Auditor Tenure and Auditor Change:

Does Mandatory Auditor Rotation Really Improve Audit Quality?

Authors:

Mara Cameran, Ph.D.
Assistant Professor, Department of Accounting
Università Bocconi, & Accounting, Control, Corporate, and Real Estate Financial Department, SDA Bocconi School of Management, Milan, Italy
mara.cameran@unibocconi.it

Annalisa Prencipe, Ph.D.*
Assistant Professor, Department of Accounting
Università Bocconi, Milan, Italy
annalisa.prencipe@unibocconi.it

Marco Trombetta, Ph.D.
Professor, Department of Accounting Finance and Management Control
Instituto de Empresa Business School, Madrid, Spain
marco.trombetta@ie.edu

* Corresponding Author – Via Roentgen, 1 20136 Milan (Italy) – tel. +39-02-58362574 fax +39-02-58362561

We thank conference participants at 19th Annual Conference on Financial Economics and Accounting, Austin, Texas, 2008, at the XXXI EAA Annual Conference, Rotterdam, 2008, at the XXX EAA Annual Conference, Lisbon, 2007, and seminar participants at the Workshop on Audit Quality, Milan, 2006 for helpful comments. We would like to acknowledge financial support from Bocconi University.

Auditor Tenure and Auditor Change: Does Mandatory Auditor Rotation Really Improve Audit Quality?

Abstract

We test the effects of auditor tenure and auditor change on audit quality in a unique mandatory audit firm rotation environment, where the rotation rule has been effective for more than 20 years.

We first study the effect of audit tenure on audit quality. Our results show that audit quality—measured in terms of earnings management—tends to improve rather than worsen over time. We also examine the effects of voluntary auditor change vs. those resulting from mandatory auditor changes. Our results suggest that, in a mandatory rotation setting, a voluntary change of the auditor tends to improve audit quality while a mandatory change tends to hamper audit quality. Overall, our findings do not support claims that there are beneficial effects of mandatory audit rotation on audit quality.

Keywords: audit quality, auditor change, auditor tenure, mandatory rotation

I. Introduction

In this paper, we take advantage of the unique institutional setting provided by the Italian case, where a policy of mandatory audit firm rotation has been in place for more than 20 years. This allows us to test the effects of auditor tenure and auditor change on audit quality in a real mandatory auditor rotation environment. To the best of our knowledge, there are no other studies on this issue that are based on a sample where the replacement of the audit firm is compulsory after a fixed number of years of appointment.

The need for a mandatory audit firm rotation rule has been debated for decades both by academics (e.g., Arrunada and Paz-Ares 1997; Dopuch et al. 2001; Myers et al. 2003) and by practitioners (e.g., Mautz and Sharaf 1961; Hoyle 1978; Bates et al. 1982; AICPA 1992, 1995; EFAA 1998; Brody and Moscove 1998; NYSE 2002; ICAEW 2002; Healey and Kim 2003; ICC 2005). This debate has been intensified by the recent financial reporting scandals (e.g. Enron, Worldcom, Parmalat, etc.), culminating in a number of government agencies' and institutions' decisions to impose changes in accountability on both the firms issuing financial reports and their auditors in order to reduce the possibility of fraud. One of the suggested measures to reduce the possibility of fraud is mandatory auditor rotation, meaning that a maximum limit is set for the tenure of an auditor with a firm to preserve auditor independence and possibly increase investors' confidence in financial reports. Following the Sarbanes–Oxley Act of 2002, the SEC requested the Government Accounting Office (GAO) to study the issue of mandatory auditor rotation. The GAO concluded that there is no clear need for a mandatory audit firm rotation rule;

however, it did not reject the idea that such a requirement may become appropriate in the future, once the impacts on audit quality resulting from the Sarbanes–Oxley Act become apparent (GAO 2003). Moreover, both the GAO and other regulatory bodies and institutions, e.g., the New York Stock Exchange, the Commission on Public Trust and Private Enterprise and TIAA–CREF, called for a periodical change of the audit firm on a voluntary basis to enhance audit quality. Therefore, the possibility that a proposal to impose a mandatory audit firm rotation be put on the table once again is not trivial (DeFond and Francis 2005).

To aid the quality of this debate, there is a need to research the impact of such a rule. The academic literature on the effects of auditor rotation on audit quality is scant (Johnson et al. 2002; Myers et al. 2003; Carcello and Nagy 2004; Nagy 2005; Ghosh and Moon 2005; Blouin et al. 2007). The conclusions of this literature are not consistent. Moreover, the existing studies were typically conducted under a voluntary rotation regime, or under a "forced" rotation setting, like the one following the Arthur Andersen demise. Hence, these studies do not provide direct evidence on whether or not a mandatory auditor rotation rule improves or hampers audit quality. They just show that under a system of voluntary auditor rotation, audit quality may or may not appear to deteriorate with tenure or immediately after the auditor change.

The lack of empirical evidence on the issue of mandatory rotation stems mainly from the limited number of settings in which mandatory rotation is actually enforced. Italy is one of the very few countries in which a rule on mandatory audit firm rotation has been effective for more than 20 years[1]. During the period studied here, according to the Italian

regulation, the auditor term could be renewed every three years and could be extended up to a maximum tenure of nine years. This means that in Italy, there was both a retention and a rotation rule. Once appointed, the audit firm was retained for at least three years. At the end of each three-year period, the auditee had to decide whether to renew the appointment of the auditor. After nine consecutive years of engagement, change of the audit firm was mandatory. This rule was issued to preserve auditor independence based on the assumption that such independence could be compromised of a long-term relationship between the auditor and the auditee[2]. Therefore, the Italian institutional setting allows us to test the effects of auditor tenure and auditor change in an actual mandatory rotation environment.

In this paper we focus on the impacts of both auditor tenure and auditor change on audit quality, measured in terms of earnings management. The available literature suggests that the incentives for the auditors, while performing audit activities, may be different when they know that their engagement cannot be renewed. At the same time, the signal provided by an auditor change in a voluntary audit rotation setting may be different from a similar change under a mandatory rotation regime, and consequently the effects on the quality of audit may be different. To the best of our knowledge, this is the first study of this kind conducted in a fully operational mandatory auditor rotation setting. Our results suggest that audit quality tends to enhance with auditor tenure, and that under a mandatory rotation regime, a voluntary auditor replacement tends to improve audit quality while a mandatory change tends to hamper audit quality. Overall, our results do

not provide empirical support to the hypothesis that a mandatory rotation rule improves audit quality.

The paper is structured as follows. In the first part, we test the relationship between auditor tenure and audit quality in a mandatory nine-year rotation setting. In the second part of the paper, we compare the effects of voluntary and mandatory auditor changes on audit quality. In the final section, we provide conclusions.

II. Empirical evidence on auditor tenure and audit quality

A few papers recently analyzed the impact of auditor tenure on audit quality. All of these studies were performed under a voluntary rotation regime; hence, their conclusions cannot be easily generalized to an actual setting where a mandatory auditor rotation rule is enforced.

Because audit quality is not directly observable, various indicators have been applied to measure audit quality. Some studies measure audit quality in terms of audit or reporting failure, based on the idea that audit quality is inversely related to audit or reporting failures (Francis 2004). Geiger and Raghunandan (2002) find that, in the early years of the auditor–client relationship, auditors are more likely to issue a 'clean audit' report prior to a bankruptcy filing. Similarly, Carcello and Nagy (2004) find that accounting fraud is more likely to occur in the early years of tenure (three years or less) compared with a medium audit tenure (four to eight years). However, they do not find support for the hypothesis that fraudulent financial reports are more likely for long auditor tenure.

Other studies use earnings quality as a surrogate for audit quality. The implicit assumption is that high audit quality implies high earnings quality. Johnson et al. (2002) examine whether audit-firm tenure is correlated to some indicators of financial reporting quality. Using both the absolute value of unexpected accruals and the persistence of current accruals as proxies for financial reporting quality, they find that short audit tenures are correlated with lower-quality financial reports. However, they find no evidence of reduced financial-reporting quality for longer audit tenures. Myers et al. (2003) study the relation between auditor tenure and earnings quality, using the dispersion and the magnitude of both raw and absolute abnormal accruals and current accruals as proxies for earnings quality. Their conclusions suggest that higher earnings quality is correlated with longer auditor tenure. Their interpretation of these results is that, under the research environment, the longer-tenure auditors tend to place greater constraints on extreme management decisions in the reporting of earnings. More recently, Jenkins and Velury (2008) document a positive association between the level of conservatism in reported earnings and the length of the auditor–client relationship. In particular, they find an increase in conservatism between short and medium tenure that does not deteriorate over a long tenure, and they conclude that a mandatory auditor rotation rule might have an adverse effect in terms of earnings conservatism.

To summarize, the majority of the existing literature on auditor tenure and audit quality support the hypothesis that, in a voluntary auditor replacement setting, audit quality is lower in the early engagement years, while the empirical evidence concerning the effects of long-term tenure on audit quality provides equivocal results[3].

III. Auditor tenure and audit quality in the presence of mandatory rotation

The effects of auditor tenure on audit quality under a mandatory auditor rotation setting may be different from those observed in a voluntary replacement environment. Differences may arise as a consequence of the auditors' perceptions and motivations. Under a mandatory auditor rotation regime, the auditors know in advance that their tenure will end on a given date. Such awareness might affect their incentives[4] in performing audit activities (Ghosh and Moon 2005). Elitzur and Falk (1996) develop an analytical model and show that when the auditing engagement period is finite and known to the auditor, the planned audit quality will diminish over time, and they predict that the amount of audit effort over the ending period will be the lowest. In fact, independent auditors aim at maximizing their net payoff over the entire engagement period. The amount of planned audit effort is positively correlated with the level of the expected losses because of audit failure. When the engagement period is finite and the termination date of the audit contract is known, the present value of the expected loss because of audit failure decreases over time, as well as the planned level of audit effort and quality. As contract renewal is not expected at the end of the contract period, the rational auditor is most likely to reduce her audit effort as the contract termination period approaches. Such an argument clearly contradicts the objective behind the idea of imposing a mandatory rotation rule. However, Elitzur and Falk's model assumes a finite game, thus no losses in terms of reputation or future penalty occur because of a possible audit failure. Incorporating a penalty in such a model may result in a significant impact on the auditor's future payoffs from other clients[5]. Moreover, their model ignores the learning

process of the auditor, which may lead to an increasing ability to detect material misstatements in the financial statements of the auditee. In a multiperiod setting, the learning process may produce audit quality improvement over time, independently from the existence of a finite engagement time (DeAngelo 1981; Geiger and Raghunandan 2002; Carcello and Nagy 2004).

An alternative theory suggests that a deterioration of audit quality over time may also be a consequence of the auditor becoming less independent from the client firm, because of a closer relationship with the managers that potentially increases the risk of collusion. Supporters of the introduction of a mandatory rotation rule have typically used such an argument to support their stand (e.g., Brody and Moscove 1998; Gietzman and Sen 2002; Healey and Kim 2003; Kaplan 2004; Moore et al. 2006). If we are to accept such a line of argument, then mandatory rotation would be the remedy rather than the cause of audit quality deterioration over time; hence, users of the financial reports would prefer mandatory auditor rotation to voluntary auditor rotation.

Therefore, from a theoretical point of view, the effects of auditor tenure on audit quality in a mandatory rotation setting are controversial. This paper aims to contribute to this debate and to shed light on this issue by examining the relationship between auditor tenure and audit quality in a unique mandatory rotation setting, i.e., Italy.

IV. Data and variables

Sample

Our sample is composed of nonfinancial Italian companies listed on the Milan Stock Exchange. The sample period spans over 20 years, from 1985 to 2004. The period post-2004 was excluded both to avoid the impact of the IFRS adoption and because of a change in Italian legislation[6].

The data were collected from consolidated financial statements retrieved from two different sources: the *Calepino dell'azionista* for the period 1985–1995, and the database *Aida* for the years 1996–2004. For each of the companies in our sample, we traced the audit firm and the related tenure 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 with auditing data were included in the sample. Moreover, observations without prior year data were eliminated, as we need two consecutive financial statements to calculate our accrual measures[7]. Finally, observations in the top and bottom one percent of the accrual measures, cash flow from operations, return on assets, sales growth and leverage were eliminated to mitigate the effects of potential outliers. The final sample consists of 1,439 firm-year observations.

Audit quality measure

Accruals are used as a proxy for audit quality. This is consistent with prior studies on audit quality (e.g., Becker et al. 1998; Francis et al. 1999; Francis and Krishnan 1999; Bartov et al. 2000; Heninger 2001; Geiger and Raghunandan 2002; Myers et al. 2003; Carey and Simnett 2006; Francis and Wang 2008). The main idea behind the use of accruals as a measure of audit quality is that high-quality audits should mitigate more extreme management reporting decisions. Accruals can be used to identify these extreme reporting decisions.

Our proxy measure of earnings management is the one suggested by DeFond and Park (2001), abnormal working capital accruals (AWCA)[8]. AWCA is defined as the difference between realized working capital and the working capital needed 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.

For robustness purposes, following Myers et al. (2003), we also use current accruals (CA), calculated as change in noncash current assets minus change in nonfinancial current liabilities.

For each of the two definitions of accruals we apply four versions of audit quality: raw (signed) values, absolute (unsigned) values, positive values and negative values. We use each of the four measures of audit quality, as each of them provides different insights. Our main audit quality measure—raw (signed) values—allows us to use the whole sample and detect shifts from conservative to aggressive accounting policies and *vice versa*[9]. Absolute values of AWCA suggest an overall magnitude of earnings management independent of the direction of accruals[10]. The subsamples of only positive or only negative accruals permit the detection of trends within each of the two possible effects of accounting policies: income increasing (aggressive) and income decreasing (conservative).

Explanatory variables

To test the effects of auditor tenure on audit quality, we first divide the maximum allowed engagement period (nine years) into three three-year periods. Our decision to focus on the three-year periods is a consequence of Italian regulation, which defines a retention period of three years once the auditor is appointed. As mentioned before, at the end of each three-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 auditor, specifically PERIOD_1 includes firm-year observations whose auditor has one to three years of service, PERIOD_2 includes firm-

year observations related to four to six years of auditor service and PERIOD_3 includes observations with seven to nine years of auditor service.

To overcome other related effects, we incorporate in the multivariate models additional control variables. These control variables are chosen for the sake of consistency with prior related studies that test audit quality measured by the level of abnormal accruals (e.g., Becker et al. 1998; Francis et al. 1999; Johnson et al. 2002; Frankel et al. 2002; Myers et al. 2003; Carey and Simnett 2006; Francis and Wang 2008). In particular, firm size (SIZE) is used as a control variable because larger firms tend to have lower levels of accruals than smaller firms. Cash flow from operations (CFO) is used because there is a well-documented inverse relationship between such variables and accruals (Dechow 1994; Sloan 1996). Leverage (LEV) is used as a proxy for the possibility of debt covenant violations, which may create an incentive to increase earnings through higher abnormal accruals. As accruals are likely to be correlated with a company's growth opportunities (Johnson et al. 2002; Carey and Simnett 2006), sales growth (SALEGR) is also used as a control variable. Moreover, because accrual estimation models, in general, are not able to capture the entire extent of a company's nondiscretionary accruals (Dechow et al. 1995; Kothari et al. 2005), we include return on assets (ROA) as an additional variable to control for the nondiscretionary component of accruals that is not extracted by our accrual model. The existence of a loss in the prior year (LAGLOSS) is another proxy for financial distress and therefore an incentive to increase reported earnings in the following year. Similarly, a company's listing age (AGE) captures the fact that younger companies are less stable and more likely to encounter financial distress

and, consequently, use accruals to achieve better profitability levels. The variable IPO was included, as prior studies show that firms tend to use accruals to increase reported earnings prior to their initial listing to improve the marketability of the offering and obtain a better price for the new issue. Finally, we control for the cases in which the audits were prepared by a big audit firms (BIG), as prior evidence shows that big audit firms tend to be more conservative and limit extreme accruals.

Descriptive statistics

Descriptive statistics for the sample data are presented in Table 1.

[Insert Table 1 around here]

As may be observed in Table 1, the mean value of the absolute AWCA (0.075) is slightly higher than those reported by Maijoor and Vanstraelen (2006) for other European countries (France, Germany and the UK). This difference may suggest that Italian companies are characterized by a higher level of earnings management than these three other EU countries. With respect of the absolute value of CA, the mean in our sample (0.052) is smaller than that reported by Myers et al. (2003) for US companies.

It is useful to note that our sample is somewhat balanced between income increasing (734) and income decreasing (705) AWCA, whereas there are more observations with income increasing CA (828) than with income decreasing CA (611). The average magnitude of positive AWCA (0.078) is significantly larger (at the 5% confidence level) than the average magnitude of negative AWCA (0.071), indicating that income increasing earnings management is more pronounced. A similar difference (0.056 vs.

0.046) is also found to be significant (at a level of 1%) for CA. Moreover, these differences are consistent with the sample positive mean and median of the raw (signed) values of both AWCA and CA.

It is important to note that about 44% of the sample observations belong to the first three-year audit service period, 36% belong to the second three-year service period and 20% belong to the third three-year service period. There are two reasons for the higher concentration of observations in the first and second periods: the increasing number of companies listed on the Italian stock market during the last few years of the sample period and the delisting of a few other companies. Both are obviously characterized by shorter auditor tenure.

Finally, note that around 94% of our sample is audited by one of the Big-N firms, which is a distinctive characteristic of the Italian audit market for listed firms.

V. Analysis of the tenure effect

Univariate analysis

The distribution of our two measures of accruals is presented in Figure 1.

[Insert Figure 1 around here]

Figure 1 depicts the mean values of the two raw accrual measures (AWCA and CA) for each three-year period of auditor tenure (years 1–3, 4–6 and 7–9, respectively). The decreasing trend in accruals appears evident in both cases. Moreover, both the mean and

the median of the AWCA change sign, from positive (income increasing) values in the first and second tenure period to a negative (income decreasing) value in the third tenure period. This decreasing trend in the value of mean accruals is also substantiated by the univariate tests in Table 2.

[Insert Table 2 around here]

Table 2 shows that the mean of the signed accruals during the first period of audit tenure is significantly larger than the mean of the signed accruals in the third (last) period of audit tenure, regardless of the accrual measure used. Only in the case of negative accruals is the difference between the first and the last three-year periods not significant. The decrease in the values of accruals is reconfirmed when the first and the second period of audit tenure are merged into one group and then compared with the third period of audit tenure. The mean of the signed accruals in the third period of audit tenure is significantly smaller than in the previous periods of audit tenure.

Therefore, we may conclude that as auditor tenure increases, companies tend to move, on average, from more aggressive (income increasing) to more conservative (income decreasing) accounting policies. This conclusion is supported by the behavior of the raw measures of accruals. Moreover, as tenure increases, we witness less earnings management activity. This conclusion is supported by the behavior of the absolute measures of accruals. Finally, we also observe that companies moderate their income-increasing accounting policies in the final years of auditor tenure. This conclusion is supported by the behavior of the positive measures of accruals.

Multivariate analysis

For each measure of accruals, the following multiple regression model is estimated:

$$\text{Accruals}_t = \beta_0 + \beta_1 \text{PERIOD\_2}_t + \beta_2 \text{PERIOD\_3}_t + \beta_3 \text{SIZE}_t + \beta_4 \text{CFO}_t + \beta_5 \text{LEV}_t + \beta_6 \text{SALEGR}_t + \beta_7 \text{ROA}_t + \beta_8 \text{LAGLOSS}_{t-1} + \beta_9 \text{IPO}_t + \beta_{10} \text{AGE}_t + \beta_{11} \text{BIG}_t + \text{fixed effects} + \varepsilon_t, \quad (2)$$

where:

Accruals_t is one of our accrual measures;

PERIOD_2_t is a dummy variable = 1 if the auditor tenure falls within the second three-year period (i.e., years 4 to 6), = 0 otherwise;

PERIOD_3_t is a dummy variable = 1 if the auditor tenure falls is within the third three-year period (i.e., years 7 to 9), = 0 otherwise;

SIZE_t designates the natural logarithm of total sales in year t;

CFO_t represents the operating cash flow in year t (deflated by lagged total assets);

LEV_t is the financial leverage ratio in year t (total liabilities to total assets);

SALEGR_t is the company sales growth rate, computed as the ratio of sales in year t to sales in year t–1 minus 1;

ROA_t is the return on assets in year t, calculated as net income over total assets;

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

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

AGE_t is the number of years since the firm's IPO;

BIG_t is a dummy variable = 1 if the audit firm is one of the Big-N, = 0 otherwise;

Fixed effects are firm, year and industry fixed effects.

To estimate model (2) with our panel of data, we use company-specific fixed effects. The results are presented in Table 3, where each of the four definitions of AWCA and CA is used as a dependent variable. The results for AWCA regressions are presented in Panel A and those for CA appear in Panel B.

[Insert Table 3 around here]

The most interesting result in Table 3 is the significance of the negative sign of the variables Period_3 in both Panel A and Panel B, where the earnings management measure is either the abnormal working capital accruals (Raw AWCA) or the current accruals (Raw CA). This result may suggest that there is a trend toward more conservative accounting choices as companies move from early tenure periods to the final tenure period. However, this is not the case for the absolute value of accruals and for the negative accruals subsample. In these cases, we find no evidence of a decline in the magnitude of unsigned accruals. It is interesting to note that when the sign of the earnings management is positive (Positive AWCA and Positive CA), there is evidence of a decrease in income-increasing accruals in the final period of tenure (PERIOD_3).

Moving to the analysis of the control variables, we find that newly listed companies tend to apply more earnings management techniques as evident in the sign and the significance of the coefficient of IPO. It is also useful to note that, regardless of the type

of earnings management measurement, the sign of Cash Flow from Operations (CFO) is significantly negative, implying that operating cash flows affect accruals in a reverse way. This result is consistent with those reported in earlier studies on the determinants of abnormal accruals. On the other hand, profitability (ROA) has a positive effect on accruals in all measurements of earnings management, with the exception of the Absolute AWCA, whereas leverage has a positive effect on CA but does not systematically affect AWCA. Sales growth (SALEGR) polarizes AWCA by increasing its absolute value and consequently by making positive AWCA more positive and negative AWCA more negative. Previous year negative earnings are associated with a more conservative level of accruals. Finally, we observe that the dummy variable for a Big-N auditor, when significant, has the expected negative sign.

Sensitivity analysis

To examine the robustness of the results in Table 3, we re-estimated the same regressions while replacing PERIOD_3 by PERIOD_1 as an explanatory variable. The results of the regression estimates (not reported here) indicate that the first period dummy is positive and significant. This result substantiates our previous findings, i.e., the accruals level is higher during the first three-year period than in the last period of the auditor service.

As a further robustness test, we estimate the following alternative model:

$$\text{Accruals}_t = \beta_1 + \beta_2\,\text{TENURE}_t + \beta_3\,\text{SIZE}_t + \beta_4\,\text{CFO}_t + \beta_5\,\text{LEV}_t + \beta_6\,\text{SALEGR}_t + \beta_7\,\text{ROA}_t + \beta_8\,\text{LAGLOSS}_{t-1} + \beta_9\,\text{IPO}_t + \beta_{10}\,\text{AGE}_t + \beta_{11}\,\text{BIG}_t + \text{fixed effects} + \varepsilon_t. \quad (3)$$

In this model, all of the variables are defined as before, except for the audit period dummies that have been replaced with TENURE, a variable that measures the number of years of the auditor's continuous service (i.e., from 1 to 9).

Table 4 reports the results of estimating model (3) with company-specific fixed effects.

[Insert Table 4 around here]

In both Panel A and Panel B, the TENURE variable has a negative effect on the raw measures of accruals and on positive accruals, corroborating the results of Table 3: as auditor service duration increases, accounting policies tend to become less aggressive.

Both Myers et al. (2003) and Carey and Simnett (2006) suggest that the early years of an audit client relationship can be characterized by more uncertainty about the results of the audit work because of a lack of familiarity with the client. Accordingly, we re-estimate our models restricting our sample to either TENURE > 1 or TENURE > 2. The results remain qualitatively unchanged: the TENURE variable still has a negative effect on the raw and positive measures of accruals, whereas it does not have a significant effect on the unsigned and negative accruals.

By and large, one may conclude that, in a mandatory auditor rotation setting, there is a positive effect of auditor tenure on audit quality. This conclusion is consistent with prior studies that were carried out in voluntary rotation settings. These results are inconsistent with the hypothesis formulated by Elitzur and Falk (1996), according to which audit quality declines over time when the audit engagement period is known and finite. Similarly, the results do not support the expectation that audit quality decreases as tenure

increases because of an impairment of the auditor's independence. To the contrary, the results seem to point to a significant learning effect that translates into an improvement of the audit quality over time. From a regulatory perspective, these results raise doubts about the necessity of the mandatory auditor rotation rule.

To gain a better understanding of the effects of the mandatory rotation rule, the next section analyses the effects of mandatory vs. voluntary auditor changes on audit quality.

VI. Empirical evidence on auditor change and audit quality

There is a continuous debate among academics regarding the rationale for voluntary auditor changes in the absence of a legal requirement. Several studies suggest that companies should change audit firms to reduce audit fees (Eichenseher and Sheilds 1983; Johnson and Lys 1990; Beattie and Fearnley 1995). Others argue that such a change takes place for the purpose of obtaining additional services by the audit firm (Burton and Roberts 1967; Bedingfield and Loeb 1974). Yet, other papers suggest that voluntary auditor changes stem from opportunistic reasons, which is a concern for regulators (SEC 1988). In particular, it has been suggested that a voluntary auditor change is the consequence of the so called "opinion shopping" phenomenon, i.e., the search for an auditor ready to sign an audit report in line with the preferences of the management of the company. However there is no clear-cut empirical evidence to support such claims (e.g., Chow and Rice 1982; Smith 1986; Johnson and Lys 1990; Francis and Wilson 1988; DeFond 1992; Lennox 2000). Another string of research points out that auditor change occurs when there exists a difference of opinion between managers and auditors

regarding the appropriate application of GAAP, particularly when an auditor applies more conservative GAAP rules (Dye 1991; Antle and Nalebuff 1991; Krishnan 1994; Krishnan and Stephens 1995; Kim et al. 2003). DeFond and Subramanyam (1998) analyze the degree of conservatism among a sample of companies that changed their auditor in a noncompulsory rotation environment. They find that discretionary accruals are income decreasing in the last year of the auditor's service whereas discretionary accruals are found to be insignificant in the first year of the new auditor's service. Moreover, these findings are more pronounced among 'high litigation risk' firms. Thus, these results support the hypothesis that auditors prefer conservative accounting policies when they perceive a greater litigation risk, and that these firms' managers tend to dismiss incumbent auditors in the hopes of finding a less conservative successor.

The main objective of the literature cited above is to provide motivations for auditor changes and their effects in terms of audit opinion. So far, however, only limited attention has been paid to the effects of an audit firm switch on audit quality. Recently, the relationship between auditor change and audit quality has been studied following the Arthur Andersen (AA) demise. In particular, Nagy (2005) reports that the enforced auditor change, following the AA collapse, is associated with a reduction in discretionary accruals among smaller ex-AA clients that may be characterized as having weaker bargaining power against the auditor. Cahan and Zhang (2006) claim that incoming auditors of ex-AA clients limit the level of abnormal accruals because such firms are perceived as a unique source of litigation risk. Continuing along the same line of research, Blouin et al. (2007) compare the post-change earnings quality of former AA

clients that changed audit team when they moved to the new auditor with ex-AA clients that followed their former AA audit team to the new auditor. They find no evidence that, after the change, financial statement quality improved more for the former than for the latter group of clients. These two studies make an inference from their results on the effectiveness of a mandatory audit firm rotation rule. They conclude that there is no clear advantage in adopting a mandatory rotation rule as far as earnings quality is concerned. However, there are clear differences between the setting analyzed by these two studies and an actual mandatory rotation regime. First, the incoming auditor after the AA collapse has no foreseeable termination of his appointment. Second, in all cases analyzed by the two studies, the dismissed auditor is characterized as an auditor with a very low reputation as far as audit quality is concerned, and this fact can significantly affect the behavior of the incoming new audit firm, as shown by Cahan and Zhang (2006).

VII. Auditor change and audit quality in a mandatory audit firm rotation setting

Under a mandatory audit firm rotation regime, auditor switches are generally expected to occur at the end of the maximum engagement period allowed by the regulator (e.g., nine years for Italy). In Section 5, we presented empirical results that suggest that audit quality tends to be higher before the mandatory change and lower after it, possibly because of the auditor's learning process that leads to an improved ability to reduce the occurrence of audit failure (DeAngelo 1981; Geiger and Raghunandan 2002; Carcello and Nagy 2004). Now, we turn our attention to the issue of how audit quality changes if a client company dismisses its auditor before the maximum auditor tenure. Such a case—representing a

voluntary change under a mandatory audit firm rotation regime—has not been researched to date. This issue is important as the empirical results may help us understand better the effects and the usefulness of a mandatory auditor rotation rule.

Following DeFond and Subramanyam (1998), we would expect the predecessor auditor to act in a more conservative manner in the period prior to the change than the new auditor following the auditor change. Such a claim is based on the idea that managers tend to dismiss incumbent auditors, hoping to appoint a less conservative successor. A lower level of audit quality after the change could also be the consequence of the learning process by the new auditor, similarly for the results reported for the mandatory changes.

However, following a different line of arguments that considers the auditor change as a "signal," we can have opposite expectations. Under a mandatory rotation regime, a voluntary change of the auditor is an exception. This case may represent a bad signal to both financial statement users and the successor auditor. In contrast to a mandatory change, where the company is obliged to switch its auditor, the incoming auditor may perceive a higher litigation risk, which may end up in sustaining penalties. Consequently, the auditor might adopt a more conservative approach to his audit procedures to reduce the perceived risk. Put differently, in a mandatory rotation regime, the company is obliged to switch its auditor and the rotation itself loses its signaling role to outsiders and to the successor auditor. Based on this line of argument, one would expect audit quality to be higher after (lower before) a voluntary change in the presence of a mandatory audit firm rotation rule.

Theoretically, one may not be able to predict which of the effects discussed above will prevail. Therefore, in what follows, we turn to empirical evidence to shed light on this important issue. We do this by examining the effects of voluntary and mandatory auditor changes on audit quality in a real mandatory rotation setting. The Italian setting lends itself to this purpose. Recall that according to the Italian regulation, the auditor term may be renewed every three years and can be extended up to the maximum nine years. This means that at the end of each three-year period, the auditee can decide not to renew the appointment of the auditor, representing a case of voluntary change under a mandatory audit firm rotation regime. Consequently, in our sample, we identified as voluntary auditor changes those changes that take place after the first or the second three-year period of tenure. Overall, we were able to detect 179 observations related to a voluntary auditor change in our sample.

VIII. Results on auditor changes

Univariate analysis

Figures 2 and 3 provide the mean, median and extreme deciles of the distribution of the raw measures of accruals divided into the three-year periods before (pre) and after (post) the change of auditor.

[Insert Figure 2 and 3 around here]

Figure 2 presents the results related to the case of mandatory auditor changes, whereas Figure 3 presents the results related to the case of voluntary auditor changes. There is a

clear difference between these two figures. In the case of mandatory auditor changes, the distribution of abnormal working capital accruals (AWCA) confirms our previous results on the tenure effect: accruals in the first three-year period of tenure on average are income increasing, whereas accruals in the last three-year tenure period on average are income decreasing. Hence, a mandatory change of auditor marks a shift from more conservative to more aggressive accounting policy choices.

On the other hand, shifting our attention to Figure 3, in the case of voluntary auditor changes we observe an opposite trend. In the first three-year period of tenure after the change, accruals are more conservative on average than in the three-year period right before the change. Hence, a voluntary change of auditor marks a shift from more to less aggressive accounting policies.

To assure that the distinction between voluntary and mandatory auditor changes does not induce a self-selection bias in our sample, we ran tests to compare the mean accruals in the two subsamples of voluntary and mandatory changes of auditor before the change.

The results are presented in Table 5.

[Insert Table 5 around here]

The results of Table 5 show that there is no statistical evidence that the mean of the accruals in a three-year period before a voluntary auditor change is significantly different from the mean of the accruals of a similar period for mandatory auditor changes (i.e., companies that do not carry out a voluntary change). These results are robust to the

choice of the accruals measure and to the specific tenure period (first or second three-year period).

For the same purpose, we also run tests to check whether the subsample of companies that carry out a voluntary change is significantly different from the others on selected firm characteristics. The results are reported in the Appendix. We observe that companies that carry out a voluntary auditor change are similar to the others as far as size, leverage, profitability level and IPO are concerned, whereas they are younger and tend to have lower sales growth rates, lower levels of cash flow from operations and lower frequency of lagged losses. Because we control for all of these characteristics in our multivariate analysis, we conclude that self-selection bias is not a problem when a distinction in our sample is made between voluntary and mandatory auditor changes.

Table 6 presents univariate tests for the equality of the means of accruals before and after the auditor change.

[Insert Table 6 around here]

In the case of mandatory changes (Panel A) the raw, absolute and positive measures of accruals are statistically greater in the tenure period after the change than in the tenure period before the change. This is not the case only for the negative accruals. On the contrary, in the case of voluntary changes (Panel B), in general, there is not a statistically significant difference in accruals before and after the change. There is only scant evidence in favor of raw current accruals being greater *before* the change of auditor.

These preliminary univariate results support the hypothesis of a difference between voluntary and mandatory auditor changes with respect to their effects on accruals.

Multivariate analysis

To analyze better the effects of voluntary vs. mandatory auditor changes we estimate the following regression model.

$$\begin{aligned} Accruals_t = {} & \beta_1 + \beta_2\, DVOL_t + \beta_3\, POST_t + \beta_4\, DVOL*POST_t + \beta_5\, SIZE_t + \beta_6\, DVOL*SIZE_t \\ & + \beta_7\, CFO_t + \beta_8\, DVOL*CFO_t + \beta_9\, LEV_t + \beta_{10}\, DVOL*LEV_t + \beta_{11}\, SALEGR_t \\ & + \beta_{12}\, DVOL*SALEGR_t + \beta_{13}\, ROA_t + \beta_{14}\, DVOL*ROA_t + \beta_{15}\, LAGLOSS_{t-1} \\ & + \beta_{16}\, DVOL*LAGLOSS_{t-1} + \beta_{17}\, IPO_t + \beta_{18} DVOL*IPO_t + \beta_{19}\, AGE_t + \beta_{20} \\ & DVOL*AGE_t + \beta_{21} BIG_t + \text{fixed effects} + \varepsilon_t. \end{aligned} \quad (4)$$

In equation (4), the variables are defined as before, whereas the new variable POST is a dummy variable that takes the value 1 if the observation belongs to the three-year tenure period after the change, and 0 otherwise; and DVOL is a dummy variable that takes the value 1 if the observation belongs to a voluntary auditor change, and 0 otherwise.

Model 4 is a full interaction model designed to check for any statistically significant difference between mandatory and voluntary changes of auditor. Because we restrict our attention to observations belonging to the three-year periods immediately before and after a change, the sample size has been reduced to 1,099 observations. Again, the model is estimated using company specific fixed effects.

The results are reported in Table 7.

[Insert Table 7 around here]

Examining first the impact of mandatory auditor changes, there is some evidence of a positive effect of POST on the raw (signed) measure of AWCA (Table 7 Panel A). This confirms a shift from more conservative to more aggressive accounting policies after a mandatory change of auditor. In the case of voluntary auditor changes, the overall effect of POST is given by the sum of the coefficients of the simple and of the interaction term. For raw AWCA, the coefficient of the interaction term is significantly negative and the sum is also negative. The Wald test (7.20) shows that this sum is significantly less than zero. Therefore, the evidence presented is in favor of a shift from more aggressive to more conservative accounting policies after a voluntary change of auditor.

When CA is used instead of AWCA (Table 7 Panel B), the results are qualitatively similar.

Our multivariate results seem to confirm the prior hypothesis that the effects of a change of auditor on accruals are different in the case of a mandatory change than in the case of a voluntary change. Mandatory auditor changes clearly produce an increase in the level of accruals, i.e., more aggressive accounting policies, while voluntary changes seem to produce a decrease in the level of accruals, i.e., more conservative accounting policies.

Sensitivity analysis

As Panels A and B in Table 7 show, the reported results are robust to the use of both raw and negative AWCA or CA.

Moreover, we have estimated the following alternative full interaction model.

$$\text{Accruals}_t = \beta_1 + \beta_2 \text{DVOL}_t + \beta_3 \text{TENURE}_t + \beta_4 \text{DVOL*TENURE}_t + \beta_5 \text{SIZE}_t + \beta_6 \text{DVOL*SIZE}_t + \beta_7 \text{CFO}_t + \beta_8 \text{DVOL*CFO}_t + \beta_9 \text{LEV}_t + \beta_{10} \text{DVOL*LEV}_t + \beta_{11} \text{SALEGR}_t + \beta_{12} \text{DVOL*SALEGR}_t + \beta_{13} \text{ROA}_t + \beta_{14} \text{DVOL*ROA}_t + \beta_{15} \text{LAGLOSS}_{t-1} + \beta_{16} \text{DVOL*LAGLOSS}_{t-1} + \beta_{17} \text{IPO}_t + \beta_{18} \text{DVOL*IPO}_t + \beta_{19} \text{AGE}_t + \beta_{20} \text{DVOL*AGE}_t + \beta_{21} \text{BIG}_t + \text{fixed effects} + \varepsilon_t. \quad (5)$$

In equation (5) the TENURE variable takes the values –3, –2 and –1 if the observation belongs to the third, second and first year before the change of auditor, respectively. Alternatively, TENURE takes the values 1, 2 and 3 if the observation belongs to the first, second and third year after the change of auditor, respectively.

The results of estimating model (5) with company specific fixed effects are reported in Table 8.

[Insert Table 8 around here]

Table 8 indicates that, compared with Table 7, the results are fairly similar to those obtained using the POST audit tenure period dummy. For mandatory auditor changes, TENURE has a positive effect on the raw measures of accruals for both raw AWCA and raw CA. Hence, a mandatory change of auditor is associated with a movement from more conservative to more aggressive accounting policies. When we turn our attention to voluntary auditor changes, we may observe that the coefficient of the interaction term for TENURE has a negative effect on the raw measures of accruals, but is significant only for raw CA. The Wald statistic (8.29) shows that the sum of the two coefficients is

significantly nonpositive (i.e., zero or negative). Hence, this evidence confirms the result that voluntary and mandatory changes of auditor have different effects on raw accruals.

Overall, our results differ from those reported by DeFond and Subramanyan (1998), who show that accruals tend to be income decreasing before a voluntary auditor change and not significantly different from zero after the change. Our results indicate that accruals are less conservative before a voluntary change than after the change. Our different results may be because of the different institutional setting in which we voluntarily carried out our analysis. In a mandatory rotation environment, a voluntary change of auditor can be interpreted as a negative signal because of its exceptionality. Financial statements users may be suspicious after such a change, and the incoming auditor may be more concerned about possible litigation risk, adopting as a consequence a more conservative approach. Our evidence is consistent with this explanation. Concerning mandatory changes, our results confirm our findings on auditor tenure. We document a decrease in audit quality after a mandatory change. Again, in a mandatory rotation setting, a mandatory change of auditor is fully expected and consequently it does not fulfill any signaling role. For this reason no change in the perceived litigation risk is expected for the incoming auditor, and this may explain the different results when compared with voluntary changes.

IX. Concluding remarks

A crucial issue in audit regulation is whether a periodic change of the audit firm should be mandated.

This study contributes to the ongoing debate on this issue by testing the effects of auditor tenure and auditor change on audit quality in a real mandatory audit firm rotation environment. We took advantage of the unique institutional setting provided by the Italian case, where a policy of mandatory audit firm rotation has been in place for more than 20 years.

Those in favor of a mandatory change of the audit firm often defend their view by claiming that audit quality deteriorates as audit tenure increases because the relationship between the auditor and the client becomes too strict and the auditor looses independence. Our results showed that audit quality—measured in terms of earnings management—tends to improve rather than worsen with tenure, providing support to the expectation that there is a significant learning process for the auditor, i.e., an auditor needs time to get to know sufficiently well the business of the client and, consequently, audit quality tends to increase over time. In particular, our results showed that the inverse relationship between accruals and auditor tenure is mainly because of positive accruals, which means that auditor behavior tends to become more effective over time in limiting aggressive accounting policies.

We also examined the effects of voluntary auditor change vs. those resulting from mandatory auditor changes. We found that mandatory auditor changes tend to be followed by more aggressive accounting policies, whereas voluntary changes of auditor are followed by less aggressive accounting policies. These results suggest that, in a mandatory auditor rotation setting, a voluntary change of the auditor tends to improve audit quality while a mandatory change tends to hamper audit quality. We have

interpreted such results as a possible consequence of the different signal that the two kinds of change deliver in a mandatory auditor rotation environment. In particular, a voluntary change tends to be perceived with suspicion by financial statement users and incoming auditors, and to minimize their litigation risk, the latter tend to be more conservative. On the contrary, a mandatory change is fully expected and is not perceived as delivering a special signal. Therefore, in such a case, the learning effect mentioned before seems to prevail.

Our study represents the first empirical analysis of the effects of audit tenure and auditor change on audit quality in a real setting where auditor rotation is mandatory. Overall, our findings do not support claims that there are beneficial effects of mandatory audit rotation on audit quality, in line with what has been suggested recently by various US institutions.

References

American Institute of Certified Public Accountants (AICPA). 1992. *Statement of Position Regarding Mandatory Rotation of Audit Firms of Publicly Held Companies*.

American Institute of Certified Public Accountants (AICPA). 1995. News Report: Washington Update. 1995 Legislative preview: The new agenda and what it means to the accounting profession. *Journal of Accountancy* 179: 10.

Antle, R., and B. Nalebuff. 1991. Conservatism and auditor–client negotiations. *Journal of Accounting Research* 29 (Supplement): 31–54.

Arrunada, B., and C. Paz-Ares. 1997. Mandatory rotation of company auditors: A critical examination. *International Review of Law and Economics* 17 (1): 31–61.

Bar-Yosef, S., and B. Sarath. 2005. Auditor Size, Market Segmentation and Litigation Patterns: A Theoretical Analysis. *Review of Accounting Studies* 10 (1): 59–92.

Bartov, E., F.A. Gul, and J.S.L. Tsui. 2000. Discretionary-accruals models and audit qualifications. *Journal of Accounting and Economics* 30 (December): 421–452.

Bates, H.L., R.W. Ingram, and M.J. Reckers. 1982. Auditor–client affiliation: the impact on «materiality». *Journal of Accountancy* 153 (4): 60–68.

Beattie, V., and S. Fearnley. 1995. The importance of Audit Firm Characteristics and the Drivers of Auditor Changes in UK Listed Companies. *Accounting and Business Research* 25 (Autumn): 227–239.

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

Bedingfield, J.P., and S.E. Loeb. 1974. Auditor changes—an examination. *Journal of Accountancy* 137 (March): 66–69.

Blouin, J., B. Grein, and B. Rountree. 2007. An Analysis of forced auditor change: The case of former Arthur Andersen clients. *The Accounting Review* 82 (3): 621–650.

Brody, R.G., and S.A. Moscove. 1998. Mandatory Auditor Rotation. *National Public Accountant* 43 (3): 32–36.

Burton, J., and W. Roberts. 1967. A study of auditor changes. *Journal of Accountancy* 123 (April): 31–36.

Cahan, S.F., and W. Zhang. 2006. After Enron: Auditor conservatism and ex-Andersen clients. *The Accounting Review* 81 (1): 49–82.

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

Carey, P., and R. Simnett. 2006. Audit partner tenure and audit quality. *The Accounting Review* 81 (3): 654–676.

Chow, C., S. Rice. 1982. Qualified audit opinions and auditor switching. *The Accounting Review* 57 (2): 326–335.

Chung, H., October 2004. Selective Mandatory Auditor Rotation and Audit Quality: An Empirical Investigation of Auditor Designation Policy in Korea. Ph.D. Thesis. Purdue University. West Lafayette, IN.

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.

DeAngelo, L. 1981. Auditor independence, 'low balling' and disclosure regulation. *Journal of Accounting and Economics* 3 (2): 113–127.

Dechow, P.M. 1994. Accounting earnings and cash-flows as measures of firm performance: the role of accounting accruals. *Journal of Accounting and Economics* 18 (July): 3–42.

Dechow, P.M., R.G. Sloan, and A.P. Sweeny. 1995. Detecting earnings management. *The Accounting Review* 70 (April): 193–226.

DeFond, M.L. 1992. The association between changes in client firm agency costs and auditor switching. *Auditing: A Journal of Practice & Theory* 11 (Spring): 16–31.

DeFond, M.L., and J. R. Francis. 2005. The audit research after Sarbanes–Oxley. *Auditing: A Journal of Practice & Theory* 24 (Supplement): 5–30.

DeFond, M.L., and C.W. Park. 2001. The reversal of abnormal accruals and the market valuation of earnings surprises. *The Accounting Review* 76 (July): 375–404.

DeFond, M.L., and K. R. Subramanyam. 1998. Auditor changes and discretionary accruals. *Journal of Accounting and Economics* 25 (1): 35–68.

Dopuch, N., R. King, and R. Schwartz. 2001. An experimental investigation of retention and rotation requirements. *Journal of Accounting Research* 39 (1): 93–117.

Dye, R.A. 1991. Informationally motivated auditor replacements. *Journal of Accounting and Economics* 14 (4): 347–374.

Eichenseher, J., and D. Sheilds. 1983. The correlates of CPA-Firm Change for Publicity Held Corporations. *Auditing: A Journal of Practice & Theory* 2 (Spring): 23–37.

Elitzur, R., and H. Falk. 1996. Planned audit quality. *Journal of Accounting and Public Policy* 15 (3): 247–269.

European Federation of Accountants and Auditors (EFAA). 1998. *The role, the position and the liability of the statutory auditor within the European Union*.

Francis, J.R. 2004. What do we know about audit quality? *The British Accounting Review* 36 (4): 345–368.

Francis, J.R., and J. Krishnan. 1999. Accounting accruals and auditor reporting conservatism. *Contemporary Accounting Research* 16 (Spring): 135–165.

Francis, J.R., E.L. Mydew, 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 (Fall): 17–34.

Francis J.R. and D. Wang. 2008. The joint effect of investor protection and Big 4 audits on earnings quality around the world, *Contemporary Accounting Research* 25 (1):157–191.

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 (4): 663–682.

Frankel, R.M., M.F. Johnson, and K.K. Nelson. 2002. The relation between auditors' fees for nonaudit services and earnings management. *The Accounting Review* 77 (Supplement): 71–105.

Geiger, M.A. and K. Raghunandan. 2002. Auditor tenure and audit reporting failures. *Auditing: A Journal of Practice & Theory* 21 (1): 67–78.

Ghosh, A. and D. Moon. 2005. Auditor tenure and perceptions of audit quality. *The Accounting Review* 80: 585–612.

Gietzman, M. B., and P.K. Sen. 2002. Improving auditor independence through selected mandatory rotation. *International Journal of Auditing* 6 (2): 183–210.

Government Accounting Office (GAO). 2003. Public Accounting Firms: Required Study on the Potential Effects of Mandatory Audit Firm Rotation. United States General Accounting Office. Available on the Internet at: http://www.gao.gov/new.items/d04216.pdf.

Healey, T.J., and Y.J. Kim. 2003. The benefits of mandatory audit rotation. *Regulation* 26(3): 10–12.

Heninger, W.G. 2001. The association between auditor litigation and abnormal accruals. *The Accounting Review* 76 (January): 111–126.

Hoyle, J. 1978. Mandatory rotation is not the best solution to the problems of independence and public protection. *The Journal of Accountancy* 145 (May): 69–78.

Hribar, P., and C. Nichols. 2007. The use of unsigned earnings quality measures in tests of earnings management. *Journal of Accounting Research* 45(5): 1017–1053.

Institute of Chartered Accountants in England and Wales (ICAEW). 2002. *Mandatory rotation of audit firms*. ICAEW, London. Available at: http://www.icaew.co.uk/publicassets/00/00/03/64/0000036465.pdf.

International Chamber of commerce (ICC). 2005. *The adverse effects of compulsory audit firm rotation.* Final statement, March 4.

Jenkins, D.S., and U. Velury. 2008. Does auditor tenure influence the reporting of conservative earnings?. *Journal of Accounting and Public Policy* 27 (2): 115–132.

Jeong, S. W., K. Jung, and S. Lee. 2005. The effect of mandatory auditor assignment and non-audit service on audit fees: Evidence from Korea. *International Journal of Accounting* 40 (3): 233–248.

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

Johnson, W.B. and T. Lys. 1990. The Market for Audit services: Evidence from Voluntary Auditor Changes. *Journal of Accounting and Economics* 12 (January): 281–308.

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

Kaplan, R. 2004. The mother of all conflicts: auditor and their clients. *Illinois public law and legal theory research paper series* 04-13. Available at SSRN: http://ssrn.com/abstract=556623.

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, M. Chung-ki, and Y. Cheong. June 2004. Selective Auditor Rotation and Earnings Management: Evidence from Korea. Working paper. Available at SSRN: http://ssrn.com/abstract=560522.

Kothari, S.P., A.J. Leone, and C.E. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39 (1): 163–197.

Krishnan, J. 1994. Auditor switching and conservatism. *The Accounting Review.* 69 (1): 200–215.

Krishnan, J., and R.G, Stephens. 1995. Evidence of opinion shopping from auditor opinion conservatism. *Journal of Accounting and Public Policy* 14 (3): 179–201.

Lennox, C. 2000. Do companies successfully engage in opinion-shopping? Evidence from the UK. *Journal of Accounting and Economics* 29 (3):321–337.

Magee, R.P., and M-C., Tseng. 1990. Audit pricing and independence. *The Accounting Review* 65 (2): 315–336.

Maijoor, S., and A. Vanstraelen. 2006. Earnings management within Europe: the effects of member state audit environment, audit firm quality and international capital markets. *Accounting and Business Research* 36(1): 33–52.

Mautz. R.K., and H.A. Sharaf. 1961. *The Philosophy of Auditing*. American Accounting Association.

Meuwissen, R.F., F. Moers, E. Peek, and A. Vanstraelen. 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.

Moore, D. A., P. E. Tetlock, L. Tanlu, and M.H. Bazerman. 2006. Conflicts of interest and the Case of Auditor Independence: Moral Seduction and Strategic Issue Cycling. *Academy of Management Review* 31 (1): 10–29.

Myers, J. N., L. A. Myers, and T. C. Omer. 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): 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): 51–68.

New York Stock Exchange. 2002. *Corporate Accountability and Listing Standards Committee Recommendation*.

New York Stock Exchange. 2003. *Final NYSE Corporate Governance Rules.* Available at: http://www.nyse.com/pdfs/finalcorpgovrules.pdf.

Securities and Exchange Commission, 1988. Financial Reporting Release No.31, Commence Clearing House, Chicago.

Sloan, R. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review* 71 (July): 289–315.

Smith, D.B. 1986. Auditor 'subject to' opinions, disclaimers, and auditor changes. *Auditing: A Journal of Practice & Theory* 6 (1): 95–108.

TIAA–CREF. 2004. Policy Statement on Corporate Governance. New York, NY: TIAA–CREF.

Wysocki, P. 2004. Discussion of ultimate ownership, income management, and legal and extra-legal institutions. *Journal of Accounting Research* 42 (May): 463–474.

Footnotes

[1] During the mid 1990s, several countries decided to apply a mandatory rotation rule. In 1996, Brazil adopted this rule first for banks, and the rule was later imposed on all listed companies. After the turn of the 21st century, several other countries introduced similar rules (i.e., South Korea and Singapore). A few other countries, such as Austria, Spain and Canada, introduced a mandatory rotation rule but dropped it at a later stage.

[2] A law passed in 2005 extending the maximum term to 12 years (six-year term, renewable only once) and one more recent amendment (December 2006) restated the maximum time to nine years. In contrast to before, this now also represents the minimum retention period.

[3] A few unpublished studies analyze audit quality in a setting that can be somehow assimilated to a mandatory auditor rotation regime. Such studies are based on the Korean experience, where a regulatory authority is in charge of designating the auditor for those firms that are deemed to have low reporting quality. In particular, Kim et al. (2004) find that firms with designated auditors report relatively lower discretionary accruals compared with firms with a free selection of auditors, suggesting that auditor designation improves the independence of auditors. The results are consistent with findings by Chung (2004). However, their conclusions cannot be easily generalized because the Korean auditor replacement rules are different from a traditional auditor rotation rule in a key way: the client does not have discretion in choosing the auditor (Jeong et al. 2005).

[4] Magee and Tseng (1990) suggest that for auditors—like for managers—accounting choice preferences are motivated by incentives.

[5] See, for example, Bar-Yosef and Sarath (2005) for such an argument.

[6] See footnote 2.

[7] Note that our sample does not include postacquisition data of companies that were acquired by other firms, because they disappeared from our databases. On the contrary, acquiring companies are included in our sample, although the accrual data related to the year of acquisition are excluded because of the lack of comparable data from the previous year.

[8] Jones-type abnormal accrual measures (Jones 1991; Dechow et al., 1995; Kothari et al., 2005) are normally used to measure earnings management and earnings quality. However, when the number of observations per year/industry is limited, like in the Italian setting, these measures perform unreliably (Wysocki 2004; Meuwissen et al., 2007).

[9] In Italy, signed accruals are a particularly suitable proxy for audit quality because, in the period under analysis, Italian financial statements were mainly aimed at providing information to creditors and conservatism was the dominating principle in the financial reporting framework, according to the Italian regulation. In general, managerial discretion aimed at increasing reported earnings is the kind of earnings management most likely to damage an auditor's reputation (Francis and Wang 2008).

[10] A recent contribution by Hribar and Nichols (2007) shows that the use of unsigned earnings quality measures may imply an over-rejection of the null hypothesis of no earnings management. Therefore, the results of the models based on the absolute value of AWCA should be interpreted with caution.

TABLE 1
Descriptive Statistics

Variables	n	Mean	Median	Std. Deviation	Minimum	Maximum
Raw AWCA	1,439	0.005	0.002	0.109	–0.464	0.632
Absolute AWCA	1,439	0.075	0.049	0.079	0.000	0.632
Positive AWCA	734	0.078	0.053	0.086	0.000	0.632
Negative AWCA	705	–0.071	–0.045	0.072	–0.464	0.000
Raw CA	1,439	0.013	0.007	0.076	–0.378	0.436
Absolute CA	1,439	0.052	0.034	0.058	0.000	0.436
Positive CA	828	0.056	0.036	0.063	0.000	0.436
Negative CA	611	–0.046	–0.030	0.049	–0.378	0.000
PERIOD_1	1,439	0.442	0.000	0.497	0.000	1.000
PERIOD_2	1,439	0.361	0.000	0.480	0.000	1.000
PERIOD_3	1,439	0.197	0.000	0.398	0.000	1.000
SIZE	1,439	12.241	11.998	1.707	3.417	20.30
CFO	1,439	0.093	0.093	0.097	–0.635	0.519
LEV	1,439	0.534	0.540	0.195	0.044	0.999
SALEGR	1,439	0.108	0.072	0.336	–0.999	6.606
ROA	1,439	0.021	0.028	0.074	–0.886	0.398
LAGLOSS	1,439	0.162	0.000	0.368	0.000	1.000
IPO	1,439	0.064	0.000	0.245	0.000	1.000
AGE	1,439	11.566	6.000	18.486	0.000	128.0
BIG	1,439	0.943	1.000	0.232	0.000	1.000

Variable definitions:

AWCA = abnormal working capital accruals scaled by total sales
CA = current accruals scaled by 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
SIZE = natural logarithm of total sales
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
BIG = 1 if audit firm belongs to the Big-N group, and 0 otherwise

TABLE 2
Means and test of equality of means by period of tenure
Null hypothesis: equal means

	Raw AWCA	Absolute AWCA	Positive AWCA	Negative AWCA	Raw CA	Absolute CA	Positive CA	Negative CA
Mean Per_1	0.00993	0.07907	0.08525	–0.07232	0.01729	0.05586	0.06138	–0.04791
Mean Per_2	0.00395	0.07362	0.07712	–0.07008	0.01371	0.05099	0.05560	–0.04459
Mean Per_3	–0.00415	0.06721	0.06350	–0.07086	0.00173	0.04382	0.04430	–0.04363
Mean Per_1&2	0.00724	0.07662	0.08167	–0.07129	0.01568	0.05367	0.05881	–0.04639

Panel A:	**Raw AWCA**		**Absolute AWCA**		**Positive AWCA**		**Negative AWCA**	
Alternative hypothesis	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value
Per_1 > Per_3	1.965**	0.025	2.335**	0.010	3.010***	0.001	–0.206	0.582
Per_2 > Per_3	1.119	0.132	1.254	0.105	1.877**	0.031	0.110	0.456
Per_1 > Per_2	0.905	0.183	1.122	0.131	1.097	0.137	–0.363	0.642
Per_3 < Per_1&2	–1.779**	0.038	–2.099**	0.018	–2.914**	0.002	0.066	0.526
Panel B:	**Raw CA**		**Absolute CA**		**Positive CA**		**Negative CA**	
Alternative hypothesis	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value
Per_1 > Per_3	3.081***	0.001	3.185***	0.001	3.145***	0.001	–0.832	0.797
Per_2 > Per_3	2.391***	0.009	1.940**	0.026	2.082**	0.019	–0.198	0.578
Per_1 > Per_2	0.779	0.218	1.403*	0.081	1.173	0.121	–0.728	0.767
Per_3 < Per_1&2	–3.113***	0.001	–2.966**	0.002	–2.996**	0.002	0.6175	0.7313

Variable definitions:

AWCA = abnormal working capital accruals scaled by total sales
CA = current accruals scaled by total assets
Per_1 = mean for the first three-year period (years 1 to 3)
Per_2 = mean for the second three-year period (years 4 to 6)
Per_3 = mean for the third three-year period (years 7 to 9)
Per_1&2 = mean for the first and the second period together (years 1 to 6)

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

TABLE 3
Fixed effects regressions with period dummies

Panel A	**Raw AWCA**	**Absolute AWCA**	**Positive AWCA**	**Negative AWCA**
Constant	0.125	0.129	0.159	–0.202
	(3.12)***	(3.68)***	(3.77)***	(3.57)***
PERIOD_2	–0.007	–0.001	–0.003	0.000
	(1.34)	(0.12)	(0.50)	(0.07)
PERIOD_3	–0.014	–0.008	–0.013	–0.005
	(2.12)**	(1.46)	(1.80)*	(0.77)
SIZE	–0.001	–0.006	–0.002	0.021
	(0.19)	(2.28)**	(0.66)	(4.35)***
CFO	–0.918	–0.104	–0.675	–0.529
	(31.30)***	(4.07)***	(16.86)***	(13.33)***
LEV	0.011	0.004	–0.006	0.009
	(0.45)	(0.21)	(0.24)	(0.37)
SALEGR	–0.001	0.031	0.024	–0.051
	(0.14)	(4.34)***	(2.05)**	(5.29)***
ROA	0.391	–0.128	0.132	0.330
	(8.35)***	(3.11)***	(2.00)**	(6.22)***
LAGLOSS	–0.020	–0.005	–0.022	–0.014
	(2.57)**	(0.75)	(2.24)**	(1.72)*
IPO	0.022	0.016	0.018	0.026
	(2.24)**	(1.78)*	(1.76)*	(2.00)**
AGE	0.001	0.002	0.002	–0.001
	(1.22)	(3.50)***	(2.41)**	(1.96)*
BIG	–0.047	0.006	–0.041	–0.046
	(2.43)**	(0.34)	(1.53)	(2.72)***
Observations	1439	1439	734	705
R-squared	0.46	0.06	0.37	0.31
F test	86.43	6.00	26.28	19.46
Prob > F test	0.000	0.000	0.000	0.000

Variable definitions:

AWCA = abnormal working capital accruals scaled by total sales
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
SIZE = natural logarithm of total sales
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
BIG = 1 if audit firm belongs to the Big-N group, and 0 otherwise

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm, industry and year fixed effects are omitted for readability

TABLE 3 (cont'd)
Fixed effects regressions with period dummies

Panel B	Raw CA	Absolute CA	Positive CA	Negative CA
Constant	0.034	0.056	0.010	–0.000
	(1.75)*	(2.16)**	(0.39)	(0.00)
PERIOD_2	–0.002	–0.002	–0.001	0.001
	(0.89)	(0.49)	(0.32)	(0.23)
PERIOD_3	–0.008	–0.005	–0.007	–0.005
	(2.54)**	(1.33)	(1.82)*	(1.41)
SIZE	0.003	–0.002	0.003	0.004
	(2.08)**	(1.15)	(1.62)	(1.99)**
CFO	–0.769	–0.145	–0.674	–0.546
	(53.73)***	(7.74)***	(30.10)***	(22.33)***
LEV	0.038	0.051	0.047	0.000
	(3.30)***	(3.33)***	(3.05)***	(0.02)
SALEGR	0.048	0.024	0.071	0.012
	(12.32)***	(4.72)***	(11.03)***	(2.87)***
ROA	0.428	0.034	0.481	0.229
	(18.73)***	(1.13)	(10.98)***	(8.75)***
LAGLOSS	–0.020	–0.014	–0.016	–0.004
	(5.21)***	(2.77)***	(2.91)***	(0.82)
IPO	0.041	0.038	0.045	0.016
	(8.33)***	(5.96)***	(7.79)***	(2.07)**
AGE	–0.000	0.001	0.000	–0.000
	(1.37)	(1.48)	(0.35)	(0.54)
BIG	–0.016	0.001	0.001	–0.027
	(1.67)*	(0.07)	(0.05)	(2.72)***
Observations	1439	1439	828	611
R-squared	0.73	0.11	0.64	0.57
F test	283.26	12.13	93.69	46.13
Prob > F test	0.00	0.00	0.00	0.00

Variable definitions:

CA = current accruals scaled by total assets
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
SIZE = natural logarithm of total sales
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
BIG = 1 if audit firm belongs to the Big-N group, and 0 otherwise

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm, industry and year fixed effects are omitted for readability

TABLE 4
Fixed effects regressions with years of tenure

Panel A	Raw AWCA	Absolute AWCA	Positive AWCA	Negative AWCA
Constant	0.127	0.132	0.165	–0.201
	(3.17)***	(3.76)***	(3.93)***	(3.55)***
TENURE	–0.002	–0.001	–0.002	–0.000
	(1.77)*	(1.15)	(1.70)*	(0.34)
SIZE	–0.001	–0.006	–0.002	0.021
	(0.18)	(2.32)**	(0.70)	(4.34)***
CFO	–0.918	–0.105	–0.675	–0.529
	(31.29)***	(4.08)***	(16.88)***	(13.33)***
LEV	0.011	0.006	–0.005	0.010
	(0.47)	(0.26)	(0.19)	(0.40)
SALEGR	–0.001	0.031	0.024	–0.051
	(0.11)	(4.36)***	(2.03)**	(5.26)***
ROA	0.391	–0.125	0.135	0.332
	(8.36)***	(3.06)***	(2.07)**	(6.28)***
LAGLOSS	–0.020	–0.005	–0.022	–0.013
	(2.55)**	(0.73)	(2.23)**	(1.69)*
IPO	0.022	0.014	0.016	0.025
	(2.26)**	(1.62)	(1.57)	(1.95)*
AGE	0.001	0.002	0.002	–0.001
	(1.16)	(3.41)***	(2.35)**	(2.06)**
BIG	–0.047	0.006	–0.042	–0.046
	(2.43)**	(0.38)	(1.56)	(2.69)***
Observations	1439	1439	734	705
R-squared	0.46	0.05	0.37	0.31
F test	94.10	6.44	28.66	21.18
Prob > F test	0.00	0.00	0.00	0.00

Variable definitions:

AWCA = abnormal working capital accruals scaled by total sales
TENURE = years of tenure of the actual auditor
SIZE = natural logarithm of total sales
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
BIG = 1 if audit firm belongs to the Big-N group, and 0 otherwise

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm, industry and year fixed effects are omitted for readability

TABLE 4 (cont'd)
Fixed effects regressions with years of tenure

Panel B	Raw CA	Absolute CA	Positive CA	Negative CA
Constant	0.037	0.058	0.013	0.002
	(1.86)*	(2.24)**	(0.52)	(0.08)
TENURE	–0.001	–0.001	–0.001	–0.001
	(2.08)**	(1.38)	(2.08)**	(1.25)
SIZE	0.003	–0.002	0.003	0.004
	(2.06)**	(1.16)	(1.63)	(1.97)**
CFO	–0.769	–0.145	–0.675	–0.545
	(53.72)***	(7.75)***	(30.18)***	(22.34)***
LEV	0.039	0.051	0.049	0.001
	(3.37)***	(3.36)***	(3.15)***	(0.10)
SALEGR	0.048	0.024	0.071	0.012
	(12.36)***	(4.73)***	(10.96)***	(2.92)***
ROA	0.429	0.035	0.485	0.232
	(18.82)***	(1.16)	(11.11)***	(8.89)***
LAGLOSS	–0.020	–0.014	–0.017	–0.003
	(5.18)***	(2.76)***	(2.95)***	(0.76)
IPO	0.040	0.037	0.042	0.014
	(8.23)***	(5.85)***	(7.51)***	(1.86)*
AGE	–0.000	0.001	0.000	–0.000
	(1.51)	(1.44)	(0.26)	(0.67)
BIG	–0.015	0.001	0.001	–0.026
	(1.64)	(0.09)	(0.08)	(2.67)***
Observations	1439	1439	828	611
R-squared	0.73	0.11	0.64	0.56
F test	308.53	13.25	102.56	50.16
Prob > F test	0.00	0.00	0.00	0.00

Variable definitions:

AWCA = abnormal working capital accruals scaled by total sales
TENURE = years of tenure of the actual auditor
SIZE = natural logarithm of total sales
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
BIG = 1 if audit firm belongs to the Big-N group, and 0 otherwise

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm, industry and year fixed effects are omitted for readability

TABLE 5
Means and test of equality of means (before the change) between voluntary and mandatory changes
Null hypothesis: means for mandatory changes (MC) = means for voluntary changes (VC)

	Raw AWCA	Absolute AWCA	Positive AWCA	Negative AWCA	Raw CA	Absolute CA	Positive CA	Negative CA
Mean Per_1 before MC	0.00859	0.07896	0.08346	–0.07401	0.01747	0.05643	0.06123	–0.04935
Mean Per_1 before VC	0.02149	0.07997	0.10146	–0.05848	0.01571	0.05096	0.06286	–0.03752
Mean Per_2 before MC	0.00250	0.07367	0.07601	–0.07132	0.01275	0.05089	0.05464	–0.04567
Mean Per_2 before VC	0.01696	0.07319	0.08681	–0.05848	0.02231	0.05188	0.06429	–0.03494

	Raw AWCA		Absolute AWCA		Positive AWCA		Negative AWCA	
	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value
Per_1	–0.866	0.389	–0.092	0.927	–0.942	0.352	–1.645	0.106
Per_2	–0.921	0.361	0.041	0.967	–0.588	0.561	–0.937	0.356
	Raw CA		**Absolute CA**		**Positive CA**		**Negative CA**	
	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value
Per_1	0.175	0.862	0.707	0.482	–0.128	0.899	–1.605	0.114
Per_2	–0.856	0.395	–0.113	0.911	–0.693	0.493	–1.580	0.123

Variable definitions:

AWCA = abnormal working capital accruals scaled by total sales
CA = current accruals scaled by total assets
Per_1 = mean for the first three-year period (years 1 to 3)
Per_2 = mean for the second three-year period (years 4 to 6)

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

TABLE 6
Means and test of equality of means before and after an auditor change
Null hypothesis: means before the change = means after the change

	Raw AWCA	Absolute AWCA	Positive AWCA	Negative AWCA	Raw CA	Absolute CA	Positive CA	Negative CA
Mean pre mandatory	–0.00415	0.06721	0.06350	–0.07086	0.00173	0.04382	0.04430	–0.04363
Mean post mandatory	0.00993	0.07907	0.08525	–0.07232	0.01729	0.05586	0.06138	–0.04791
Mean pre voluntary	0.01447	0.07461	0.08811	–0.06080	0.02151	0.05478	0.06676	–0.03882
Mean post voluntary	0.00695	0.08959	0.10113	–0.07904	0.00199	0.04805	0.05004	–0.04606

Panel A: Mandatory	**Raw AWCA**		**Absolute AWCA**		**Positive AWCA**		**Negative AWCA**	
Alternative hypothesis	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value
pre > post	1.965	0.975	2.335	0.990	3.011	0.999	–0.206	0.418
pre < post		0.025**		0.009***		0.001***		0.582
	Raw CA		**Absolute CA**		**Positive CA**		**Negative CA**	
	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value
pre > post	3.081	0.999	3.185	0.999	3.145	0.999	–0.832	0.203
pre < post		0.001***		0.001***		0.001***		0.797
Panel B: Voluntary	**Raw AWCA**		**Absolute AWCA**		**Positive AWCA**		**Negative AWCA**	
Alternative hypothesis	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value
pre > post	0.423	0.336	–1.166	0.877	–0.620	0.732	1.229	0.111
pre < post		0.664		0.123		0.269		0.889
	Raw CA		**Absolute CA**		**Positive CA**		**Negative CA**	
	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value
pre > post	1.742	0.042**	0.800	0.213	1.203	0.116	0.951	0.172
pre < post		0.958		0.788		0.884		0.828

Variable definitions:

AWCA = abnormal working capital accruals scaled by total sales
CA = current accruals scaled by total assets
pre = mean for the three-year period before the auditor change
post = mean for the three-year period after the auditor change
* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 7
Fixed effects regressions with auditor changes & periods of tenure

Panel A:	**Raw AWCA**	**Absolute AWCA**	**Positive AWCA**	**Negative AWCA**
Constant	0.140	0.144	0.144	–0.093
	(2.66)***	(3.02)***	(2.65)***	(1.32)
DVOL	–0.031	0.044	–0.007	0.006
	(0.61)	(0.96)	(0.12)	(0.11)
POST	0.016	0.008	0.012	0.009
	(2.43)**	(1.27)	(1.55)	(1.21)
DVOL*POST	–0.040	–0.009	–0.027	–0.036
	(2.40)**	(0.60)	(1.39)	(2.05)**
SIZE	–0.004	–0.009	–0.002	0.011
	(0.92)	(2.24)**	(0.42)	(1.75)*
DVOL*SIZE	0.006	–0.000	0.006	0.000
	(1.41)	(0.07)	(1.22)	(0.02)
CFO	–0.921	–0.067	–0.690	–0.567
	(24.75)***	(1.98)**	(12.41)***	(10.99)***
DVOL*CFO	–0.145	–0.166	–0.292	0.005
	(1.79)*	(2.27)**	(2.63)***	(0.05)
LEV	0.026	0.010	–0.020	0.017
	(0.90)	(0.40)	(0.58)	(0.55)
DVOL*LEV	0.005	–0.047	–0.043	0.058
	(0.11)	(1.23)	(0.85)	(1.32)
SALEGR	0.002	0.025	0.020	–0.050
	(0.19)	(2.83)***	(1.18)	(4.19)***
DVOL*SALEGR	–0.053	0.045	0.007	–0.074
	(2.00)**	(1.90)*	(0.20)	(2.76)***
ROA	0.420	–0.174	0.383	0.336
	(7.22)***	(3.32)***	(3.56)***	(5.28)***
DVOL*ROA	0.001	0.155	0.037	0.008
	(0.01)	(1.56)	(0.27)	(0.07)
LAGLOSS	–0.028	0.005	–0.012	–0.019
	(2.76)***	(0.51)	(0.90)	(1.86)*
DVOL*LAGLOSS	0.009	0.023	–0.006	–0.006
	(0.37)	(1.12)	(0.20)	(0.25)
IPO	0.034	0.019	0.023	0.030
	(3.09)***	(1.91)*	(1.93)*	(1.92)*
DVOL*IPO	0.012	0.006	–0.016	0.014
	(0.36)	(0.19)	(0.51)	(0.23)
AGE	0.002	0.002	0.003	0.000
	(2.63)***	(2.50)**	(2.83)***	(0.14)
DVOL*AGE	0.000	0.000	–0.001	–0.000
	(0.02)	(0.18)	(0.76)	(0.13)
BIG	–0.064	0.013	–0.048	–0.056
	(3.59)***	(0.78)	(1.99)**	(3.34)***
Observations	1099	1099	561	538
R-squared	0.48	0.07	0.40	0.37
F test	39.27	3.19	11.60	9.83
Prob > F test	0.00	0.00	0.00	0.00

Variable definitions

AWCA = abnormal working capital accruals scaled by total sales
POST = 1 if the observation belongs to the three-year audit tenure period after the auditor change
DVOL = 1 if the observation belongs to the voluntary change subsample
SIZE = natural logarithm of total sales
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
BIG = 1 if audit firm belongs to the Big-N group, and 0 otherwise

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm, industry and year fixed effects are omitted for readability

TABLE 7 (cont'd)
Fixed effects regressions with auditor changes & periods of tenure

Panel B:	**Raw CA**	**Absolute CA**	**Positive CA**	**Negative CA**
Constant	0.064	0.054	0.024	–0.033
	(2.37)**	(1.60)	(0.67)	(1.03)
DVOL	–0.015	–0.000	–0.033	0.019
	(0.60)	(0.01)	(0.98)	(0.64)
POST	0.008	0.004	0.005	0.008
	(2.30)**	(1.02)	(1.16)	(2.19)**
DVOL*POST	–0.024	–0.007	–0.018	–0.024
	(2.85)***	(0.70)	(1.63)	(2.49)**
SIZE	–0.000	–0.004	0.001	0.006
	(0.05)	(1.29)	(0.36)	(2.31)**
DVOL*SIZE	0.003	0.003	0.005	–0.001
	(1.33)	(0.98)	(1.70)*	(0.49)
CFO	–0.746	–0.100	–0.639	–0.524
	(39.36)***	(4.20)***	(20.91)***	(19.11)***
DVOL*CFO	–0.058	–0.190	–0.102	0.087
	(1.41)	(3.67)***	(1.63)	(1.45)
LEV	0.038	0.060	0.060	–0.001
	(2.61)***	(3.27)***	(2.85)***	(0.05)
DVOL*LEV	–0.009	–0.026	–0.017	0.008
	(0.43)	(0.96)	(0.55)	(0.35)
SALEGR	0.039	0.024	0.074	0.003
	(7.89)***	(3.95)***	(8.48)***	(0.65)
DVOL*SALEGR	0.017	0.015	–0.015	–0.000
	(1.23)	(0.91)	(0.78)	(0.02)
ROA	0.418	–0.064	0.503	0.239
	(14.09)***	(1.72)*	(7.35)***	(7.69)***
DVOL*ROA	–0.057	0.119	–0.039	–0.045
	(1.01)	(1.70)*	(0.47)	(0.70)
LAGLOSS	–0.022	–0.016	–0.015	–0.005
	(4.27)***	(2.48)**	(2.05)**	(0.87)
DVOL*LAGLOSS	0.013	0.000	0.005	0.011
	(1.07)	(0.03)	(0.29)	(0.95)
IPO	0.042	0.040	0.048	0.020
	(7.67)***	(5.80)***	(7.15)***	(2.32)**
DVOL*IPO	–0.011	–0.022	–0.008	–0.003
	(0.61)	(1.00)	(0.42)	(0.15)
AGE	0.000	0.000	0.001	0.000
	(0.28)	(0.96)	(1.08)	(0.56)
DVOL*AGE	0.000	0.000	0.000	0.000
	(0.66)	(0.70)	(0.45)	(0.20)
BIG	–0.024	0.007	–0.013	–0.032
	(2.64)***	(0.65)	(0.82)	(3.78)***
Observations	1099	1099	622	477
R-squared	0.71	0.13	0.63	0.61
F test	104.41	6.23	34.26	22.30
Prob > F test	0.00	0.00	0.00	0.00

Variable definitions

CA = current accruals scaled by total sales
POST = 1 if the observation belongs to the three-year audit tenure period after the auditor change
DVOL = 1 if the observation belongs to the voluntary change subsample
SIZE = natural logarithm of total sales
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
BIG = 1 if audit firm belongs to the Big-N group, and 0 otherwise

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm, industry and year fixed effects are omitted for readability

TABLE 8
Fixed effects regressions with auditor changes & years of tenure

Panel A:	Raw AWCA	Absolute AWCA	Positive AWCA	Negative AWCA
Constant	0.134	0.159	0.154	–0.089
	(2.52)**	(3.32)***	(2.82)***	(1.26)
DVOL	–0.055	0.052	–0.021	–0.030
	(1.08)	(1.12)	(0.38)	(0.54)
TENURE	0.004	0.001	0.002	0.002
	(2.42)**	(0.99)	(1.29)	(1.25)
DVOL*TENURE	–0.006	0.000	–0.005	–0.006
	(1.63)	(0.06)	(1.05)	(1.55)
SIZE	–0.003	–0.010	–0.002	0.011
	(0.66)	(2.43)**	(0.47)	(1.75)*
DVOL*SIZE	0.006	–0.001	0.005	0.001
	(1.33)	(0.17)	(1.15)	(0.20)
CFO	–0.927	–0.061	–0.688	–0.563
	(24.87)***	(1.83)*	(12.30)***	(10.88)***
DVOL*CFO	–0.151	–0.191	–0.286	0.049
	(1.82)*	(2.56)**	(2.54)**	(0.47)
LEV	0.031	0.007	–0.022	0.017
	(1.06)	(0.26)	(0.63)	(0.55)
DVOL*LEV	0.020	–0.053	–0.041	0.051
	(0.47)	(1.37)	(0.80)	(1.15)
SALEGR	0.001	0.025	0.019	–0.049
	(0.06)	(2.84)***	(1.09)	(4.11)***
DVOL*SALEGR	–0.079	0.053	0.004	–0.077
	(2.82)***	(2.12)**	(0.10)	(2.82)***
ROA	0.417	–0.175	0.384	0.333
	(7.17)***	(3.34)***	(3.56)***	(5.22)***
DVOL*ROA	0.041	0.163	0.048	–0.018
	(0.37)	(1.64)	(0.35)	(0.15)
LAGLOSS	–0.028	0.004	–0.012	–0.019
	(2.78)***	(0.45)	(0.87)	(1.79)*
DVOL*LAGLOSS	0.005	0.017	–0.006	–0.008
	(0.21)	(0.79)	(0.20)	(0.34)
IPO	0.036	0.020	0.025	0.030
	(3.38)***	(2.03)**	(2.13)**	(1.93)*
DVOL*IPO	–0.006	0.005	–0.029	–0.003
	(0.17)	(0.17)	(0.90)	(0.05)
AGE	0.002	0.002	0.003	0.000
	(2.56)**	(2.50)**	(2.83)***	(0.14)
DVOL*AGE	–0.000	–0.000	–0.001	–0.000
	(0.27)	(0.12)	(0.79)	(0.16)
BIG	–0.064	0.013	–0.046	–0.056
	(3.59)***	(0.82)	(1.93)*	(3.34)***
Observations	1099	1099	561	538
R-squared	0.48	0.07	0.39	0.36
F test	39.53	3.21	11.19	9.47
Prob > F test	0.00	0.00	0.00	0.00

Variable definitions

AWCA = abnormal working capital accruals scaled by total sales
TENURE = years before and after the auditor change. It takes values from –3 to +3
1 if the observation belongs to the voluntary change subsample
DVOL = natural logarithm of total sales
SIZE = operating cash flow scaled by lagged total assets
CFO = ratio of total liabilities to total assets
LEV = sales growth rate, calculated as the sales in year t minus sales in t–1 and scaled
SALEGR = by sales in year t–1
return on assets, calculated as net income divided by total assets
ROA = 1 if the firm reported negative income in year t–1, and 0 otherwise
LAGLOSS = 1 if the firm had an IPO in year t, and 0 otherwise
number of years since the firm's IPO
IPO = 1 if audit firm belongs to the Big-N group, and 0 otherwise
AGE =
BIG =

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm, industry and year fixed effects are omitted for readability

TABLE 8 (cont'd)
Fixed effects regressions with auditor changes & years of tenure

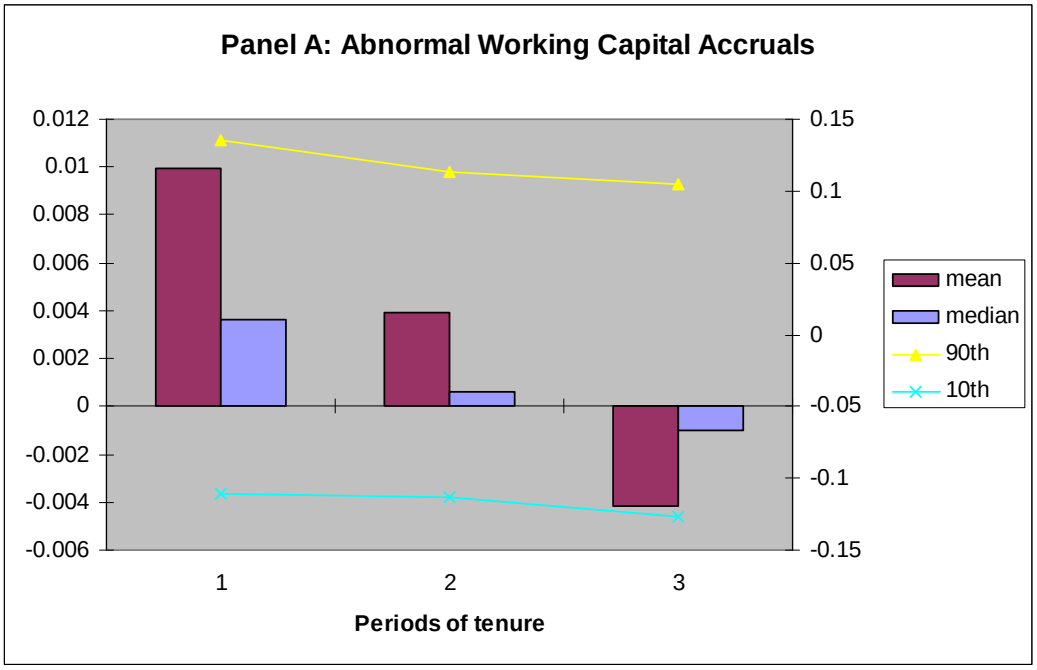
Panel B:	**Raw CA**	**Absolute CA**	**Positive CA**	**Negative CA**
Constant	0.053	0.060	0.027	–0.028
	(2.00)**	(1.77)*	(0.74)	(0.89)
DVOL	–0.036	–0.002	–0.045	–0.003
	(1.39)	(0.05)	(1.32)	(0.11)
TENURE	0.002	0.001	0.001	0.001
	(2.54)**	(0.64)	(0.58)	(1.69)*
DVOL*TENURE	–0.005	–0.000	–0.003	–0.004
	(2.54)**	(0.17)	(1.17)	(1.91)*
SIZE	0.001	–0.004	0.001	0.006
	(0.44)	(1.38)	(0.33)	(2.33)**
DVOL*SIZE	0.003	0.003	0.005	–0.001
	(1.37)	(0.92)	(1.65)	(0.30)
CFO	–0.753	–0.098	–0.639	–0.522
	(40.25)***	(4.11)***	(20.71)***	(18.79)***
DVOL*CFO	–0.054	–0.194	–0.105	0.087
	(1.31)	(3.65)***	(1.63)	(1.45)
LEV	0.043	0.059	0.060	–0.000
	(2.95)***	(3.21)***	(2.84)***	(0.03)
DVOL*LEV	0.006	–0.027	–0.016	0.007
	(0.26)	(1.01)	(0.51)	(0.29)
SALEGR	0.037	0.024	0.074	0.003
	(7.67)***	(3.95)***	(8.47)***	(0.71)
DVOL*SALEGR	–0.012	0.017	–0.016	–0.005
	(0.88)	(0.93)	(0.85)	(0.26)
ROA	0.416	–0.064	0.503	0.239
	(14.24)***	(1.73)*	(7.29)***	(7.62)***
DVOL*ROA	–0.025	0.121	–0.025	–0.044
	(0.45)	(1.73)*	(0.31)	(0.66)
LAGLOSS	–0.022	–0.016	–0.015	–0.005
	(4.36)***	(2.48)**	(1.96)*	(0.94)
DVOL*LAGLOSS	0.011	–0.001	0.005	0.010
	(0.95)	(0.08)	(0.30)	(0.82)
IPO	0.044	0.041	0.050	0.020
	(8.10)***	(5.92)***	(7.36)***	(2.43)**
DVOL*IPO	–0.026	–0.024	–0.019	–0.012
	(1.50)	(1.05)	(0.94)	(0.54)
AGE	0.000	0.000	0.001	0.000
	(0.17)	(0.94)	(1.08)	(0.49)
DVOL*AGE	0.000	0.000	0.000	0.000
	(0.37)	(0.56)	(0.44)	(0.25)
BIG	–0.024	0.008	–0.012	–0.033
	(2.69)***	(0.66)	(0.74)	(3.83)***
Observations	1099	1099	622	477
R-squared	0.72	0.13	0.63	0.61
F test	107.51	6.06	33.71	21.79
Prob > F test	0.00	0.00	0.00	0.00

Variable definitions

AWCA =	abnormal working capital accruals scaled by total sales
TENURE =	years pre (–3,–2,–1) and post (1,2,3) the change of auditor
DVOL =	1 if the observation belongs to the voluntary change subsample
SIZE =	natural logarithm of total sales
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
	1 if the firm had an IPO in year t, and 0 otherwise
IPO =	number of years since the firm's IPO
AGE =	

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm, industry and year fixed effects are omitted for readability

Figure 1: Distribution of accruals by period of tenure



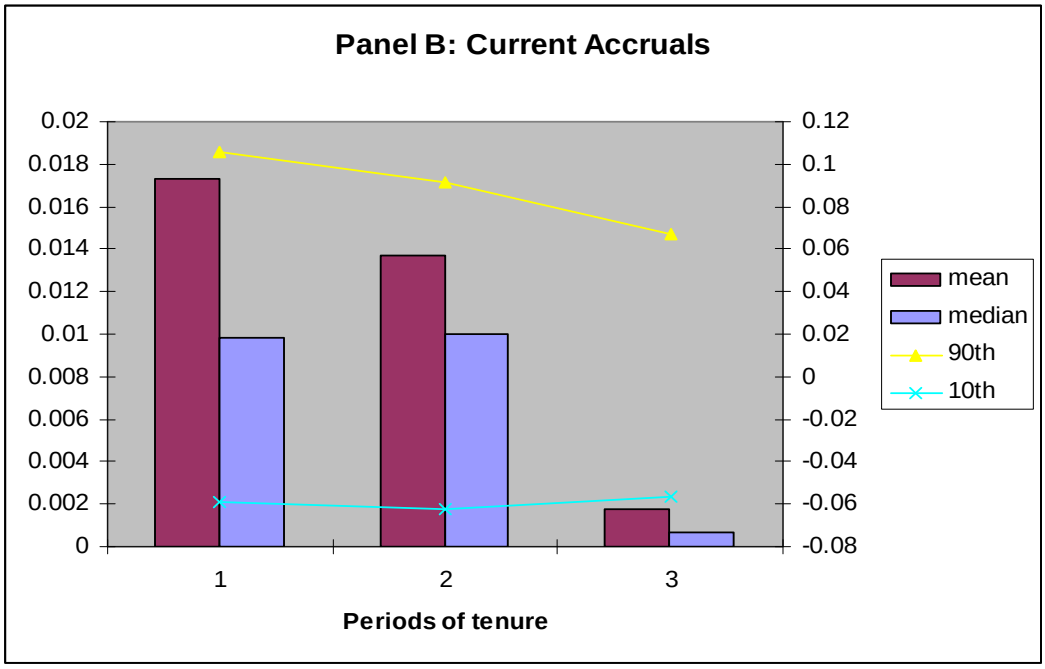
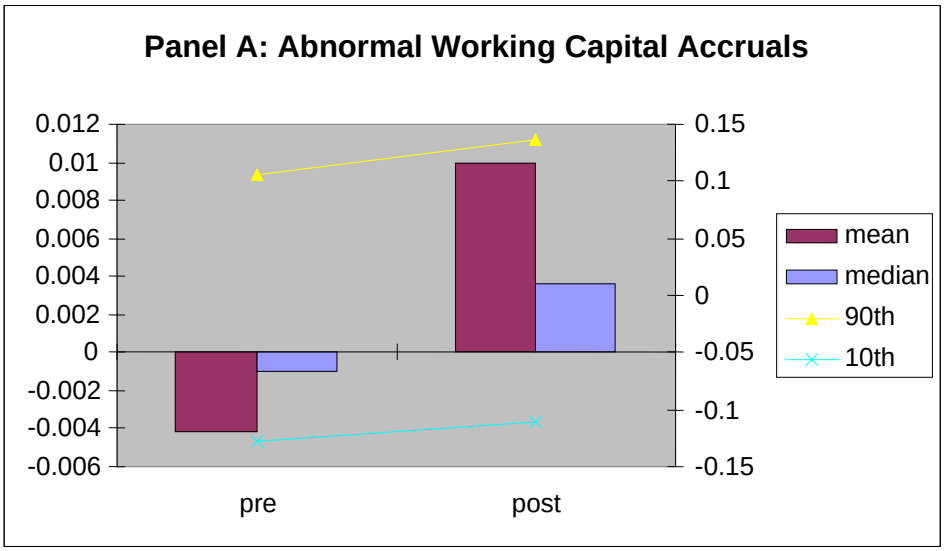


Figure 2: Mandatory auditor changes



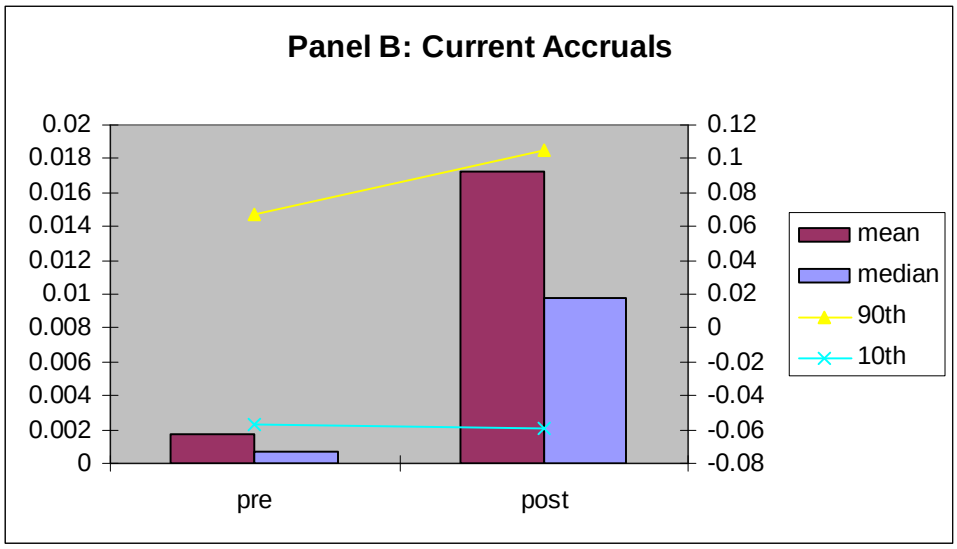
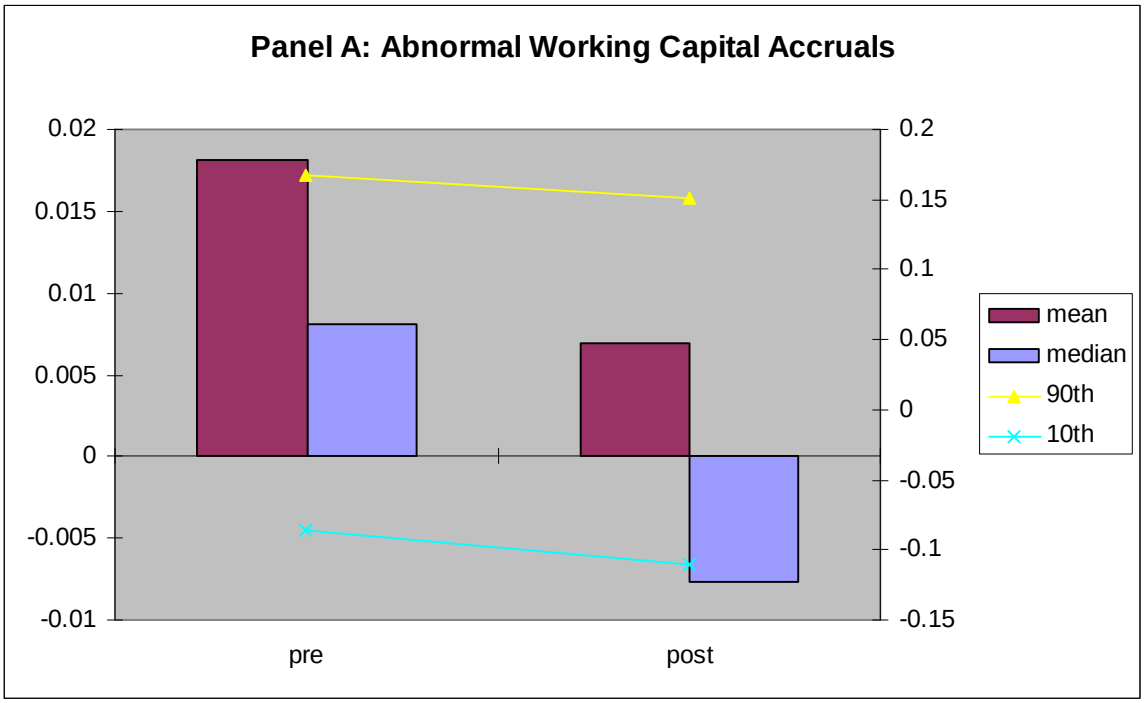
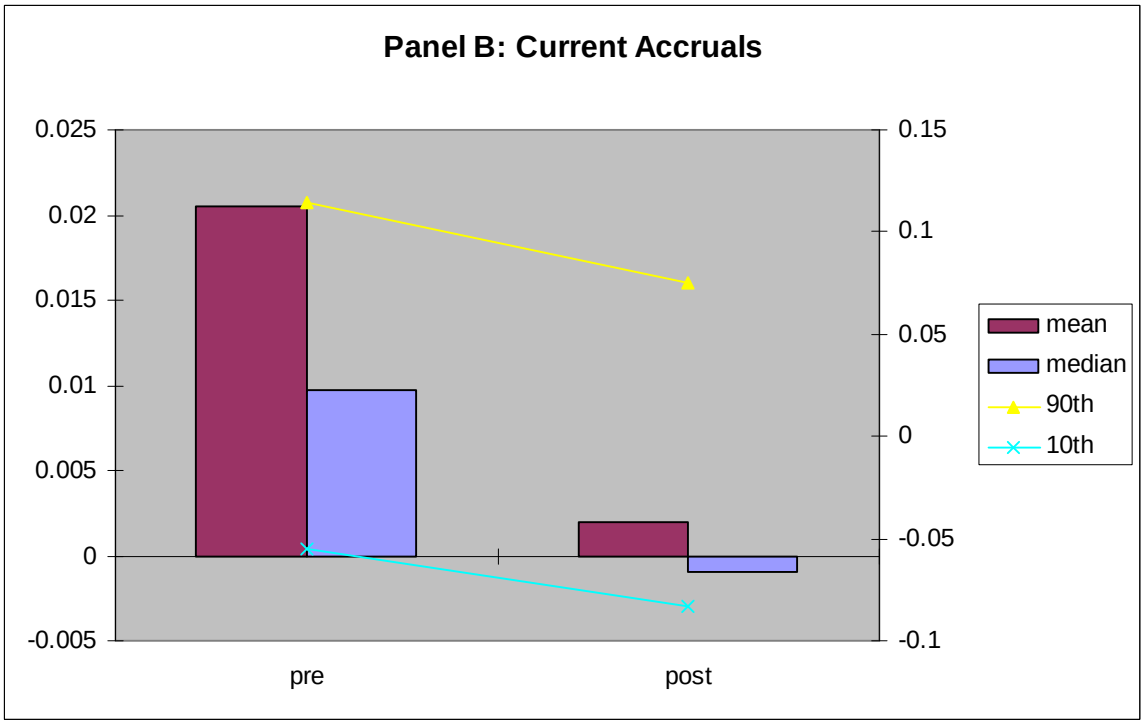


Figure 3. Voluntary auditor changes





APPENDIX

Means and test of equality of means (before the change) between voluntary and mandatory changes
Null hypothesis: means for mandatory changes (MC) = means for voluntary changes (VC)

Variable	Mandatory change	Voluntary change	T-test	P-value MC < VC	P-value MC > VC
SIZE	12.193	12.309	–0.6891	0.245	0.755
CFO	0.0961	0.0696	2.6971	0.996	0.004***
LEV	0.5311	0.5519	–1.0935	0.137	0.863
SALEGR	0.1272	0.0765	1.4639	0.928	0.072*
ROA	0.0208	0.0144	0.8464	0.801	0.199
LAGLOSS	0.1745	0.1102	1.7733	0.962	0.038**
IPO	0.0820	0.0593	0.8604	0.805	0.195
AGE	10.923	7.8983	1.7348	0.958	0.042**

Variable definitions

SIZE = natural logarithm of total sales
CFO = operating cash flow scaled by lagged total assets
LEV = ratio of total liabilities to total assets
SALEGR = sales growth rate, calculated as ($sales_t$ / $sales_{t-1}$ –1).
ROA = return on assets, calculated as net income divided by total assets
LAGLOSS Dummy = 1 if the firm reported negative income in year t–1, otherwise 0
Dummy = 1 if the firm had an IPO in year t, 0 otherwise
IPO = number of years since the firm's IPO
AGE =