auditing: A Journal of Practice and Theory*, 26(1), pp. 113-131.
- Kothari, S. P., Leone, A. J. and Wasley, C. E. (2005) Performance matched discretionary accrual measures, *Journal of Accounting and Economics*, 39(1), pp. 163–197.
- Kramer, S. T., Georgakopoulos, G. I., Sotiropoulos, K. and Vasileiou, Z. (2011) Audit Firm Rotation, Audit Firm Tenure and Earnings Conservatism, *International Journal of Business and Management*, 6, pp. 44-57.
- Krishnan, J. (1994) Auditor Switching and Conservatism, *The Accounting Review*, 69(1), pp. 200-215.
- Krishnan, J., Raghunandan, K. and Yang, J. S. (2007) Were former Andersen clients treated more leniently than other clients? Evidence from going-concern modified audit opinions, *Accounting Horizons*, 21(4), pp. 423–435.
- Krishnan, G. V. (2007) Did earnings conservatism increase for former Andersen clients?, *Journal of Accounting, Auditing & Finance*, 22(2). pp. 141–163.
- La Porta, R., Lopez-De-Silanes, F., Shleifer, A. and Vishny, R. W. (1998) Law and finance, *Journal of Political Economy*, 106(6), pp. 1113-55.
- Lys, T. and Watts, R. L. (1994) Lawsuits against Auditors, *Journal of Accounting Research*, 32(Supplement), pp. 65-93.
- Li, D. (2010) Does auditor tenure affect accounting conservatism? Further evidence, *Journal of Accounting & Public Policy*, 29(3), pp. 226-241.
- Lu, T. and Sivaramakrishnan, K. (2010) Does mandatory audit firm rotation improve or impair corporate investment efficiency?, *Working Paper* (University of Huston), Available at SSRN: <http://papers.ssrn.com>.

- Mai, D., Mishra, S. and Raghunandan, K. K. (2008) Auditor Tenure and Shareholder Ratification of the Auditor, *Accounting Horizons*, 22(3), pp. 297-314.
- Manry, D., Mock, T. and Turner, J. (2008) Does increased partner tenure reduce audit quality?, *Journal of Accounting, Auditing & Finance*, 23(4), pp. 553–572.
- Mansi, S. A., Maxwell, W. F. and Miller, D. P. (2004) Does auditor quality and tenure matter to investors? Evidence from the bond market, *Journal of Accounting Research*, 42(4), pp. 755–93.
- Meuwissen, R. F., Moers, F. E., Peek and Vanstraelen, A. (2007) Comparing abnormal accruals estimates across samples: An international test, *Working paper*, Available at SSRN: http://papers.ssrn.com/sol3/papers-cfm?abstract_id=442681.
- Myers, J. N., Myers, L. A. and Omer, T. C. (2003) Exploring the term of the auditor–client relationship and the quality of earnings: A case for mandatory auditor rotation?, *The Accounting Review*, 78(3), pp. 779–800.
- Nagy, A. (2005) Mandatory audit firm turnover, financial reporting quality, and client bargaining power: The case of Arthur Andersen, *Accounting Horizons*, 19(2), pp. 51–68.
- PCAOB (Public Company Accounting Oversight Board) (2011) *Concept Release on Auditor Independence and Audit Firm Rotation* (PCAOB Release No. 2011-009, August 16, 2011; PCAOB Rulemaking Docket Matter 37), Available at: [at:http://pcaobus.org/Rules/Rulemaking/Docket037/Release_2011-006.pdf](http://pcaobus.org/Rules/Rulemaking/Docket037/Release_2011-006.pdf).
- Prencipe, A. and Bar-Yosef, S. (2011) Corporate governance and earnings management in family-controlled companies, *Journal of Accounting, Auditing and Finance*, 26(2), pp. 199-227.
- Prencipe A., Bar-Yosef, S., Mazzola, P. and Pozza, L. (2011) Income smoothing in family-controlled companies: Evidence from Italian listed companies, *Corporate Governance: an International Review*, 19(6), pp. 529-546 .
- Ruiz-Barbadillo, E., Gomez-Aguilar, N. and Carrera, N. (2009) Does mandatory audit firm rotation enhance auditor independence? Evidence from Spain, *Auditing: A Journal of Practice & Theory*, 28(1), pp. 113–135.
- Ruddock, C., Taylor S. J. and Taylor, S. L. (2006) Non audit Services and Earnings Conservatism: Is Auditor Independence Impaired?, *Contemporary Accounting Research*, 23(3), pp. 701-46.

- Wang, K. J. and Tuttle, B. M. (2009) The impact of auditor rotation on auditor–client negotiation, *Accounting, Organizations and Society*, 34(2), pp. 222–243.
- Watts, R. L. (2003) Conservatism in accounting part I: Explanations and implications, *Accounting Horizons*, 17(3), pp. 207-221.
- Wingate, M. L. (1997) An Examination of Cultural Influence on Audit Environments, *Research in Accounting Regulation*, (Supplement), pp. 129-148.
- Wysocki, P. (2004) Discussion of ultimate ownership, income management, and legal and extra-legal institutions, *Journal of Accounting Research*, 42(May), pp. 463–474.

NOTES

¹ In a first stage, only the largest listed companies were obliged to comply with it (Consob, 1992).

² According to the national regulation, audit firms who audit listed companies "may provide services limited to the accounting organization of the firms, as well as auditing services" (Cameran, 2007: p. 155).

³ "For example [...] an audit firm may be sanctioned by the regulators to suspend or cease practice; it may be required by a government agency (e.g., the SASAC) to rotate off the client; or it may have self-liquidated. [...]" (Firth et al., 2012: p.118)

⁴ Conditional conservatism is 'the accountant's tendency to require a higher degree of verification to recognize good news as gains than to recognize bad news as losses' (Basu, 1997, 4). Conditional conservatism leads to a timelier recognition of unrealized losses than of unrealized gains.

⁵ Note that there are no "early adopters" of IFRS in our sample.

⁶ AIDA is the Italian version of Amadeus provided by Bureau Van Dijk that contains comprehensive information for more than 500,000 Italian companies, included listed ones.

⁷ For example, this is true in cases of companies that acquire other firms. In such a case, the accrual data related to the year of acquisition are excluded because of the lack of comparable data from the previous year.

⁸ Our sample includes only those observations related to companies that experienced a mandatory audit firm rotation either within the analyzed period or later.

⁹ Note that over 94% of our initial sample is audited by Big-N audit firms.

¹⁰ Although small in size – our sample represents quite well the underlying population of non-financial listed companies. Indeed, the industry distribution for the latter is very similar to the one in our sample, that is: Food and beverage = 4.0%; Automotive = 5.9%; Chemical = 12.4%; Construction = 10.6%; Electronics = 13.9%; Machinery = 5.2%; Textile = 12.2%; Media = 5.3%; Utilities = 8.8%; Transportation-tourism = 9.0%; New Economy = 8.5%; Miscellaneous = 4.0%.

¹¹ Despite the small number of listed companies relative to the main US stock exchanges (the number of non-financial companies listed on the Milan Stock Exchange ranges from 70 in 1985 to 145 in 2004), the Italian stock exchange is one of the most active in Europe in terms of stock trading activity. Indeed, the average daily trading activity per stock (in millions of Euros) on the Italian Stock Exchange over the period 2000-2004 was 1.97, compared to 1.45 of the Euronext, 1.16 of the Deutsche Borse, and to 0.58 of the London Stock Exchange (Federation of European Securities Exchanges, 2000-2004).

¹² These characteristics of the Italian setting are consistent to those reported in more recent studies on Italian companies, e.g. Prencipe and Bar-Yosef, 2011.

¹³ However we also performed our analysis on a sample of raw accruals observations (1067) made of the sum of the positive accruals (565) and negative accruals (502)

observations. The results (untabulated) are qualitatively similar to those presented in table 4.

¹⁴ Also in this case we remove influential observations using the DFIT statistics.

TABLE 1

Panel A: Sample selection		
	No. Obs.	
Population of non-financial listed companies (1985-2004)	1,903	
- Missing auditor or financial reporting data	464	
- Obs. that voluntarily changed the auditor	173	
- Obs. audited by non-big audit firms	82	
Total	1,184	
Panel B: Sample description		
	No. Obs.	%
Years:		
1985-1989	194	
1990-1994	246	
1995-1999	251	
2000-2004	493	
Total	1,184	
Industries:		
Food and beverage	49	4.1%
Automotive	60	5.1%
Chemical	165	13.9%
Construction	180	15.2%
Electronics	197	16.6%
Machinery	69	5.8%
Textile	138	11.7%
Media	44	3.7%
Utilities	50	4.2%
Transportation-Tourism	116	9.8%
New Economy	83	7.0%
Miscellaneous	33	2.8%
Total	1,184	100%
Auditors (*):		
Arthur Andersen	231	19.5%
Deloitte	262	22.1%
KPMG	146	12.3%
REY	188	15.9%
PWC	357	30.2%
Total	1,184	100%

(*) Big-N audit firms are grouped based on the final acquiring firm. E.g. In Italy in December 1999 Coopers & Lybrand (C&L) and Price Waterhouse (PW) merged, creating PricewaterhouseCoopers (PwC): observations included in our sample for which the auditor was C&L or PW are grouped under PWC label (the name of the audit firm resulting from the merger).

TABLE 2
Descriptive Statistics – Accrual based sample

Variables	n	Mean	Median	Std. Deviation	Minimum	Maximum
Raw AWCA	1,184	0.004	0.003	0.109	-0.464	0.632
Positive AWCA	612	0.077	0.053	0.084	0.000	0.632
Negative AWCA	572	-0.073	-0.047	0.073	-0.464	-0.000
TENURE	1,184	4.505	4.000	2.405	1.000	9.000
PERIOD_1	1,184	0.391	0.000	0.488	0.000	1.000
PERIOD_2	1,184	0.377	0.000	0.485	0.000	1.000
PERIOD_3	1,184	0.232	0.000	0.422	0.000	1.000
SALES	1,184	814	172	3,511	0.030	75,394
CFO	1,184	0.093	0.093	0.092	-0.635	0.519
LEV	1,184	0.533	0.547	0.194	0.044	0.999
SALEGR	1,184	0.111	0.073	0.345	-0.999	6.606
ROA	1,184	0.020	0.029	0.072	-0.886	0.311
LAGLOSS	1,184	0.164	0.000	0.370	0.000	1.000
IPO	1,184	0.065	0.000	0.247	0.000	1.000
AGE	1,184	12.32	6.000	19.56	0.000	128.0
DSHR	1,184	0.806	1.000	0.396	0.000	1.000

Variable definitions:

- AWCA* = abnormal working capital accruals scaled by total sales
- PERIOD_1* = 1 if the audit firm engagement tenure is within the first three-year period (years 1 to 3) and 0 otherwise
- PERIOD_2* = 1 if the audit firm engagement tenure is within the second three-year period (years 4 to 6) and 0 otherwise
- PERIOD_3* = 1 if the audit firm engagement tenure is within the third three-year period (years 7 to 9) and 0 otherwise
- TENURE* = years of tenure with the actual audit firm
- SALES* = total sales (in million Euros)
- CFO* = operating cash flow scaled by lagged total assets
- LEV* = ratio of total liabilities to total assets
- SALEGR* = sales growth rate, calculated as the sales in year t minus sales in t-1 and scaled by sales in year t-1
- ROA* = return on assets, calculated as net income divided by total assets
- LAGLOSS* = 1 if the firm reported negative income in year t-1 and 0 otherwise
- IPO* = 1 if the firm had an IPO in year t and 0 otherwise
- AGE* = number of years since the firm's IPO
- DSHR* = 1 if the largest shareholder owns more than 50% of the voting shares and 0 otherwise

TABLE 3
Mean AWCA and test of equality of means by period of tenure

	Raw AWCA	Positive AWCA	Negative AWCA
PERIOD_1	0.011	0.083	-0.073
PERIOD_2	0.003	0.078	-0.072
PERIOD_3	-0.005	0.064	-0.073
	t-test	t-test	t-test
PERIOD_1>PERIOD_2	-1.013	-0.623	0.160
PERIOD_2>PERIOD_3	-0.993	-1.619*	-0.058
PERIOD_1>PERIOD_3	-1.874**	-2.101**	0.087

Variable definitions:

AWCA = abnormal working capital accruals scaled by total sales
PERIOD_1 = mean for the first three-year audit firm engagement period (years 1 to 3)
PERIOD_2 = mean for the second three-year audit firm engagement period (years 4 to 6)
PERIOD_3 = mean for the third three-year audit firm engagement period (years 7 to 9)

Significance levels are one-tailed

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 4
Fixed effects regressions with period dummies

	Exp. Sign	Raw AWCA	Positive AWCA	Negative AWCA
Constant		0.043 (1.33)	0.060 (1.55)	-0.373 (4.02)***
PERIOD_2	-	-0.004 (0.90)	-0.004 (0.83)	-0.009 (1.74)
PERIOD_3	-	-0.012 (2.37)**	-0.009 (2.06)*	-0.017 (2.92)**
SIZE	-	0.004 (0.83)*	-0.000 (0.09)	0.035 (4.62)***
CFO	-	-0.956 (17.94)***	-0.634 (8.93)***	-0.573 (18.29)***
LEV	+	0.018 (0.87)	0.047 (1.89)*	-0.010 (0.43)
SALEGR	+	-0.018 (0.83)	-0.028 (1.73)	-0.039 (5.89)***
ROA	+/-	0.499 (7.24)***	0.367 (4.70)***	0.422 (4.47)***
LAGLOSS	+	-0.019 (2.86)**	-0.017 (2.41)**	-0.004 (0.53)
IPO	+	0.024 (5.66)***	0.013 (2.37)**	0.037 (4.29)***
AGE	-	0.000 (0.68)	0.001 (1.06)	-0.002 (2.45)**
DSHR	-	-0.019 (2.19)*	0.009 (1.45)	-0.015 (1.77)
Observations		1088	565	502
Adjusted R-squared		0.64	0.45	0.41
Prob > F test		0.00	0.00	0.00

Variable definition: see Table 2

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Firm and year fixed effects are omitted for readability

TABLE 5
Fixed effects regressions with tenure

	Exp. Sign	Raw AWCA	Positive AWCA	Negative AWCA
Constant		0.046 (1.44)	0.062 (1.63)	-0.370 (4.88)***
TENURE	-	-0.001 (2.25)**	-0.001 (1.39)	-0.002 (2.25)**
SIZE	-	0.004 (1.86)*	-0.000 (0.09)	0.035 (5.63)***
CFO	-	-0.956 (18.12)***	-0.633 (8.87)***	-0.557 (12.99)***
LEV	+	0.019 (0.90)	0.047 (1.81)*	-0.018 (0.71)
SALEGR	+	-0.017 (0.83)	-0.028 (1.71)	-0.040 (6.18)***
ROA	+/-	0.500 (7.10)***	0.365 (4.77)***	0.408 (3.89)***
LAGLOSS	+	-0.019 (2.82)**	-0.016 (2.36)**	-0.006 (0.72)
IPO	+	0.023 (6.14)***	0.013 (2.59)**	0.037 (3.84)***
AGE	-	0.000 (0.54)	0.001 (1.04)	-0.002 (2.60)**
DSHR	-	-0.019 (2.22)**	0.009 (1.43)	-0.015 (1.63)
Observations		1088	567	505
Adjusted R-squared		0.64	0.45	0.39
Prob > F test		0.00	0.00	0.00

Variable definitions:

TENURE = Years of tenure with the actual audit firm
For other variables: See Table 2

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Firm and year fixed effects are omitted for readability

TABLE 6
Descriptive Statistics – Market returns sample

Variables	n	Mean	Median	Std. Deviation	Minimum	Maximum
RET	784	0.037	-0.019	0.516	-1.365	7.893
EARN	784	0.027	0.049	0.281	-6.823	1.002
ΔEARN	784	0.007	0.003	0.124	-0.547	0.866
PERIOD_1	784	0.335	0.000	0.472	0.000	1.000
PERIOD_2	784	0.411	0.000	0.492	0.000	1.000
PERIOD_3	784	0.254	0.000	0.435	0.000	1.000

Variable definitions:

- RET* = Market adjusted returns
- EARN* = Earnings scaled by price
- ΔEARN* = change in earnings scaled by price
- PERIOD_1* = 1 if the audit firm engagement tenure is within the first three-year period (years 1 to 3) and 0 otherwise
- PERIOD_2* = 1 if the audit firm engagement tenure is within the second three-year period (years 4 to 6) and 0 otherwise
- PERIOD_3* = 1 if the audit firm engagement tenure is within the third three-year period (years 7 to 9) and 0 otherwise

TABLE 7
Basu model of conditional conservatism
Dependent variable = EARN

Constant	0.0299** (2.32)
RET	0.117*** (2.72)
DRET	-0.016 (-1.23)
DRET*RET	-0.083 (-1.21)
PERIOD_2	0.017 (1.141)
PERIOD_2*RET	-0.053 (-1.001)
PERIOD_2*DRET*RET	0.0968 (1.054)
PERIOD_3	0.030* (1.76)
PERIOD_3*RET	-0.0870 (-1.46)
PERIOD_3*DRET*RET	0.268** (2.41)
Observations	784
R-squared	0.086
Ftest	6.55
Prob > Ftest	0.00
Variable definitions:	
	<i>EARN</i> = Earnings scaled by price
	<i>RET</i> = Market adjusted returns
	<i>DRET</i> = 1 if <i>RET</i> <0 and 0 otherwise
	<i>PERIOD_2</i> = 1 if the audit firm engagement tenure is within the second three-year period (years 4 to 6) and 0 otherwise
	<i>PERIOD_3</i> = 1 if the audit firm engagement tenure is within the third three-year period (years 7 to 9) and 0 otherwise
	<i>Fixed effects</i> = Industry and year fixed effects (untabulated)

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE 8
Earnings>Returns Association Regressions
Dependent variable = RET

Constant	0.092 (0.18)
EARN	0.304 (1.66)*
Δ EARN	0.876 (4.04)***
SIZE	0.010 (0.73)
LEV	-0.065 (0.55)
PERIOD_2	0.022 (0.53)
PERIOD_2*EARN	-0.169 (0.86)
PERIOD_2* Δ EARN	0.010 (0.03)
PERIOD_3	0.106 (2.15)**
PERIOD_3*EARN	0.763 (2.02)**
PERIOD_3* Δ EARN	0.820 (1.74)*
Observations	784
Adjusted R-squared	0.15
Prob > F test	0.00
ERC	1.180***
PERIOD_3 *ERC	1.583***

Variable definitions:

- RET* = Market adjusted returns
- EARN* = Earnings scaled by price
- Δ *EARN* = change in earnings scaled by price
- SIZE* = natural logarithm of total sales
- LEV* = ratio of total liabilities to total assets
- PERIOD_1* = 1 if the audit firm engagement tenure is within the first three-year period (years 1 to 3) and 0 otherwise
- PERIOD_2* = 1 if the audit firm engagement tenure is within the second three-year period (years 4 to 6) and 0 otherwise
- PERIOD_3* = 1 if the audit firm engagement tenure is within the third three-year period (years 7 to 9) and 0 otherwise

Industry and year fixed effects (untabulated)

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Industry and year fixed effects are omitted for readability