Auditor Tenure, Auditor Independence and Earnings Management

Larry R. Davis
Michigan Tech University

Billy Soo
Boston College

Greg Trompeter
Boston College

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This paper examines the relation between the length of auditor tenure and the extent of corporate earnings management. In particular, we test for a relation between the length of auditor tenure and the magnitude of absolute discretionary accruals and forecast errors (defined as actual earnings less earnings forecasts). Using a sample of 855 firms over the period 1981 to 1998, we find a positive relation between tenure and absolute discretionary accruals and a negative relation between tenure and absolute analyst forecast errors. These findings are consistent with management (1) gaining greater reporting flexibility and (2) being able to meet earnings forecasts more easily as auditor tenure increases.

We also examine the relation between auditor tenure and signed discretionary accruals and forecast errors. We find a significant negative relation between tenure and signed discretionary accruals. These results are consistent with management using its reporting flexibility to reduce reported earnings. However, these efforts to reduce earnings did not diminish management's ability to exceed earnings forecasts as we also observe a significant positive relation between tenure and signed forecast errors.

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I. Introduction

In this paper we provide evidence of a relation between the length of auditor tenure and the extent of corporate earnings management. Motivation for this study comes from the Security and Exchange Commission's (SEC) recently expressed concerns about auditor independence and earnings management (c.f. Johnson 1999; Turner 1999; Levitt 1998)

A recent report documenting more than 8,000 breaches of independence requirements at one Big 5 accounting firm was characterized by the Chief Accountant of the Securities and Exchange Commission (SEC) as "*… a sobering reminder that accounting professionals need to renew their commitment to the fundamental principle of auditor independence"* (Fardella 2000 SEC 2000a). Similarly, restatements of corporate earnings in the past few years have been characterized by the SEC as occurring with "alarming frequency" (Johnson 1999). These two issues -- auditor independence and earnings management -- are directly related. Independent audits are intended, in part, to serve as a check on clients' attempts to manage earnings; if auditors are not independent then it is less likely that they will serve as an effective check on earnings management (c.f., Public Oversight Board 2000; Levitt 1998).

Motivated by their concerns about auditor independence, the SEC has taken action to rectify the perceived problem, including the establishment of the Independence Standards Board (ISB) (SEC 1998) and new regulations restricting the types of services that accounting firms may offer to their audit clients (SEC 2000b). Further, the SEC has signaled that additional action

such as mandatory auditor rotation may be forthcoming and called for research into the effects on independence of other dimensions of auditor/client relationships, including the length of auditor tenure (Turner 1999; Turner and Godwin 1999).

As in the past, the accounting profession is generally opposed to increased regulation (c.f. AICPA 1992, Elliot 2000). The profession asserts that there is no evidence that independence has been impaired and that the primary consequence of regulation will be increased costs to clients and investors (AICPA 1997). With respect to auditor tenure in particular, the profession asserts that there is a positive relation between tenure and auditor quality, and that mandatory rotation would most likely impair, not enhance, audit quality (AICPA 1992).

We examine the relation between auditor tenure and earnings management for a sample of 855 firms over the period 1981 to 1998. In particular, we test for a relation between the length of auditor tenure and the magnitude of absolute discretionary accruals and forecast errors (defined as actual earnings less earnings forecasts). We hypothesize that a positive relation between tenure and absolute discretionary accruals is indicative of management gaining greater reporting flexibility the longer the length of the auditor-client relationship. We also hypothesize that a negative relation between tenure and absolute forecast errors is consistent with management being able to meet earnings forecast more easily the longer their relationship with the existing auditor. We find evidence consistent with the above hypotheses.

We then examine the relation between auditor tenure and signed discretionary accruals and forecast errors. We find a significant negative relation between auditor tenure and signed discretionary accruals. These results are consistent with management increasingly using its reporting flexibility to reduce reported earnings. However, these

efforts to reduce earnings did not diminish their ability to exceed earnings forecasts as we also observe a significant positive relation between tenure and signed forecast errors.

Our results contribute to the literature in two ways. First, we provide the first empirical evidence consistent with a relation between auditor tenure and earnings management. This finding is consistent with the SEC's assertion that long-term auditor tenure impairs auditor independence and enables management to engage in more extensive earnings management. The implication is that constraining tenure could act to strengthen auditors' independence and enhance the extent to which audits serve as a check on earnings management. Secondly, our results indicate that, at least for our sample and time period, companies whose auditors have longer tenure are more likely to have greater discretionary accruals which are income decreasing yet are more likely to have actual earnings exceed forecasts. These last two findings provide further evidence that companies with auditors having longer tenure use discretionary accruals to manage earnings to meet forecasts and are consistent with the SEC's concern that companies are using accruals to create 'cookie jar' reserves of earnings for the purpose of earnings management (c.f., Levitt 1998; Davis 1999; Burns 1999).

II. Background

The arguments for and against mandatory rotation of auditors are set forth in reports by Congressional Committees (U.S. Senate 1977), the Commission on Auditor Responsibilities (AICPA 1978), the National Committee on Fraudulent Financial Reporting (AICPA 1987), in an AICPA White Paper (1992), in Brody and Moscove (1998) and in the SEC's recent call for academic research (Turner 1999). These arguments may be summarized as follows:

Proponents of mandatory auditor rotation argue that it provides a 'fresh look' at the company's financial information. They claim that the longer an audit firm retains a client, the less

able it is to maintain objectivity when examining the client's assertions and the more likely it is that there will be undetected errors in the financial statements. The lack of objectivity has multiple sources.

First, it is argued that over time auditors begin to identify with and act as advocates for management. As a consequence, rather than viewing management's assertions with the appropriate professional skepticism, auditors will view them from the perspective of advocates for management.

Second, over time auditors become 'stale' and fail to notice and incorporate into their judgements new evidence or changes in the client's situation. This behavior could result in auditors failing to revise their judgments from prior years about the appropriateness of assertions even though facts and circumstances have changed (e.g., failing to give proper weight to new evidence regarding the probability of a contingent loss).

Lastly, it is argued that the ability to retain clients indefinitely provides incentives for auditors to settle disputes in the client's favor if doing otherwise would result in the loss of the client. This argument is buttressed by research showing that startup costs are incurred by auditors during first year engagements, and that as a result auditors may be able to earn economic rents for subsequent years' audits for as long as they retain the client (DeAngelo 1981, Davis et al. 1993, O'Keefe, et al. 1994).

Opponents of mandatory rotation argue that it does not pass the cost/benefit test. They argue that auditor rotation will result in higher audit costs but few, if any, incremental benefits. Their arguments are as follows:

Increasing the frequency of auditor changes will necessarily increase the frequency with which the startup costs associated with first-year engagements are incurred and, consequently,

increase total audit costs. These higher costs will be passed on by auditors in order to maintain profitability and consequently result in higher audit fees for clients. Clients would suffer additional increased costs due to the periodic need to devote resources to assist auditors in obtaining an understanding of their operations and information systems. Perhaps more importantly, costs would rise as the result of decreased audit quality.

Knowledge of clients' operations and information systems is critical to understanding and identifying sources of audit risk and performing effective audits. Auditors' understanding of their clients increases with tenure. Mandatory rotation would, on average, decrease average auditor tenure, auditors' understanding of client-specific risks and, therefore, decrease average audit quality. Consistent with this assertion, both the Committee on Auditor Responsibility (AICPA 1978) and the National Commission on Fraudulent Financial Reporting (AICPA 1987) found evidence of higher rates of audit failure with new audit clients. More recently, Geiger and Raghunandan (2000) found that "there were significantly more audit reporting failures in the earlier years of the auditor/client relationship" than in the later years.

Opponents of auditor rotation also note that current standards and practice provide many of the benefits that are claimed for rotation. Normal turnover in audit staff and client management, second partner reviews and peer reviews already provide a 'second look' at firms' work. As a consequence, there is little to be gained by yet one more 'fresh look.' Consistent with this argument, Bates, et al. (1982) found that while audit firm rotation may result in lower materiality levels, staff rotation had a similar effect. Further, firms' internal quality control procedures should insure that processes are in place to insure objectivity and prevent complacency when auditing long time clients.

Lastly, the risks associated with performing a substandard audit are so great that they alone are likely to provide sufficient motivation for auditors to maintain their objectivity and independence. Firms failing to maintain independence for an engagement may suffer both direct and indirect losses. A direct loss may result from litigation brought by those to whom the auditor is responsible. Indirect losses may result from loss of reputation. Auditors' reputations for performing quality audits is positively associated with their ability to earn higher fees and attract clients (Francis and Simon 1987; Balvers et al. 1988; Beatty 1989; Craswell et al. 1995). A loss of reputation through disclosure of substandard audit performance impairs a firm's ability to attract clients and earn higher fees (Davis and Simon 1992; Wilson and Grimlund 1990; Firth 1990).

Interestingly, given the disagreement about the effects of audit firm rotation and the periodic surfacing of this issue in discussion about governmental and professional regulation of accountants, there is little direct empirical or experimental evidence about the effects of rotation on audit quality or costs. As discussed above, prior findings are consistent with many of the arguments for and against auditor rotation. However, with the exception of the studies by Bates, et al. (1982) and Geiger and Raghunandan (2000), there is no empirical research that directly addresses the concerns that have been expressed about the effect of audit firm rotation on audit quality, including the relationship between auditor tenure and earnings management.[1]

III. Hypotheses

One view of discretionary accruals is that they allow managers to more precisely communicate the value of the firm to investors. Under this view, managers use discretionary accruals "to produce a more reliable and more timely measure of firm performance" (Guay et al. 1996). Alternatively, discretionary accruals can be used opportunistically to conceal actual performance. Under this perspective, accruals can be

used to either hide poor performance by increasing revenue or reducing expenses or, as suggested by DeFond and Park (1997), they can also be used to reduce reported income to "save current earnings for possible use in the future".

Recently the SEC has called the neutrality of reported earnings into question (Levitt 1998). These statements have noted the market's tendency to punish firms that are unable to achieve forecasted earnings and expressed increased concern over the perception that management uses accounting accruals to manipulate earnings in order to achieve those forecasts.

If the independent audit effectively serves as a check on management's ability to manage earnings through the accrual process, then there is no reason to expect, *a priori*, an auditor's length of association with a given client to be associated with the client's level of discretionary accruals. However, if increased auditor tenure does enhance management's ability to use discretionary accruals to manage earnings, then the absolute value of discretionary accruals should be positively associated with auditor tenure. The use of the absolute value allows the analysis to capture unexpected accruals in either direction--income increasing or income reducing.

H1a *Auditor tenure is not related to the absolute value of discretionary accruals.*

We expect that a high quality audit effectively curtails the client's ability to manage earnings with respect to analysts' forecasts. If increased audit tenure reduces audit quality then we expect auditor tenure to be associated with forecast error. Specifically, greater auditor tenure would be associated with an increased ability for the client to manage reported earnings to meet forecasted earnings, thus resulting in a smaller absolute value of forecast error.

H1b *Auditor tenure is not related to the absolute value of forecast error.*

Prior research has found a great tendency for management to overstate earnings (DeFond and Jiambalvo, 1991, 1993; Kinney and Martin 1994). Becker et al. (1998) focused on the use of discretionary accruals to inflate income and found that clients engaging lower quality (defined as non-Big Six) auditors were associated with significantly greater earnings management than were clients engaging higher quality (defined as Big Six) auditors. Burgstahler and Dichev (1997) find that there is a disproportionately high frequency of firms that report small increases in earnings and positive income and unusually low numbers of firms with small decreases in earnings or losses. If firms are motivated to increase earnings and longer auditor tenure is associated with a greater ability to use discretionary accruals to inflate earnings, then audit tenure should be associated with the use of discretionary accruals to inflate income.

The incentive to increase earnings may not be present across all firms. The earlier studies tend to focus on firms that are unprofitable or financially distressed. Watts and Zimmerman (1980), however, argue that large, profitable firms are more inclined to reduce earnings in order to minimize political costs. DeFond and Park (1997) also find evidence consistent with managers using discretionary accruals to smooth income. Specifically, they find that managers report income decreasing (increasing) discretionary accruals when current year's earnings are above (below) expectations but next year's earnings are below (above) forecasts.

Given the above discussion, a significant positive association between auditor tenure and discretionary accruals would be indicative of an increased ability by management to inflate earnings. Alternatively, a significant negative association would be consistent with management having a greater ability to bank excess earnings as the length of the auditor's tenure increased.

H2a *Auditor tenure is not related to signed discretionary accruals*.

Similarly, assuming that an audit effectively curtails the client's ability to manage earning with respect to analyst's forecasts, there should be no systematic relation between auditor tenure and forecast error. However, if increased auditor tenure results in a lower quality audit, then we would expect that managers are better able to meet or exceed earnings forecasts. We therefore predict a positive relation between auditor tenure and signed forecast error.

H2b *Auditor tenure is not related to signed forecast error.*

IV. Sample Selection and Variable Measurement

The sample consists of all firms with SIC codes less than 6000 and having complete auditor, audit opinion and accruals data over the period 1980-1998 from Compustat. We impose an industry requirement because accrual estimation is problematic for financial and service firms. For firms with complete accruals data but missing or incomplete auditor and audit opinion information, we supplement the auditor and audit opinion data using LEXIS/NEXIS and NAARS. This was necessary in order to distinguish among similarly coded modified opinions and non-Big 5 auditors. In particular, all modified opinions (Compustat Auditor Opinion Codes 2, 3, 4 and 5) were examined in order to identify opinions qualified due to contingency or going concern uncertainty. Because Compustat did not differentiate among non-Big 5 auditors prior to 1988 (and only identifies the 16 largest non-Big 5 auditors commencing in 1988), all similarly coded non-Big 5 auditors were specifically identified in order to distinguish auditor changes from lateral switches among non-Big 5 auditors. There were 855 firms with complete accrual, auditor and audit opinion data.

Measurement of Tenure

In order to accurately measure the length of auditor tenure, the exact year when an auditor is employed would need to be determined. This is not a problem for firms that experience an auditor change at any point during the period examined. However, for firms that employ a single auditor throughout the period examined (as well as for firm-years prior to the first identified auditor change), precise determination of the length of auditor tenure is not possible with the available data. Thus, in order minimize the effects of any potential measurement error of auditor tenure, we construct two subsamples and conduct tests separately as well as in combination.

The first sub-sample consists of 589 firms that employ a single auditor throughout the period 1980-98. For these firms, without loss of generality, we code 1981 as the first year of auditor tenure and add one for each subsequent year. Note that the tenure variable captures the *average incremental* impact of a year of auditor tenure on earnings management. The exact year of tenure is therefore not important ***cross-sectionally*** for so long as the increment per year of tenure is consistent for each firm.

The second sub-sample consists of the remaining 266 firms that employed more than one auditor during the period examined, and includes only the firm-years subsequent to their first auditor change. Because these firms experience at least one auditor change during the period examined, we can no longer equally code tenure as one for all 1981 observations and the first year of an auditor change. Therefore, for these firms, we exclude all firm-year observations prior to the first auditor change (for which we can not determine accurately what the auditor tenure is).

Accruals Estimation

Total accruals (TA) is measured over the period in a manner consistent with that of previous accruals studies (Jones 1991, Dechow *et al.* 1995, Guay *et al.* 1996, DeFond and Park 1997):

$$TA_{it} = \Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta CPLTD_{it} - DEPN_{it} \quad (1)$$

where:

ΔCA_{it} = change in current assets for firm i in year t;
ΔCL_{it} = change in current liabilities for firm i in year t;
$\Delta CASH_{it}$ = change in cash and marketable securities for firm i in year t;
$\Delta CPLTD_{it}$ = change in current portion of long-term debt for firm i in year t;
$DEPN_{it}$ = depreciation and amortization expense for firm i in year t.

Guay *et al.* (1996) and Dechow *et al.* (1995) show that the Jones (1991) and a modified version of the Jones (1991) model are the best models for measuring discretionary accruals and detecting earnings management, respectively. In our sample, discretionary accruals measured under the original and modified versions of the Jones (1991) model have a correlation coefficient of 0.94, producing highly similar results. For better comparability with previous accrual studies, we limit our subsequent discussion to those based on the original Jones (1991) model.

Consistent with Subramanyam (1996) and DeFond and Subramanyam (1996), the discretionary component of total accruals (DA) was estimated from the following Jones (1991) model:

$$DA_{it}/A_{i,t-1} = TA_{it}/A_{i,t-1} - [ß_o\ (1/A_{i,t-1}) + ß_1\ (PPE_{it}/A_{i,t-1}) + ß_2\ (\Delta REV_{it}/A_{i,t-1})] \quad (2)$$

where
DA_{it} = discretionary accruals for firm i in year t;
$A_{i,t-1}$ = total assets for firm i in year t-1;
PPE_{it} = gross property, plant and equipment for firm i in year t;
ΔREV_{it} = change in annual net revenue for firm i in year t.

where $ß_o$, $ß_1$ and $ß_2$ were obtained from the following cross-sectional, industry (two-digit SIC code) and year-specific estimates of the following equation:

$$TA_{it}/A_{i,t-1} = ß_o\ (1/A_{i,t-1}) + ß_1\ (PPE_{it}/A_{i,t-1}) + ß_2\ (\Delta REV_{it}/A_{i,t-1}) + e_{it} \quad (3)$$

Nine additional firms were eliminated because there was insufficient industry data to estimate the coefficient parameters for all years. To eliminate the effects of outliers, we drop all firm-years with discretionary accrual estimates in excess of the top and bottom 1% of all observations. Because the accruals calculation required lagged variables, the period examined covers only the period 1981-98. This resulted in a final sample of 12,892 firm-years representing 846 firms (585 and 261 firms for the single and multiple auditor subsamples, respectively).

Sample Characteristics

Table 1 provides some descriptive information about the number and type of auditors and audit opinions. Panel A classifies the sample according to the number of auditors employed by each firm over the period 1981-98. A large majority (585 firms, representing 69.1% of the sample) had the same auditor over the entire 18 year-period. Two hundred firms had two auditors (23.6%) and 52 firms had three auditors (6.1%). The remaining nine firms had four or more auditors over the period with a maximum of six auditors employed by any firm over the period (by two firms, 0.2% of the sample).[2] Panel B provides a distribution by auditor types. Almost 95% of the firm-years (12,221 firm-years) were audited by a Big 5 auditor, followed by national non-big 5 auditors (386 firm-years, 3.0% of the sample) and local auditors (285 firm-years, 2.2% of the sample).[3] Panel C provides a distribution of audit opinions. An unqualified (clean) opinion was received in 87.2% of the years. This was followed in frequency by modified opinions

arising from a change in accounting principle (8.6%), contingency (2.3%) and going concern uncertainty (1.5%), respectively. A small percentage (0.4%) included cases where there were disclosures involving a change in operations (typically after a reorganization), exceptions arising from failure to disclose segment information, and reliance on other auditor's opinion or scope limitation.

Table 2 provides some descriptive statistics on the sample as a whole and by sub-samples. Parametric t-tests and non-parametric Wilcoxon Z-scores comparing the two sub-samples are reported in the last column of table 2. Not surprisingly, we observe significant differences between the two sub-samples. Firms that employ a single auditor are significantly larger in terms of total assets, but are less leveraged than multiple auditor firms using both parametric and non-parametric tests (at less than the 1% significance level, two-tailed test). Because of the size difference, all subsequent financial variables are scaled by total assets. Single auditor firms are also more profitable and generate greater cash flow than multiple auditor firms. These results are not surprising given previous studies that have shown that financially distressed firms are more likely to switch auditors (Schwartz and Menon, 1985). Interestingly, although there is no significant difference in total accruals between the two sub-samples (mean of -0.037 versus –0.033), single auditor firms report greater unstandardized and standardized discretionary accruals than multiple auditor firms (0.042 vs. 0.008 and 0.228 vs. –0.304, respectively, significant at the 5% level or better, two-tailed tests).[4] On an absolute basis, however, the relation reverses as multiple auditors now have greater absolute total and discretionary accruals than single auditor firms (significant at the 1% level for absolute total accruals but significant only at the 10% level using parametric t-tests for absolute

discretionary accruals). These preliminary univariate results suggest that although multiple auditor firms have more discretion (in terms of having greater absolute accruals) than single auditor firms, the former tends to report more income-decreasing accruals.

Comparing audit-related characteristics of the sub-samples, we find that single auditor firms have an average auditor tenure of 9.5 years, which is significantly longer than multiple auditor firms' average tenure of 5.7 years. Single auditor firms are also more likely to employ a Big 5 auditor (96.9% vs. 86.4%) and less likely to receive a going concern opinion (0.7% vs. 4.9%). There is no significant difference in the likelihood of receiving a contingency opinion. Overall, the results suggest that firms employing single auditors are economically different and are likely to experience different incentives than those that switch auditors.

V. Empirical Model and Results

Discretionary Accruals Regression Results

We examine first the relation between discretionary accruals and auditor tenure after controlling for factors that have previously been shown to be associated with the level of discretionary accruals. Specifically, we estimate the following models:

$$|DA_{it}/A_{i,t-1}| = \beta_0 + \beta_1 TENURE_{it} + \beta_2 GCU_{it} + \beta_3 CTG_{it} + \beta_4 BIG5_{it} + \beta_5 ATACC_{it} + \beta_6 CFOP_{it} + \beta_7 LASTYR_{it} + \beta_8 FIRSTYR_{it} + \mu_i$$

$$DA_{it}/A_{i,t-1} = a_0 + a_1 TENURE_{it} + a_2 GCU_{it} + a_3 CTG_{it} + a_4 BIG5_{it} + a_5 ATACC_{it} + a_6 CFOP_{it} + a_7 LASTYR_{it} + a_8 FIRSTYR_{it} + e_i$$

where:

TENURE = auditor tenure in years.
GCU = 1 if the auditor issued a going concern uncertainty modification, 0 otherwise.
CTG = 1 if the auditor issued a contingency modification, 0 otherwise.
BIG5 = 1 if the firm employed a Big 5 auditor, 0 otherwise.
ATACC = absolute total accruals scaled by total assets.

CFOP = cash flow from operations scaled by total assets.
LASTYR = 1 if the last year with an auditor, 0 otherwise.
FIRSTYR = 1 if the first year with a new auditor, 0 otherwise.

Our variable of interest is TENURE, which measures the number of years the auditor has been employed by the client. In the case of single auditor firms, this variable is set to one for 1981 and increases by one for each subsequent year. Several variables are included in the model to control for factors other than tenure that may affect the level of discretionary accruals. Francis and Krishnan (1999) observe a higher rate of going concern and contingency opinions for firms with high accruals while DeFond and Subramanyam (1996) find more negative accruals for firms that receive a modified opinion. To control for unusual levels of discretionary accruals attributable to modified opinions, we include separate indicator variables for years when a going concern (GCU) or contingency (CTG) opinion is issued. Becker et al. (1998) and Francis et al. (1999) find that clients of non-big 6 auditors report greater income-increasing discretionary accruals than firms employing big 6 firms. To control for systematic differences in accruals due solely to the type of auditor, we include also an indicator variable that differentiates between big 5 and non-big 5 auditors (BIG5).

As in DeFond and Subramanyam (1996) and Becker et al. (1998), we control for cross-sectional differences in discretionary accruals-generating ability by including the absolute value of total accruals (ATACC). We also include cash flow from operations (CFOP) because DeChow et al. (1995) find it to be significantly negatively related to discretionary accruals. Finally, De Fond and Subramanyam (1996) observe that discretionary accruals are significantly negative in the last year with an auditor but that this recovers in the following year with a successor auditor. To control for any potential

unusual changes in discretionary accruals related to the change in auditors, we include indicator variables for the first and final years with an auditor (FIRSTYR and LASTYR, respectively). Because single auditor firms, by construction, do not experience any auditor changes over the period examined, the model using this sub-sample does not include the FIRSTYR and LASTYR variables.

Table 3 provides a correlation matrix of the independent variables by sub-samples. Pearson correlation coefficients are quite low between most variables. Tenure and the first year indicator variable are significantly negatively correlated (ρ = -0.471 for the multiple auditor sample) as are cash flow from operations and absolute total accruals (ρ = -0.369 and –0.229 for the single and multiple auditor samples, respectively). All other variables have correlation coefficients less than 0.20. Correlations for the sample as a whole are similar and are not reported.

We report the multiple regression results for the combined sample using absolute and signed discretionary accruals as the dependent variables in the first and second columns, respectively, of Table 4. The TENURE variable is significantly positively related to absolute discretionary accruals (at less than the 1% level, two-tailed test). This suggests that the longer the association with the auditor, the greater the amount of absolute discretionary accruals reported by the firm, and is consistent with reporting flexibility increasing with auditor tenure. In the second column, we report the regression results using signed discretionary accruals as the dependent variable. The TENURE variable is now significantly negative (at the 5% level, two-tailed test). This indicates that the longer the association with the same auditor, the smaller (or more negative) the amount of discretionary accruals reported by the firm. Together, the results suggest that

although firms appear to have greater reporting flexibility over time with the same auditor, their tendency is to grow more conservative.

The control variables are generally consistent with previous studies. GCU and CTG are significantly negative (the former only with the signed discretionary accruals model), consistent with the results observed in DeFond and Subramanyam (1996). They conjecture that firms receiving modified opinions are more likely to be in distress and/or subject to high litigation risk, and are likely to report lower accruals. As observed in Becker et al. (1998), the absolute total accruals is positively associated with absolute discretionary accruals, and as observed by DeChow et al. (1995), cash flow from operations is significantly negatively correlated with discretionary accruals. The indicator variables denoting the first and final years of an audit engagement are significantly negatively associated with signed discretionary accruals, with LASTYR's coefficient more negative than FIRSTYR, consistent with the results observed by DeFond and Subramanyam (1996).[5]

The BIG5 variable, however, is positively associated with absolute discretionary accruals (at the 1% level, two-tailed test), and appears inconsistent with what Becker et al. (1998) and Francis et al. (1999) observe. Because of data requirements, our sample consists mostly of Big 5 firms (95% versus 87% for Becker et al. and 72% for Francis et al.) that have survived over a lengthy period of time. The lack of auditor type diversity across our sample as well as the elimination of riskier non-Big 5 firms likely explain this inconsistency.

In Table 5, we report the results from the same regression models estimated separately for the single and multiple auditor sub-samples. The first (last) two columns

are for the single (multiple auditor) auditor sub-sample. The results of the single auditor sub-sample are essentially similar to that of the combined sample. TENURE is significantly positively associated with absolute discretionary accruals and is significantly negatively associated with signed discretionary accruals (at the 5% level or better, two-tailed test). For the multiple auditor sub-sample, however, TENURE is significantly (negatively) associated with discretionary accruals. Although positively related to absolute discretionary accruals, TENURE is not significant at conventional levels. One possible explanation for the weaker results observed in the multiple auditor subsample is that the increased reporting flexibility may not be evident until after a significantly long association with the same auditor. Because the multiple auditor sample experiences a relatively shorter auditor tenure compared to the single auditor group, the increase in reporting flexibility may not be as evident for the multiple auditor subsample. We conduct additional tests later to investigate this potential explanation.

Forecast Sample

We next examine if analysts' forecast errors are associated with auditor tenure. Prior research on analysts' forecasts have generally assumed that earnings are exogenous and focussed on the factors that influence analysts' ability to forecast earnings (e.g., Clement 1997; see Schipper 1991 for a review). Anecdotal evidence, however, suggest that managers strategically aim towards meeting or exceeding earnings forecasts (Levitt 1998). Burgstahler and Dichev (1997), for example, find evidence consistent with earnings being managed to avoid earnings decreases and losses. In light of the stock market's response to earnings disappointments, we hypothesize that managers

strategically report earnings to meet or exceed analysts' forecasts, and that this ability is correlated with auditor tenure.

Analysts' forecast data is obtained from I/B/E/S. There were 733 firms of our discretionary accruals sample that appeared on the I/B/E/S tapes, but only 637 had analysts' forecast data over the period examined. Of these, 476 with 6,556 firm-year observations belonged to the single auditor group and 161 with 1,056 firm-year observations were from the multiple auditor. These represent 63% and 41% of the original accruals data, respectively. The smaller representation from the multiple auditor subsample is not surprising as analysts tend to follow larger, more profitable firms (Brown, Foster and Noreen 1985).

Forecast model:

To investigate management's ability to meet or exceed analysts' forecasts, we estimate the following models:

$$AFE_{i,t} = a_0 + a_1 TENURE_{it} + a_2 HORIZON_{it} + a_3 \#\_ANALYSTS_{it} + a_4 FORSTD_{it} + a_5 SIZE_{it} + e_I$$

$$FE_{i,t} = \beta_0 + \beta_1 TENURE_{it} + \beta_2 HORIZON_{it} + \beta_3 \#\_ANALYSTS_{it} + \beta_4 FORSTD_{it} + \beta_5 SIZE_{it} + e_I$$

where:

FE_{it} = forecast error, calculated as (median consensus analysts' forecast – actual earnings per share)/stock price at the beginning of year t.
AFE_{it} = absolute forecast error.
HORIZON = forecast horizon, equal to the number of months between fiscal year-end and the month when the most recent median earnings forecast was made.
#_ANALYSTS = number of analysts making an earnings forecast for firm i in year t.
FORSTD = forecast dispersion, calculated as standard deviation of earnings forecasts made for firm i.

SIZE = natural logarithm of total assets.

We use the most recent median consensus forecast in our calculation of forecast error. To eliminate the effects of outliers, we winsorize the forecast data at both extremes at the 99% level. Results are similar using mean forecasts and with raw (unwinsorized) data. Prior research has found that the closer the forecast is to the earnings announcement, the smaller the forecast error (Brown et al. 1985; O'Brien 1988). Because the timing of the most recent forecasts varies across firms, we include a control variable, HORIZON, that measures the number of months between the most recent forecast and the fiscal year-end.[6] We also include the number of analysts (#_ANALYSTS) covering a firm, forecast dispersion (FORSTD) and firm size to control for cross-sectional differences in the information environment that may explain variation in forecast accuracy (Atiase 1985; Freeman 1987; Lys and Soo 1995).

Table 6 provides some descriptive statistics on the forecast sample. Panel A reports the forecast characteristics of the combined samples and compares the single and multiple auditor subsamples. There is no significant difference in median absolute forecast error between the subsamples. Consistent with the forecast literature, there is evidence of analyst optimism in earnings forecasts, as the average median forecast error is negative (Fried and Givoly 1982, O'Brien 1988), with the multiple auditor sample showing greater negative bias than the single auditor group (significant at the 1% level, parametric t-tests only). The average forecast horizon for both samples is approximately one month past the fiscal year-end (significantly different at the 5% level between the two subsamples using non-parametric Wilcoxon scores only). The single auditor sample also has statistically higher analysts' coverage (significant at the 1% level, two-tailed

test), which is consistent with the size difference observed in table 2. Forecast dispersion is also slightly higher for the single auditor sample (significant at the 1% level using non-parametric Wilcoxon scores).

Panel B provides the pearson correlation matrix among the independent variables. Correlations are generally low between variables, with the exception of size and tenure and analyst following and firm size, which have correlation coefficients of 0.237 and 0.752, respectively. The latter result is not surprising as larger firms tend to have greater analyst following (O'Brien and Bhushan 1990). The rest of the variables have correlation coefficients less than 0.10.

Table 7 provides the regression results for the combined sample using absolute forecast errors as the dependent variable in the first column and signed forecast errors in the second column. All test statistics were calculated using the White (1980) heteroskedasticity-consistent covariance matrix. TENURE is significantly negatively associated with the absolute forecast error at less than the 1% level (two-tailed test). This is consistent with our hypothesis that the longer the association between the auditor and the client, the easier it is for firms to meet analysts' forecasts and therefore the smaller the absolute forecast error. In the second column, we observe a significantly negative coefficient for TENURE (at the 1% level, two-tailed test) when signed forecast errors are the dependent variable. This is consistent with firms tending to exceed analysts' forecasts as auditor tenure increases and supports our hypothesis that managers are increasingly likely and able to exceed analysts' forecasts as auditor tenure increases. This result holds despite the optimistic bias among analysts and the negative association between discretionary accruals and auditor tenure observed in table 4.

Of the control variables, forecast horizon and dispersion are significantly positively (negatively) related to absolute (signed) forecast error. This is consistent with the results of previous studies that find an inverse relation between forecast accuracy and the forecast horizon and lack of consensus among analysts (Brown et al. 1985; O'Brien 1988). Analyst following is also negatively (positively) related to absolute (signed) forecast error, indicating that the larger the following, the higher the forecast accuracy (and bias). SIZE is significant only for the signed forecast error model, although its results are affected by its collinearity with analyst following.

In Table 8, we report the regression results by subsamples. Results for the single auditor subsample are consistent with those observed for the full sample. TENURE is negatively related to absolute forecast error and is positively related to signed forecast error. This is consistent with managers being able to meet or exceed earnings forecast with greater regularity as their association with the current auditor increases. For the multiple auditor subsample, however, TENURE is only signficantly negatively associated with absolute forecast error (at less than the 1% level, two-tailed test). Although positive, TENURE is not significantly correlated with the signed forecast error. Thus, while there is some evidence that managers are better able to meet analysts' forecasts for the multiple auditor sample, their ability to exceed forecasts is more limited. It should be noted that the multiple auditor sample is less profitable and much more likely to be distressed than the single auditor group. Its ability to increase earnings is therefore much more limited.

Additional Tests

Another explanation for the weaker results observed for the multiple auditor subsample is that the impact of auditor tenure on management's ability to manage

discretionary accruals or earnings to meet or exceed analysts' forecasts may not occur until after a sufficiently long period of association. The single auditor subsample consists of firms that are associated with the same auditor for at least 18 years (and perhaps much longer) whereas the multiple auditor subsample has an average auditor tenure of less than half what we observe for the single auditor group. To investigate this for the two models where tenure was not significant, we reestimate these models for the single auditor sample using multiple tenure variables that capture the incremental impact of auditor tenure on absolute discretionary accruals and signed forecast errors as follows:

$$|DA_{it}/A_{i,t-1}| = a_0 + a_1 TENURE_{it} + a_2\, TENURE*TEN6_{it} + a_3 TENURE*TEN10_{it} + a_4\, TENURE*TEN15_{it} + a_5\, GCUit + a_6 CTG_{it} + a_7 BIG5_{it} + a_8 ATACC_{it} + a_9 CFOP_{it} + a_{10} LASTYR_{it} + a_{11} FIRSTYR_{it} + e_I$$

$$FE_{i,t} = \beta_0 + \beta_1 TENURE_{it} + \beta_2 TENURE*TEN6_{it} + \beta_3 TENURE*TEN10_{it} + \beta_4 TENURE*TEN15_{it} + \beta_5 HORIZON_{it} + \beta_6 \#\_ANALYSTS_{it} + \beta_7 FORSTD_{it} + \beta_8 SIZE_{it} + \mu_i$$

where:

$TEN6_{it}$ = indicator variable assuming the value of one if auditor tenure equals or exceeds 6 years.
$TEN10_{it}$ = indicator variable assuming the value of one if auditor tenure equals or exceeds 10 years.
$TEN15_{it}$ = indicator variable assuming the value of one if auditor tenure equals or exceeds 15 years.

The interaction variables TENURE*TEN6, TENURE*TEN10 and TENURE* TEN15 capture the incremental impact on discretionary accruals and forecast error of auditor tenure falling within the ranges 6-9, 10-14 and 15-18 years, respectively. Thus, the average impact of auditor tenure on discretionary accruals in the first five years is equal to a_1, for years 6-9 is equal to $a_1 + a_2$, for years 10-14 is equal to $a_1 + a_2 + a_3$, and for years 15-18 is equal to $a_1 + a_2 + a_3 + a_4$. Results from these models are provided in Table 9.

In the case of absolute discretionary accruals, we observe significantly positive coefficients for a_1 and a_4, and significantly negative coefficients for a_2 and a_3. This result suggests that while absolute discretionary accruals are positively associated with auditor tenure in the first and final periods under observation in the sample, there is an observed reversal in the middle. Because less than 2% of the multiple auditor subsample has an auditor tenure greater than 15 years, the absence of a significant association between tenure and absolute accruals was likely due to the subsample's smaller representation in the post-15 year period.

In the case of signed forecast errors, we observe a significant relation with auditor tenure only in the latest period. The observed "delayed" response of signed forecast errors to auditor tenure may therefore explain the weaker results found in the case of multiple auditors.

V. Summary and Conclusion

In this study, we report empirical evidence of an association between auditor tenure and discretionary accruals and a link between auditor tenure and forecast errors. Specifically, we find that absolute discretionary accruals increase with auditor tenure, and that absolute forecast errors decline with increases in auditor tenure. These findings are consistent with the claim that long-standing auditors are more likely to allow client management greater latitude in recording accruals to manage earnings in total and meeting analysts' forecasts in particular. These results are consistent with the SEC's claim that auditor independence is impaired by long-term auditor-client relationships.

We further find that as auditor tenure increases the discretionary accruals tend to be more negative. This is consistent with clients using their increased flexibility to

become more conservative--essentially banking earnings for future use. In addition, we find that while forecast errors decline over the length of an auditor's tenure, a client's ability to exceed analysts' forecasts improves with increased auditor tenure.

While these overall findings support the SEC's position, the results are not uniform across subsamples. In particular, the results are less consistent in the 'multiple auditor' subsample. Additional tests suggest that the level of earnings management flexibility experienced by the client is variable over the auditors' tenure. These results may partly explain the findings for the multiple auditor subsample.

These findings have serious implications for the profession. If independence is impaired by long-term relationships between the auditor and the client, then additional regulation may be called for. However, while this paper provides evidence that discretionary accruals and forecast errors are empirically related to auditor tenure, it does not provide evidence that these associations result from impairment of auditor independence. Nevertheless, given the results reported in this paper, further research into the nature of the relationship between auditor tenure and earnings management is called for.

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Table 1
Distribution and Type of Auditors and Audit Opinions[1]

Panel A: Number of auditors per firm

One	585	69.1%
Two	200	23.6
Three	52	6.1
Four	6	0.7
Five	1	0.1
Six	2	0.2
	846	100%

Panel B: Distribution by type of auditor[2]

Big 5	12,221	94.8%
National non-big 5	386	3.0
Local non-big 5	285	2.2
	12,892	100%

Panel C: Distribution by opinion

Unqualified	11,237	87.2%
Modified: Consistency Exception	1,109	8.6
Modified: Contingency	298	2.3
Modified: Going Concern Uncertainty	197	1.5
Modified: Others[3]	51	0.4
	12,892	100%

[1] Sample consists of 12,892 firm-year observations representing 846 distinct firms that had complete accruals, auditor and auditor opinion data over the period 1981-98.

[2] Big 5 firms also include all firms that were previously categorized as Big 8 or Big 6. National non-big 5 auditors include the 16 largest non-big 5 auditors that are identified in Compustat commencing 1988. Data prior to 1988 were coded in a consistent manner.

[3] Others include disclosures on change in operations (20), various exceptions (22), reliance on other auditors (8) and scope limitation (1).

Table 2
Sample Comparisons of Descriptive Variables
Means (Medians)

	Single Auditor	Multiple Auditor	T-statistic	Wilcoxon Z-score
A. Financial characteristics:				
Total assets	2,475.612 (435.591)	999.188 (160.513)	17.341***	22.527***
Liabilities/assets	0.577 (0.561)	0.624 (0.586)	-5.850***	-4.798***
NI before EI/assets	0.060 (0.061)	0.027 (0.048)	11.486***	11.933***
Cash flow/assets	0.097 (0.101)	0.060 (0.079)	10.886***	12.932***
Total accruals/assets	-0.037 (-0.044)	-0.033 (-0.039)	-1.307	1.398
Discretionary accruals/ assets	0.042 (0.014)	0.008 (0.007)	2.875***	2.037**
Standardized discretionary accruals/assets	0.228 (0.089)	-0.304 (0.036)	3.596***	2.167**
Absolute total accruals/ total assets	0.068 (0.056)	0.089 (0.063)	-9.312***	-7.560***
Absolute discretionary accruals/ total assets	0.285 (0.134)	0.303 (0.141)	-1.787*	-1.599
B. Audit/Auditor Characteristics:				
Auditor Tenure	9.546 (10.0)	5.664 (5.0)	41.586***	33.893***
% Big 5 Auditor	96.882	86.399	15.015***	21.394***
% Going Concern Opinion	0.688	4.910	-9.722***	-15.606***
% Contingency Opinion	2.247	2.572	-0.943	-0.981
Number of Observations	10,326	2,566		

Notes:

(1) Total accruals (TA) are calculated from: $TA_{it} = \Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta CPLTD_{it} - DEPN_{it}$

where: ΔCA_{it} = change in current assets for firm i in year t;

ΔCL_{it} = change in current liabilities for firm i in year t;

$\Delta CASH_{it}$ = change in cash and marketable securities for firm i in year t;

$\Delta CPLTD_{it}$ = change in current portion of long-term debt for firm i in year t;

$DEPN_{it}$ = depreciation and amortization expense for firm i in year t.

(2) Discretionary accruals (DA) are estimated from:

$$DA_{it}/ A_{i,t-1} = TA_{it}/A_{i,t-1} - [ß_o (1/A_{i,t-1}) + ß_1 (PPE_{it}/A_{i,t-1}) + ß_2 (\Delta SAL_{it}/A_{i,t-1})]$$

where

DA_{it} = discretionary accruals for firm I in year t;

$A_{i,t-1}$ = total assets for firm i in year t-1;

PPE_{it} = gross property, plant and equipment for firm i in year t;

ΔSAL_{it} = change in annual net sales for firm i in year t.

where $ß_o$, $ß_1$ and $ß_2$ were obtained from the following cross-sectional, industry (two-digit SIC code) and year-specific estimates of the following equation:

$$TA_{it}/A_{i,t-1} = ß_o (1/A_{i,t-1}) + ß_1 (PPE_{it}/A_{i,t-1}) + ß_2 (\Delta SAL_{it}/A_{i,t-1}) + e_{it}$$

(3) Standardized discretionary accruals are calculated from: $DA/\sigma(e)$

where $\sigma(e)$ = estimated standard error from estimating the non-discretionary parameters.

* significant at the 10% level, two-tailed test.
** significant at the 5% level, two-tailed test.
*** significant at the 1% level, two-tailed test.

Table 3
Pearson Correlation Matrix: By Sub-Samples

Panel A: Single auditor sample

	TENURE	GCU	CTG	BIG5	ATACC	CFOP
TENURE	1.000	-0.004	-0.072	0.001	-0.029	0.002
GCU		1.000	-0.013	0.001	0.057	-0.058
CTG			1.000	0.016	0.047	-0.044
BIG5				1.000	0.003	0.023
ATACC					1.000	-0.369
CFOP						1.000

Panel B: Multiple auditor sample

	TENURE	GCU	CTG	BIG5	ATACC	CFOP	LASTYR	FIRSTYR
TENURE	1.000	-0.057	-0.109	0.106	-0.076	0.046	0.001	-0.471
GCU		1.000	-0.037	-0.105	0.145	-0.186	0.102	0.061
CTG			1.000	-0.036	0.045	-0.052	0.094	0.092
BIG5				1.000	-0.059	0.092	-0.095	-0.069
ATACC					1.000	-0.229	0.030	0.065
CFOP						1.000	-0.051	-0.049
LASTYR							1.000	-0.005
FIRSTYR								1.000

Notes:
(1) Panel A correlations are based on 10,326 firm-year observations and panel B correlations are based on 2,566 firm-year observations over the period 1981-98.
(2) Variable definitions:
TENURE = discrete number of years of auditor employment.
GCU = 1 if a going concern opinion was issued; 0 otherwise.
CTG = 1 if a contingency opinion was issued; 0 otherwise.
BIG5 = 1 if auditor was a big 8/6/5 auditor; 0 otherwise.
ATACC = absolute value of total accruals divided by total assets.
CFOP = cash flow from operations divided by total assets.
LASTYR = 1 if the last year of auditor employment; 0 otherwise.
FIRSTYR = 1 if the first year of auditor employment; 0 otherwise.

Table 4
Signed and Absolute Discretionary Accruals Regression Results

Variables	Absolute Discretionary Accruals	Discretionary Accruals
INTERCEPT	0.189***	0.048**
	(10.926)	(2.288)
TENURE	0.003***	-0.002**
	(3.643)	(-1.972)
GCU	-0.020	-0.093**
	(-0.621)	(-2.363)
CTG	-0.059***	-0.061***
	(-2.963)	(-2.504)
BIG5	0.042***	0.029
	(2.684)	(1.564)
ATACC	0.517***	0.131
	(11.287)	(1.525)
CFOP	-0.006	-0.316***
	(-0.192)	(-6.426)
LASTYR	-0.035	-0.076*
	(-0.936)	(-1.730)
FIRSTYR	0.010	-0.059**
	(0.409)	(-2.053)
Adj R^2	0.011	0.007

Notes:
(1) Regression results are based on 12,892 firm-year observations over the period 1981-98. All t-statistics are calculated based on the White (1980) correction for heteroskedasticity. Models estimated for columns (ii) and (ii), respectively, are:

(i) $|DA_{it}/A_{i,t-1}| = b_0 + b_1 TENURE_{it} + b_2 GCU_{it} + b_3 CTG_{it} + b_4 BIG5_{it} + b_5 ATACC_{it} + b_6 CFOP_{it} + b_7 FIRSTYR_{it} + b_8 FIRSTYR_{it} + m_{it}$

(ii) $DA_{it}/A_{i,t-1} = a_0 + a_1 TENURE_{it} + a_2 GCU_{it} + a_3 CTG_{it} + a_4 BIG5_{it} + a_5 ATACC_{it} + a_6 CFOP_{it} + a_7 LASTYR_{it} + a_8 FIRSTYR_{it} + e_{it}$

(2) Discretionary accruals are calculated in a manner discussed in Table 2. Other variables are defined in Table 3.

* significant at the 10% level, two-tailed test.
** significant at the 5% level, two-tailed test.
*** significant at the 1% level, two-tailed test.

Table 5
Absolute and Signed Discretionary Accruals Regression Results by Number of Auditors
Parameters (t-statistics)

	Single Auditor		Multiple Auditor	
Variables	Absolute D. Accruals	Discretionary Accruals	Absolute D. Accruals	Discretionary Accruals
INTERCEPT	0.153***	0.071***	0.246***	0.039
	(6.909)	(2.699)	(8.861)	(1.165)
TENURE	0.004***	-0.002**	0.001	-0.006*
	(4.369)	(-2.240)	(0.287)	(-1.899)
GCU	-0.059*	-0.030	0.000	-0.131**
	(-1.648)	(-0.611)	(0.006)	(-2.419)
CTG	-0.044*	-0.049*	-0.104***	-0.123***
	(-1.818)	(-1.663)	(-4.049)	(-3.545)
BIG5	0.060***	0.015	0.036	0.026
	(3.023)	(0.651)	(1.400)	(0.858)
ATACC	0.590***	0.104	0.316***	0.241***
	(11.465)	(0.897)	(4.002)	(2.687)
CFOP	0.002	-0.294***	0.013	-0.395***
	(0.058)	(-4.416)	(0.262)	(-6.341)
LASTYR	-	-	-0.051	-0.041
			(-1.302)	(-0.904)
FIRSTYR	-	-	-0.018	-0.046
			(-0.638)	(-1.363)
Adj R^2	0.014	0.005	0.004	0.017

Notes:
(1) Regression results are based on 10,326 and 2,566 firm-year observations for firms with a single and multiple auditors, respectively, over the period 1981-98. Models estimated are:

(ii) $\mathbf{DA_{it}/A_{i,t-1} = a_0 + a_1 TENURE_{it} + a_2 GCU_{it} + a_3 CTG_{it} + a_4 BIG5_{it} + a_5 ATACC_{it} + a_6 CFOP_{it} + a_7 LASTYR_{it} + a_8 FIRSTYR_{it} + e_{it}}$

(ii) $\mathbf{|DA_{it}/A_{i,t-1}| = b_0 + b_1 TENURE_{it} + b_2 GCU_{it} + b_3 CTG_{it} + b_4 BIG5_{it} + b_5 ATACC_{it} + b_6 CFOP_{it} + b_7 LASTYR_{it} + b_8 FIRSTYR_{it} + m_{it}}$

(2) T-statistics are calculated based on the White (1980) correction for heteroskedasticity.
(3) Discretionary accruals are calculated in a manner discussed in Table 2. Other variables are defined in Table 3.

* significant at the 10% level, two-tailed test.
** significant at the 5% level, two-tailed test.
*** significant at the 1% level, two-tailed test.

Table 6
Descriptive Statistics on Forecast Sample
Means (Medians)

	Combined Samples	Single Auditor	Multiple Auditor	T-stat Wilcoxon Z
A. Forecast characteristics:				
Median forecast error/	-0.004	-0.004	-0.008	3.035***
Begin. of year stock price	(0.000)	(0.000)	(0.000)	0.372
Absolute median forecast error/	0.016	0.016	0.018	-0.986
Begin. of year stock price	(0.003)	(0.003)	(0.003)	-1.544
Forecast horizon	-1.048	-1.058	-0.983	-1.483
	(-1.000)	(-1.000)	(-1.000)	-2.074**
Number of analysts	11.843	12.306	8.970	12.310***
	(9.0)	(10.0)	(6.0)	11.939***
Forecast dispersion	0.132	0.134	0.117	0.819
	(0.040)	(0.040)	(0.030)	3.738***
Number of Observations	7,612	6,556	1,056	

B. Correlation matrix

	TENURE	HORIZON	#_ANALYSTS	FORSTD	SIZE
TENURE	1.000	0.067	0.046	-0.047	0.216
HORIZON		1.000	-0.024	-0.008	-0.027
#_ANALYSTS			1.000	-0.019	0.752
FORSTD				1.000	0.026
SIZE					1.000

Notes:
(1) Descriptive statistics are calculated based on 7,612 firm-year observations over the period 1981-98.
(2) Forecast error is calculated as the difference between actual earnings per share and median forecasted earnings per share, divided by the stock price as of the beginning of the fiscal year. Other variable definitions:

TENURE = discrete number of years of auditor employment; for single auditor sample, tenure is set to 1 for 1981 and increases by one for each subsequent year.
HORIZON = forecast horizon, equal to the number of months between fiscal year-end and the month when the most recent median earnings forecast was made.
#_ANALYSTS = number of analysts making an earnings forecasts for firm i in year t.
FORSTD = standard deviation of earnings forecasts made for firm i.
SIZE = natural logarithm of total assets.

Table 7
Forecast and Absolute Forecast Error Regression Results

Variables	Absolute Forecast Errors	Forecast Errors
INTERCEPT	0.035***	-0.019***
	(6.741)	(-8.634)
TENURE	-0.001***	0.000***
	(-7.731)	(4.497)
HORIZON	0.003	-0.003***
	(1.076)	(-3.926)
#_ANALYSTS	-0.001***	0.000*
	(-6.267)	(1.769)
FORSTD	0.027**	-0.006**
	(2.327)	(-2.485)
SIZE	0.001	0.001***
	(0.554)	(3.350)
Adj R^2	0.048	0.047

Notes:
(1) All regression results are based on 7,612 firm-year observations over the period 1981-98. The models estimated are:

(i) $FE_{i,t} = a_0 + a_1 TENURE_{it} + a_2 HORIZON_{it} + a_3 \#\_ANALYSTS_{it} + a_4 FSTDV5_{it} + a_5 SIZE_{it} + u_{it}$

(ii) $|FE_{i,t}| = b_0 + b_1 TENURE_{it} + b_2 HORIZON_{it} + b_3 \#\_ANALYSTS_{it} + b_4 FSTDV5_{it} + b_5 SIZE_{it} + u_{it}$

(2) T-statistics are calculated based on the White (1980) correction for heteroskedasticity.
(3) Variable definitions:

FE = forecast error, equal to the difference between actual earnings per share and the most recent median earnings forecast prior to the earnings announcement, scaled by stock price at the beginning of the year.

Other variables are defined in Table 6.

* significant at the 10% level, two-tailed test.
** significant at the 5% level, two-tailed test.
*** significant at the 1% level, two-tailed test.

Table 8
Forecast and Absolute Forecast Error Regression Results by Number of Auditors

	Single Auditor		Multiple Auditor	
Variables	Absolute Forecast Error	Forecast Error	Absolute Forecast Error	Forecast Error
INTERCEPT	0.032***	-0.017***	0.057***	-0.030***
	(5.841)	(-7.403)	(5.225)	(-4.457)
TENURE	-0.001***	0.000***	-0.001***	0.000
	(-7.123)	(4.148)	(-2.588)	(0.507)
HORIZON	0.002	-0.003***	0.009***	-0.003
	(0.498)	(-3.608)	(2.773)	(-1.578)
#_ANALYSTS	-0.001***	0.000	-0.001***	0.000
	(-5.662)	(1.391)	(-2.842)	(1.447)
FORSTD	0.027**	-0.006**	0.019	-0.011
	(2.145)	(-2.264)	(1.372)	(-1.321)
SIZE	0.001	0.001***	-0.003**	0.003**
	(0.826)	(2.479)	(-2.054)	(2.537)
Adj R^2	0.047	0.043	0.131	0.061

Notes:
(1) All regression results are based on 6,556 and 1,056 firm-year observations for firms with a single and multiple auditors, respectively, over the period 1981-98. The models estimated are:

(i) $FE_{i,t} = a_0 + a_1 TENURE_{it} + a_2 HORIZON_{it} + a_3 \#\_ANALYSTS_{it} + a_4 FSTDV5_{it} + a_5 SIZE_{it} + u_{it}$

(ii) $|FE_{i,t}| = b_0 + b_1 TENURE_{it} + b_2 HORIZON_{it} + b_3 \#\_ANALYSTS_{it} + b_4 FSTDV5_{it} + b_5 SIZE_{it} + u_{it}$

(2) T-statistics are calculated based on the White (1980) correction for heteroskedasticity.
(3) Variables are defined in Table 6.

* significant at the 10% level, two-tailed test.
** significant at the 5% level, two-tailed test.
*** significant at the 1% level, two-tailed test.

Table 9
Single Auditor Regression Results of Multiple Tenure Variables
Parameters (t-statistics)

Variables	Absolute D. Accruals	Signed Forecast Errors
TENURE	0.056***	-0.001
	(9.278)	(-0.881)
TENURE6*TENURE	-0.038***	0.000
	(-8.465)	(0.614)
TENURE10*TENURE	-0.008***	0.000
	(-5.368)	(1.496)
TENURE15*TENURE	0.002**	0.000***
	(2.443)	(3.099)
Adj R^2	0.028	0.044

Notes:
(1) Regression results are based on 10,326 and 6,556 firm-year observations for single auditor firms with accruals and forecast data, respectively, over the period 1981-98. Models estimated are:

(i) $\left| DA_{it}/A_{it-1} \right| = a_0 + a_1 TENURE_{it} + a_2 TENURE*TEN6_{it} + a_3 TENURE*TEN10_{it} + a_4 TENURE*TEN15_{it} + a_5 GCUit + a_6 CTG_{it} + a_7 BIG5_{it} + a_8 ATACC_{it} + a_9 CFOP_{it} + a_{10} LASTYR_{it} + a_{11} FIRSTYR_{it} + e_i$

(ii) $FE_{i,t} = \beta_0 + \beta_1 TENURE_{it} + \beta_2 TENURE*TEN6_{it} + \beta_3 TENURE*TEN10_{it} + \beta_4 TENURE*TEN15_{it} + \beta_5 HORIZON_{it} + \beta_6 \#\_ANALYSTS_{it} + \beta_7 FORSTD_{it} + \beta_8 SIZE_{it} + \mu_i$

(2) T-statistics are calculated based on the White (1980) correction for heteroskedasticity.

(3) Variables are defined in Table 3 and 6. Other variable definitions:
TEN6 = indicator variable assuming value of one if tenure equals or exceeds 6 years; 0 otherwise.
TEN10 = indicator variable assuming value of one if tenure equals or exceeds 10 years; 0 otherwise.
TEN15 = indicator variable assuming value of one if tenure equals or exceeds 15 years; 0 otherwise.

* significant at the 10% level, two-tailed test.
** significant at the 5% level, two-tailed test.
*** significant at the 1% level, two-tailed test.

Endnotes

[1] Recent work by Gietzmann and Sen (2000) show analytically that when a client's fees constitute a disproportion of the auditor's revenues, improved incentives for independence outweigh the costs associated with mandatory rotation)

[2] Changes in auditors due to audit firm mergers were not treated as an auditor change.

[3] The period examined includes years prior to the merger of the Big 8 firms. For brevity, we refer to the Big 8, Big 6 and Big 5 firms uniformly as the Big 5. National non-big 5 auditors are defined to be the 16 largest non-big 5 auditors that are specifically identified by Compustat. Because the National non-big 5 firms were not coded separately by Compustat until 1988, we examined the actual audit report for each of the non-big 5 firms prior to 1988 in order to distinguish among the non-big 5 firms during this period.

[4] Standardized discretionary accruals are obtained by dividing discretionary accruals by the standard error obtained during estimation of the parameters of the non-discretionary accruals.

[5] An F-test comparing the two coefficients show no significant difference in magnitudes between the two years (F-stat = 0.079, P(F) = 0.779). This result is inconsistent with what DeFond and Subramanyam (1998) observe but is once again likely due to sample differences. Because of lengthy data requirements, we effectively limit our sample of auditor change firms to those that are most successful. DeFond and Subramanyam (1998) impose no such constraints and are therefore likely to include more firms in distress that are highly motivated to manage accruals.

[6] We also ran the tests using only the earnings forecasts made at year-end and found similar results.