Earnings Quality and Financial Reporting Credibility:

An Empirical Investigation

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First Version: December 1998

This Version: July, 1999

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[*]All authors are at The University of Michigan Business School. We are grateful for the suggestions of Julie Cotter, Patricia Dechow, Dave Wright and two anonymous referees. We thank I/B/E/S for letting us use their analyst forecast data. All errors are our own.

Abstract

Existing research indicates that firms with high accruals are more likely to experience future earnings reversals and SEC enforcement actions for GAAP violations, but that investors do not appear to anticipate these consequences. In this paper, we directly examine the published opinions of two types of professional investor intermediaries to see if they anticipate the consequences of high accruals. First, we examine the earnings forecasts of sell-side analysts. We show that analysts' earnings forecasts do not anticipate the future earnings reversals associated with high accruals. Second, we examine the audit opinions of independent auditors. We find no evidence that auditors signal the higher likelihood of GAAP violations through their audit opinions. Overall, our evidence indicates that even professional investor intermediaries act as if they do not anticipate the consequences of high accruals.

1. Introduction

This paper investigates whether sell-side analysts and auditors identify and communicate information about 'low-quality' earnings to investors. We measure earnings quality using a refined version of the accruals technique employed by Sloan (1996). Specifically, we show that firms with unusually high working capital accruals are more likely to experience declines in subsequent earnings performance and SEC enforcement actions for GAAP violations. We then investigate whether information about the subsequent earnings declines is reflected in analysts' earnings forecasts and whether information about GAAP violations is reflected in auditors' opinions. We find that sell-side analysts' forecast errors are large and negative for firms with unusually high accruals, consistent with analysts failing to anticipate the subsequent earnings declines. We also find that firms with unusually high accruals are less likely to receive a qualified opinion from their auditors, consistent with auditors failing to anticipate the increased likelihood of GAAP violations.

Our evidence complements and reinforces the evidence provided in Sloan (1996). Sloan demonstrates that stocks prices act 'as if' investors do not anticipate the subsequent stock price declines associated with unusually high levels of accruals. However, a limitation of Sloan's study is that the relation between the predictable earnings declines and stock prices could be attributable to unidentified risk factors or unknown research design flaws. We provide direct evidence that sell-side analysts do not fully incorporate the predictable subsequent earnings declines into their forecasts. We also show that auditors do not alert

investors to the increased incidence of GAAP violations associated with high accruals. Our evidence suggests that even professional investment intermediaries who specialize in interpreting accounting information do not identify and communicate information about the subsequent earnings declines. Thus, our evidence supports the hypothesis that investors do not fully anticipate the negative implications of unusually high accruals.

Our evidence also generates insights into the roles played by sell-side analysts and auditors. One interpretation of our results is that sell-side analysts and auditors lack the necessary sophistication to understand the future implications of high levels of accruals. Another interpretation is that sell-side analysts and auditors collude with management to inflate expectations of future earnings by inflating current accruals, current earnings and forecasts of future earnings. Under either of the above interpretations, our results are consistent with related research suggesting that earnings management can be used to boost stock prices around events such as equity issuances [e.g., Rangan (1998), Teoh and Wong (1998)]. Also, under either interpretation, our results call into question the quality of the opinions provided by analysts and auditors.

The next section of this paper develops our hypotheses and research design. Section 3 describes our data and section 4 presents our results. Section 5 concludes the paper.

2. Hypotheses

The question of whether investors 'see through' temporary distortions in accrual accounting numbers is of great interest to both academics and capital market participants. Perhaps Abraham Briloff has been the best known spokesperson for the view that investors are systematically misled by such distortions [e.g., Briloff (1972)]. In the 1970s, academics produced a large body of empirical evidence in support of the claim that stock prices act 'as if' investors are extremely sophisticated and see through accounting distortions. This evidence consisted of demonstrating that stock prices respond to earnings information in a timely manner, and that accounting changes do not lead to direct mechanical effects on stock prices.[1] One possible shortcoming of this research is that it may fail to reject the null hypothesis of market efficiency because of the use of low power tests. For example, the fact that stock prices do not respond mechanically to the earnings effects of a FIFO-LIFO switch does not mean that investors also see through more subtle manipulations of revenue recognition or expense capitalization.

More recently, a growing body of evidence has documented significant rejections of market efficiency in favor of the alternative hypothesis that investors respond to current earnings without fully appreciating the implications of the current accounting choices for future earnings and cash flows. For example, Sloan (1996) finds firms with high levels of current accruals experience systematic reductions in future earnings and that stock

[1] See Watts (1986) for a review of this research.

prices act 'as if' investors do not anticipate the future earnings declines. He finds that the stock prices of firms with high accruals subsequently decline, and that the magnitude and timing of the subsequent stock price declines are directly related to the magnitude and timing of the predictable declines in earnings. Subsequent research by Xie (1998) finds that the accruals driving the predictable earnings reversals appear to be attributable to earnings management. In related research, Dechow, Sloan and Sweeney (1996) find that a sample of firms targeted by the SEC for manipulating earnings were able to temporarily raise their stock prices through the use of large positive accounting accruals.

Despite the statistical and economic significance of the recent findings, many academics continue to view the evidence in this area as mixed. For example, in a recent review of earnings management research, Healy and Wahlen (1998) conclude that:

> "Findings on resource allocation effects of earnings management are conflicting, suggesting the need for future empirical and theoretical research on this issue."

Perhaps one reason for this view is academics' reluctance to let go of the efficient markets paradigm, as it provides a convenient and parsimonious framework for understanding capital markets. Academics are also concerned that recent research may suffer from research design biases. In particular, there is concern that the observed stock price behavior may be due to unknown risk factors and/or research design biases, such as survivorship biases.

In this paper, we attempt to surmount the above research design issues by focussing directly on the expectations of professional market intermediaries, rather than relying on stock prices. Stock prices have traditionally been used in research as a measure of the

expectations of sophisticated investors, but stock prices are also potentially affected by risk factors and ex post survivorship biases. Therefore, we focus on directly testing whether professional investor intermediaries anticipate the predictable consequences experienced by firms with high accruals. We focus on two groups of investor intermediaries. The first group that we examine is sell-side analysts, who directly issue their earnings expectations to market participants. The second group that we examine is auditors, who issue an opinion about the fairness of financial statements to investors.

Our hypothesis with respect to sell-side analysts' forecasts is straightforward. We hypothesize that analysts' forecasts of future earnings do not fully reflect the future earnings declines experienced by high accrual firms. Specifically, we predict that analysts' forecast errors (realized earnings minus forecast earnings) are negatively associated with current accruals:

H1: Analysts forecast errors with respect to future earnings are negatively associated with the level of current accruals.

Evidence that the predictable earnings changes are not incorporated in analysts' forecasts is inconsistent with the alternative risk factor and ex-post survivorship bias explanations that have been used to explain prior stock price results.[2]

Our hypothesis with respect to auditor opinions is also straightforward. Dechow, Sloan and Sweeney (1996) demonstrate that firms with high accruals are more likely to be subject to an SEC enforcement action for GAAP violations. We replicate and extend

their analysis on our sample and confirm that high accruals are associated with a higher incidence of SEC enforcement actions for GAAP violations. If auditors fail to use information in accruals to identify GAAP violations, then high accruals will not be associated with a greater frequency of qualified opinions. Hence, we hypothesize that auditors are not more likely to issue qualified audit opinions to firms with high accruals, despite the fact that these firms are more likely to have committed GAAP violations. This hypothesis can be formally stated in its alternative form as:

H2: There is a positive association between the level of current accruals and the probability that the audit opinion will be qualified.

An issue of interpretation arises with this hypothesis, because our position is supported by a failure to reject the null of no association. Of course, we are not the first to propose providing evidence on a hypothesis by setting it up as the null and then failing to reject that null.[3] However, we want to be open about the fact that our failure to reject could be due to low power rather than because the alternative hypothesis is false. Having said this, the standard errors in our empirical tests are such that power is not an issue – any economically significant relations in the data will certainly achieve statistical significance.[4]

A second limitation of our audit opinion tests is that qualified opinions are infrequent. Evidence suggests that auditors typically resign or are fired before they get to issue a

[2] In an independent and concurrent working paper, Elgers, Lo and Pfeiffer (1999) also examine analysts' ability to incorporate information in accruals in their earnings forecasts. Using a somewhat different research design, they reach the conclusion that analysts do not fully incorporate information in accruals.
[3] Most of the literature in support of the efficient markets hypothesis also employs this approach.
[4] In related research, Francis, Maydew and Sparks (1998) and Becker, Defond, Jiambalvo and Subramanyam (1998) find that firms with 'Big Six' auditors tend to have lower discretionary accruals. One

qualified opinion.[5] The company then 'shops around' for an auditor willing to issue a clean opinion. Consistent with this possibility, Defond and Subramanyam (1998) find that auditor changes are associated with increases in discretionary accruals. Thus, many auditors may incorporate information in accruals, but then resign or are fired before they get to disclose this information in their audit opinions. In order to address this problem, we also examine the relation between accruals and auditor changes. This final hypothesis can be stated in its alternative form as:

H3: There is a positive association between the level of current accruals and the probability of an auditor change.

This hypothesis is also subject to the limitation that our position is supported by a failure to reject the null. However, this limitation is again mitigated by the fact that power is not an issue, given our large sample size.

3. Data

Our empirical tests employ data from three sources. Financial statement data is obtained from the COMPUSTAT annual database. Analyst forecast data is obtained from the I/B/E/S summary statistics file. Finally, data on stock returns is obtained from the CRSP daily stock returns files. Our sample is restricted to the ten-year period beginning in fiscal 1988 and ending in fiscal 1997. The main reason we restrict our sample to post-1987 data is so that we can consistently measure our cash flow and accruals data using FAS 95 data. FAS 95, the standard governing the preparation of the statement of cash

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implication of these results is that firms with large accruals may select lower quality auditors, who are less likely to issue a qualified opinion.

[5] See, for example, 'More Accounting Firms Are Dumping Risky Clients', *Wall Street Journal*, April 25, 1997.

flows, took effect in fiscal 1988. Use of this sample period also allows us to conduct an out of sample test of Sloan's (1996) results, since Sloan restricted his sample to pre-1988 data in order to consistently use pre-FAS 95 data. The use of FAS 95 data makes it more straightforward for us to measure the cash flow and accruals data, but it also makes it more straightforward for investors to identify the differences between the cash flow and accrual components of earnings. Thus, it will be interesting to see whether investors continue to ignore information in cash flows and accruals in the post-FAS 95 period. A final reason for using the post-1987 period is that I/B/E/S forecast data is only available for the very largest firms in the early 1980s, but coverage is much more comprehensive by the late 1980s.

We use two alternative measures of accruals in our empirical tests. The first measure of accruals focuses on working capital accruals:

$Accruals_1$ = Increase in Accounts Receivable (COMPUSTAT data item #302)
+ Increase in Inventory (#303)
+ Decrease in Accounts Payable and Accrued Liabilities (#304)
+ Decrease in Income Taxes Accrued (#305)
+ Increase (Decrease) in Assets (Liabilities) – Other (#307)

Our second measure of accruals measures total net operating accruals:

$Accruals_2$ = Income Before Extraordinary Items (COMPUSTAT data item #123)
- Net Cash Flows from Operating Activities (#308)

In our empirical tests, we deflate both accruals measures by average total assets. There are two key differences between $Accruals_1$ and $Accruals_2$. First, $Accruals_2$ includes a

variety of long-term accruals, such as depreciation of plant and amortization of debt premiums/discounts. These accruals tend to be fairly constant over time and account for little of the variation in total accruals [see Sloan (1996)][6]. Second, $Accruals_2$ includes a variety of 'special' accruals, such as gains and losses on the sale of plant/other investments and accruals associated with restructurings and asset writedowns. These accruals tend to mean revert very quickly, but they are usually flagged as special, non-recurring items on the income statement. Thus, we expect that investors are more likely to anticipate the non-recurring nature of these accruals. Overall, our priors suggest that $Accruals_1$ should do a better job than $Accruals_2$ of capturing the accruals that lead to the earnings reversals that are unanticipated by investors. However, we conduct our initial set of tests with both measures of accruals in order to verify that this is indeed the case.

Our accruals tests also involve the examination of future earnings changes. Following Sloan (1996), we use operating income after depreciation (COMPUSTAT #178) divided by average total assets to measure earnings performance. This definition of earnings excludes special items, and so measures the 'recurring' earnings number that is tracked by analysts and is more highly correlated with stock prices than 'bottom line' measures of earnings that include special items. Our final sample with non-missing accruals, cash flows and earnings data consists of 47,571 firm years. Our stock return tests also require data from the CRSP files. Stock returns are measured using compounded buy-hold returns, inclusive of dividends and other distributions. Market adjusted returns are

[6] Sloan (1996) reports that the most significant source of accrual variation is attributable to movements in receivables and inventories that are not matched by movements in current liabilities. Sloan points out that it is important to look at aggregate working capital accruals rather than individual components in order to identify such mismatches.

calculated by deducting the corresponding return on a value-weighted market portfolio. Size adjusted returns are computed by deducting the corresponding value-weighted return for all available firms in the same size-matched decile, where size is measured using market capitalization. The requirement that CRSP stock return data is available in addition to COMPUSTAT data reduces our sample size to 38,429 observations.

Our analyst forecasts tests are conducted using the median I/B/E/S forecast of annual earnings for the current year. We initially measure the forecast in the month after financial results for the most recent fiscal year have been announced. This is because we want to ensure that the analysts have cash flow and accrual information from the most recent year available to them at the time that they make their forecasts. We then track their forecast errors over the months leading up to the announcement of the current year's earnings. For most firms, this period is 12 months long. Forecast errors are computed by subtracting forecast earnings from realized earnings and dividing by the stock price at the end of the first month in which the forecast is measured (i.e., the month after financial results for the most recent fiscal year have been announced). Imposing the requirement that I/B/E/S forecast data is available reduces the sample size to 22,874 observations.[7]

Data on audit opinions and auditor changes are obtained from the COMPUSTAT tapes. COMPUSTAT provides six codes for the audit opinion – unaudited (#0), unqualified (#1), qualified (#2), no opinion (#3), unqualified with explanatory language (#4) and adverse (#5). Only the unqualified opinion (#1) represents an unambiguous clean

[7] The smaller sample with I/B/E/S data available is only used the analyst forecast tests. The other tests employ all available COMPUSTAT and CRSP data.

opinion from the auditors. We therefore create an audit opinion indicator variable that takes on the value of 0 for an unqualified 'clean' opinion and 1 for any of the other 'dirty' categories. Note that some of the variation in this variable will undoubtedly be attributable to factors other than GAAP violations (e.g., going concern uncertainties and changes in accounting principles). This will reduce the power of our tests, but is not expected to bias our tests in any way. The alternative of manually inspecting all opinions is not cost effective, given that there are over 7,000 'dirty' opinions in our sample.[8] Finally, COMPUSTAT also provides data on the identity of the auditor. We use this data to create a dummy variable coded as 0 if the identity of the auditor is the same as in the previous fiscal year and 1 if there is a change in the identity of the auditor.[9]

4. Results

4.1 ACCRUALS, EARNINGS AND STOCK PRICES

We begin by replicating Sloan's (1996) results using our later time period and our refined measure of accruals. Recall that Sloan's sample period pre-dates the release of FAS 95, while our sample period post-dates FAS 95. Thus, while Sloan imputes accruals using balance sheet data, we are able to take the accruals directly from the statement of cash flows. Table 1 reports our examination of the contribution of the cash flow and accrual components of earnings to the rate of mean reversion in earnings. This is accomplished by regressing next period's earnings on the cash flow and accrual components of this period's earnings. Coefficients between 0 and 1 on each of this period's earnings

[8] We do, however, conduct robustness tests using an alternative measure of our audit opinion variable. Details of these tests are explained in section 4.

components indicate that they contribute to mean reversion in earnings, with a smaller coefficient indicating that the component contributes to more rapid mean reversion. Panel A reports results using continuous variables, while panel B reports results using decile rankings (which are less sensitive to outliers). We also report results using the two accruals definitions. $Accruals_1$ represents recurring working capital accruals, while $Accruals_2$ represents all accruals.

Consistent with Sloan (1996) we find that the coefficients on cash flows and accruals are both between 0 and 1, and that the coefficient on accruals is consistently lower than the coefficient on cash flows. In all regressions, we can easily reject the null of equality on the cash flow and accrual coefficients in favor of the alternative that the coefficient on accruals is less than the coefficient on cash flows. In panel A, where continuous variables are used, the coefficient differential is greatest using $Accruals_2$, while $Accruals_1$ results in the greatest differential in panel B. Further analysis (not reported) revealed that a small number of outliers caused by non-recurring items, such as gains and losses and restructuring charges explained the results for $Accruals_2$ in Panel A. Note that because such accruals are usually explicitly flagged as non-recurring in the income statement, investors are more likely to anticipate their non-recurring nature. We are more interested in understanding whether investors appreciate the more rapid mean reversion attributable to the regular working capital accruals captured in $Accruals_1$. Thus, we anticipate that the $Accruals_1$ variable will have greater predictive ability with respect to future stock returns.

[9] During our sample period, there were several mergers among audit firms. Thus, our procedure will sometimes indicate an auditor change when a merger occurred. This will reduce the power of our tests, but

The results in table 1 are illustrated graphically in figure 1. Figure 1a reports the time-series behavior of earnings for portfolios of high and low earnings firm-years. Firms are assigned to decile portfolios based on the magnitude of earnings in year 0. The graph illustrates that earnings are slowly mean reverting, and that mean reversion is far from complete even after five years. Figures 1b and 1c report the time-series behavior of earnings for portfolios of high and low accrual and cash flow firm-years respectively. Accruals are measured using the $Accruals_1$ variable. Figure 1b illustrates that mean reversion in earnings is rapid for portfolios of firms formed on accruals. There is extreme reversion in the first year, and mean reversion is almost complete after three years. In contrast, figure 1c shows evidence of much slower mean reversion in earnings for accruals formed on cash flows. We next move on to test whether investors anticipate the more rapid earnings mean reversion induced by the accrual component of earnings.

Table 2 reports future stock returns for portfolios of firm-years formed on the magnitude of accruals. Return measurement begins four months after the end of the fiscal year in which accruals are measured, in order to ensure that the accrual information would have been available for investors. Returns are then tracked over the subsequent three-year period. If investors do not anticipate the more rapid mean reversion in earnings associated with extreme accruals, then we expect that the high accrual firms (that experience subsequent earnings declines) will have poor stock price performance. Conversely, the low accrual firms (that experience subsequent earnings increases) will have strong subsequent stock price performance. The results are consistent with this hypothesis. Panel A indicates that the return differential for $Accruals_1$ in the first

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should not bias our results in any way.

subsequent year is at least 12% whether we use raw returns, market adjusted returns of size-adjusted returns. The return differential dissipates rapidly as we move out to year three, by which time the mean reversion induced by accruals has slowed considerably. Similar results are reported in Panel B, where accruals are measured using $Accruals_2$. Note, however, that the return differentials are generally somewhat smaller for $Accruals_2$. This is consistent with the idea that some of these accruals are explicitly flagged as non-recurring in the income statement, and so the subsequent earnings mean reversion attributable to these accruals is better anticipated by investors. Given that $Accruals_1$ better captures accruals that are not explicitly flagged as non-recurring, we use this accruals variable exclusively in our remaining tests.[10]

Table 3 reports formal tests of market efficiency using the framework developed in Sloan (1996). The results just corroborate those presented in Sloan using a completely different sample, and so we discuss them very briefly. Market efficiency is easily rejected, and the results suggest that investors act 'as if' they over-estimate the persistence of the accruals component of earnings. For example, in the panel B results using decile rankings, we find that investors should rationally use a persistence coefficient on accruals of γ_1=0.156, but instead, the expectations embedded in stock prices imply a coefficient of γ_1^*=0.339.[11] By contrast, the implied rational and implied persistence coefficients on cash flows are γ_2=0.311 and γ_2^*=0.338 respectively, indicating that investors expectations correspond closely with the rational expectation. It appears that investors irrationally expect accruals

[10] All results are very similar if we use $Accruals_2$. We limit subsequent results to $Accruals_1$ for brevity.
[11] Note that the estimated coefficients in the forecasting regression reported in table 1 differ slightly from the coefficients in table 3, because the table 3 results are restricted to the sample for which CRSP returns data are available.

to persist about as strongly as cash flows, when in fact they are only about half as persistent.

In summary, the preceding results provide two basic findings. First, we show that Sloan's (1996) results extend to the post-FAS 95 period. Second, we show that we can improve on Sloan's results by focussing on working capital accruals. These accruals are not explicitly flagged as non-recurring in the income statement, and it appears to be these accruals that drive the mean reversion in earnings that is not anticipated by investors.

4.2 ANALYSTS' FORECASTS

In this section, we investigate whether analysts' forecasts of future earnings reflect the predictable mean reversion in earnings associated with high levels of accruals. Our tests are conducted using I/B/E/S consensus (median) forecasts of annual earnings. We measure analysts' expectations of earnings for the forthcoming year immediately following the release of the results for the most recent year. We then stratify the sample based on the magnitude of accruals for the most recent year. If analysts incorporate the predictable mean reversion in earnings associated with accruals, then their forecast errors should not be a function of the magnitude of the most recent year's accruals. If they do not incorporate the information in accruals, then their forecast errors will be more negative (i.e., more overoptimistic) for firms with higher accruals. We also expect that their forecast errors will gradually correct themselves over the course of the subsequent year, as they revise their forecasts in response to earnings reversals that are revealed through subsequent quarterly earnings announcements. Tests using analyst forecast

errors are complicated by the fact that analysts' forecasts are well known to be optimistically biased, resulting in negative average forecast errors [Barefield and Comiskey (1975)]. Thus, our formal tests are restricted to predicting a negative relation between accruals and forecast errors.

Our basic results are illustrated graphically in Figure 2. The graph plots analysts' forecast errors for the current year's earnings over the 12 months following the announcement of the prior year's results. The horizontal axis lists the number of months since the announcement of last year's results. The horizontal axis stops at 12, because most firms have announced their earnings for the subsequent year after 12 months following the announcement of the most recent year's results. The vertical axis lists the forecast error, defined as realized earnings less forecast earnings all divided by price at the end of month 1. The graph plots the behavior of average forecast errors computed for portfolios consisting of firm-years in the highest and lowest deciles of accruals respectively. We also plot the sample average forecast errors as a benchmark. The forecast errors are consistently negative for all portfolios at all points in time. This reflects the well-documented average over-optimism in analysts' forecasts. Consistent with our hypothesis, the forecast error for the high accrual portfolio is larger than the forecast error for the low accrual portfolio at all points in time. Moreover, the magnitude of the difference is greatest in month 1, and gradually declines as the year progresses. This pattern is consistent with our hypothesis that analysts do not initially anticipate the implications of the most recent year's accruals for the subsequent year's earnings. Moreover, analysts gradually appear to realize the implications of accruals for subsequent

earnings as the year progresses. This latter effect is probably due to the gradual release of earnings information through quarterly earnings announcements and preannouncements.

Table 4 provides formal statistical tests of the relation between analysts' forecast errors and accruals. We regress the forecast errors on the decile accrual portfolio ranking assigned to the firm-year. Regressions are conducted for each of the 12 months between the announcement of the most recent years earnings and the announcement of the subsequent year's earnings. The regression intercept, β_0, measures the average forecast error for a low accrual firm-year. The coefficient on the accrual rank, β_1, measures the average incremental forecast error for a high versus a low accrual firm-year. The intercept is significantly negative in month 1, indicating that even low accruals firms have over-optimistic forecasts. However, the magnitude of the over-optimism gradually declines over the next twelve months and is insignificant immediately before the announcement of annual earnings. The coefficient on the accrual portfolio rank is significantly negative in month 1, indicating that the degree of over-optimism is much greater for high accrual firms. The degree of over-optimism associated with high accruals also declines over the course of the twelve months. However, the coefficient is still significantly negative immediately before the announcement of earnings, indicating that part of accrual-related over-optimism remains until earnings have been completely revealed.

The regression coefficient magnitudes provide some indication of the economic significance of the results. The Month 1 regression indicates that a low accrual firm has an average forecast error of –0.0033, while a high accrual firm has an average forecast error of –0.0096 (i.e., -0.0033 + -0.0063). To put these numbers into perspective, the forecast errors are scaled by price and the sample average price-to-earnings ratio is just over 20. Multiplying by an assumed price earnings ratio of 20, these forecast errors translate into 6.6% and 19.2% of reported earnings respectively.

In summary, the results in this section demonstrate that analysts' forecasts do not fully incorporate the predictable earnings reversals associated with extreme levels of accruals. Moreover, the magnitude of this effect is such that the forecast errors for high accrual firms are almost 20% of reported earnings.

4.3 AUDITORS' OPINIONS

Our final set of tests examines whether auditors signal the higher incidence of GAAP violations associated with high accruals through their audit opinions. We begin this section by demonstrating that firms with high accruals are more likely to be subject to SEC enforcement actions for GAAP violations. While these tests represent a relatively straightforward replication and extension of research in Dechow, Sloan and Sweeney (1996), the tests are useful because they provide evidence that firms with high accruals are more likely to be violating GAAP. Given that this is the case, auditors should issue more qualified opinions for high accrual firms <u>if</u> they incorporate information in accruals in reaching their audit opinions. Our basic hypothesis is that audit qualifications are

unrelated to the magnitude of accruals, because auditors do not incorporate information in accruals. In addition to examining the contemporaneous association between audit qualifications and accruals, we also examine subsequent audit qualifications and auditor changes. Our motivation for examining subsequent audit qualifications is to see whether auditors only start issuing more qualified opinions when the subsequent earnings reversals and allegations of GAAP violations that are associated with high accruals begin to materialize. Our motivation for examining auditor changes is based on prior evidence that auditors often resign or are fired by management before they get to the point of issuing a qualified audit opinion. Thus, auditor changes provide an alternative method for auditors to signal their concerns with a company's accounting.

Evidence on the relation between accruals and SEC enforcement actions is provided in table 5. In order to construct these tests, we review all *Accounting and Auditing Enforcement Releases* issued by the SEC and pertaining to our 1988-1997 sample period. Following Dechow, Sloan and Sweeney (1996), we identify all enforcement actions alleging that firms have violated GAAP in a manner that leads to the overstatement of annual earnings.[12] We then link up the GAAP violations to our sample of firm years. Note that only four of the ten years in our sample period overlap with the original Dechow, Sweeney and Sloan paper, so our results serve as a replication and extension of their results.

[12] Many enforcement actions relate only to the manipulation of quarterly earnings. We exclude these from our sample, since the effect of these manipulations is reversed in a subsequent quarter and has no impact on annual earnings.

The first panel of table 5 shows the distribution of alleged annual earnings overstatements. There are 82 overstatements during our ten-year sample period. Panel B reports the mean level of accruals for firms subject to SEC enforcement actions versus the rest of our sample firms. The mean level of accruals is significantly higher in firms subject to enforcement actions for both of our accrual measures. The economic significance of the results is quite striking, with an average accrual differential between the two sets of firms of about 7% of total assets. Finally, in panel C, we report the distribution of SEC enforcement actions across accrual portfolios. A chi-square test confirms that enforcement actions are concentrated in the high accrual portfolios. In short, table 5 clearly demonstrates that firm-years with high accruals are more likely to be subject to SEC enforcement actions for GAAP violations involving earnings overstatements.

Our basic results for audit opinions are presented in table 6. Our tests are based on regressions of an audit opinion dummy variable on accrual portfolio rank (*PortAcc*) and a variety of control variables. The audit opinion variable (*Unclean*) is assigned the value of 0 for a 'plain vanilla' unqualified opinion and the value of 1 for any other opinion, including qualified, adverse or unqualified with explanatory language (e.g., ability to continue as a going concern). Finer partitions of the audit opinion might be possible based on the nature and severity of the opinion. However, for our main empirical tests, we use the simple partition of coding the opinion as either completely 'clean', or

qualified in some way.[13] We estimate the regression using a logit model, because of the dichotomous nature of the dependent variable. Our controls are based on variables identified in previous research that has modeled audit opinions [e.g., Dopuch, Holthausen and Leftwich (1987); Krishnan and Krishnan (1996)]. The control variables that we use are firm size (a control for stability), cash from operations (a control for performance that is unrelated to accrual accounting), leverage (a control for long-term solvency) and times-interest-earned (a control for short-term solvency and liquidity). Detailed definitions for the control variables are provided in table 6. *PortAcc* is expected to load up with a positive coefficient if higher accruals result in a greater probability of a qualified audit opinion.

The results in the first column of table 6 indicate that all the control variables except for leverage load up statistically significantly with the hypothesized sign. Additional tests (not reported) indicate that the explanatory power of leverage is subsumed by the times-interest-earned variable. Surprisingly, *PortAcc* loads up with a significantly negative coefficient. This result indicates that high levels of accruals are associated with a greater frequency of clean audit opinions. Apparently, auditors interpret the higher earnings associated with higher accruals as a positive sign, and are less likely to issue qualifications in such cases.

The remaining three columns of table 6 examine audit opinions over the subsequent three years. The audit opinion and control variables are each measured contemporaneously

[13] We also replicated our results using an audit opinion indicator variable taking the value of 0 for both straight unqualified opinions and opinions that are unqualified with explanatory language. All of the key

over the next three years respectively. *PortAcc* continues to measure the decile accrual ranking as of year 0. The objective of these regressions is to see whether audit opinions only begin to respond to the information in accruals when it finally begins to translate into subsequent earnings reversals. The results indicate that the coefficient on *PortAcc* remains negative, but declines in economic and statistical significance. Thus, it appears that auditors are less likely to issue clean audit opinions to firms with high accruals once the subsequent earnings reversals and allegations of GAAP violations begin to materialize. However, there is no evidence that auditors' opinions alert investors to the increased incidence of GAAP violations associated with high accruals on a timely basis.

Table 7 examines the possibility that auditor changes signal the greater likelihood of GAAP violations associated with high accruals. Our tests are based on regressions of an auditor change indicator variable on *PortAcc* and a variety of control variables. The audit change variable (*DAuditor*) is assigned the value of 0 for no auditor change during the year and 1 if an auditor change occurs during the year. We again estimate the regression using a logit model, because of the dichotomous nature of the dependent variable. Our controls are based on variables identified in previous research that has modeled audit opinions [e.g., Johnson and Lys (1990); DeFond and Subramanyam (1998)]. The control variables that we use are absolute change in firm size (a control for expansion), change in new financing (a control for use of external financing), change in times-interest-earned (a control for change in risk of financial distress) and change in cash from operations (a control for change in performance that is unrelated to accrual accounting). Detailed definitions for the control variables are provided in table 7. The accruals portfolio

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inferences in our audit opinion tests are unchanged.

variable is expected to load up with a positive coefficient if higher accruals result in a greater probability of an auditor change.

The results in the first column of table 7 indicate that all the control variables load up statistically significantly with the hypothesized sign. As in the audit opinion regressions, *PortAcc* loads up with a significantly negative coefficient. This result indicates that high levels of accruals are associated with a lower frequency of auditor changes. Apparently, auditors are much more likely to continue serving clients reporting extremely high accruals. This is opposite to what one would expect if auditors where to quit to avoid the potential loss of reputation and lawsuits associated with the increased likelihood of GAAP violations.

The remaining three columns of table 7 examine auditor changes over the subsequent three years. The auditor change and control variables are each measured contemporaneously over the next three years respectively. *PortAcc* continues to measure the decile accrual ranking as of year 0. The objective of these regressions is to see whether auditor changes occur in response to subsequent accrual-induced earnings reversals and the SEC allegations of GAAP violations. The results indicate that the coefficient on the accrual portfolio ranking gradually increases and turns positive and statistically significant by the third year following the accrual-ranking year. Thus, it appears that the earnings reversals and allegations of GAAP violations that follow periods of high accruals lead to auditor changes. However, in the high accrual years

during which the GAAP violations actually occur, there is no evidence that auditor changes provide timely information to investors.

5. Conclusions

Firms with extremely high accruals experience subsequent reductions in earnings and are more likely to be subject to SEC enforcement actions for GAAP violations. In this paper, we show that analysts do not anticipate the earnings reductions in their earnings forecasts, and auditors do not signal the GAAP violations through their audit opinions. Previous research has demonstrated that stock prices act 'as if' investors do not anticipate negative future consequences associated with high accruals. Our findings reinforce this interpretation by demonstrating that even professional investment intermediaries do not communicate the negative information associated with high accruals to investors.

Our results add to the growing body of evidence pointing to the conclusion that accrual accounting leads to temporary resource misallocation. That is not to say that other systems, such as cash accounting, would result in better resource allocation. It does, however, undermine the role of the efficient market hypothesis, on which academics have relied to gloss over many of the features of the accrual accounting system that seem to preoccupy managers and investors. For example, the evidence is consistent with the idea that earnings management can temporarily move firms' stock prices. Indeed, recent research suggests that firms successfully use earnings management to increase their stock prices during equity offerings [Rangan (1998); Teoh, Welch and Wong (1998)].

These findings provide many opportunities for future research, which may have important implications for the practice of accounting. For example, it would be useful to gain additional insights into the extent to which the accrual-induced earnings reversals are due to earnings management versus neutral application of the GAAP accounting system. Preliminary research by Xie (1998) suggests that earnings management is responsible for the reversals. It would also be useful to establish whether analysts and auditors are genuinely unaware of the accrual-induced earnings reversals, or whether they collude with management to temporarily manipulate firms' stock prices. Finally, we should seek a better understanding of why investors appear to be 'fooled' by the predictable, accrual-induced earnings reversals. One of the purposes of FAS 95 was to make cash flows underlying earnings more transparent to investors. However, our results suggest that investors appear to anticipate the earnings reversals no more effectively than in the pre-FAS 95 era.

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FIGURE 1
Time Series Properties of Earnings for Deciles of Earnings, Accruals, and Operating Cash Flows[a]

Figure 1a: Earnings portfolios

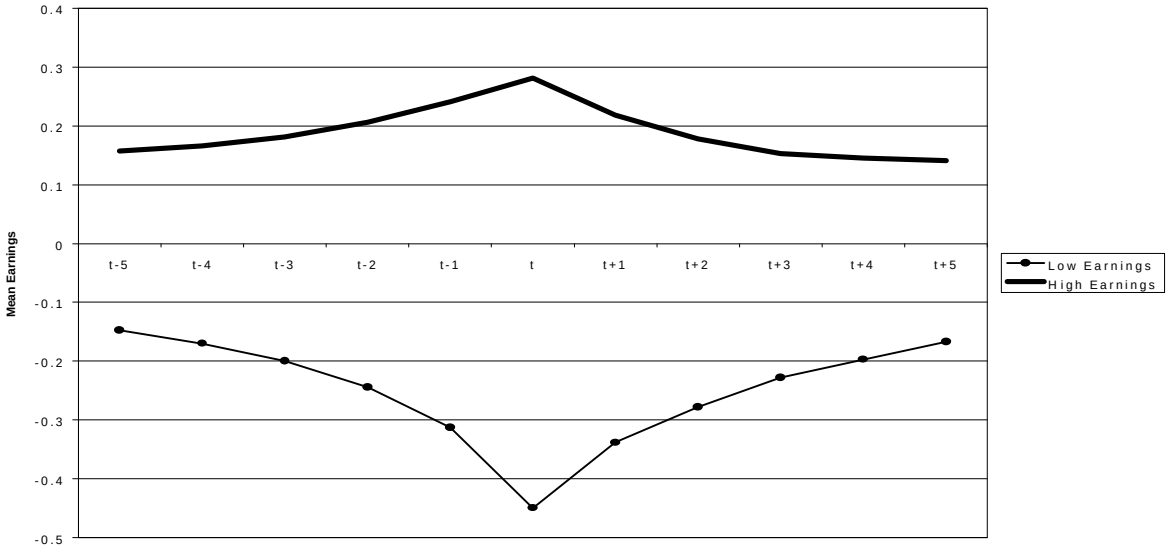


Figure 1b: Accruals portfolios

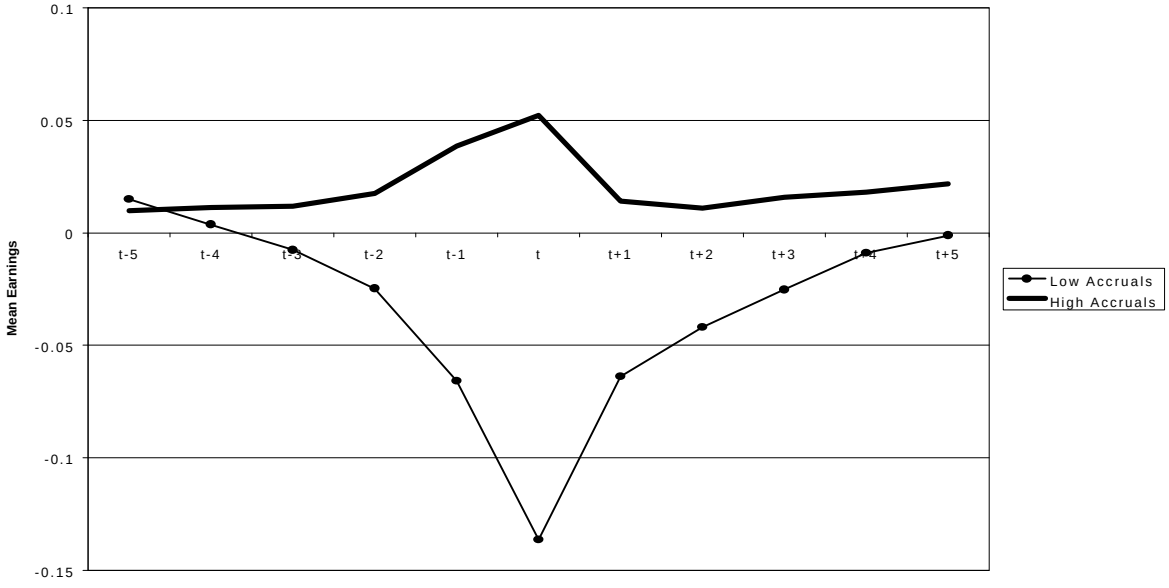
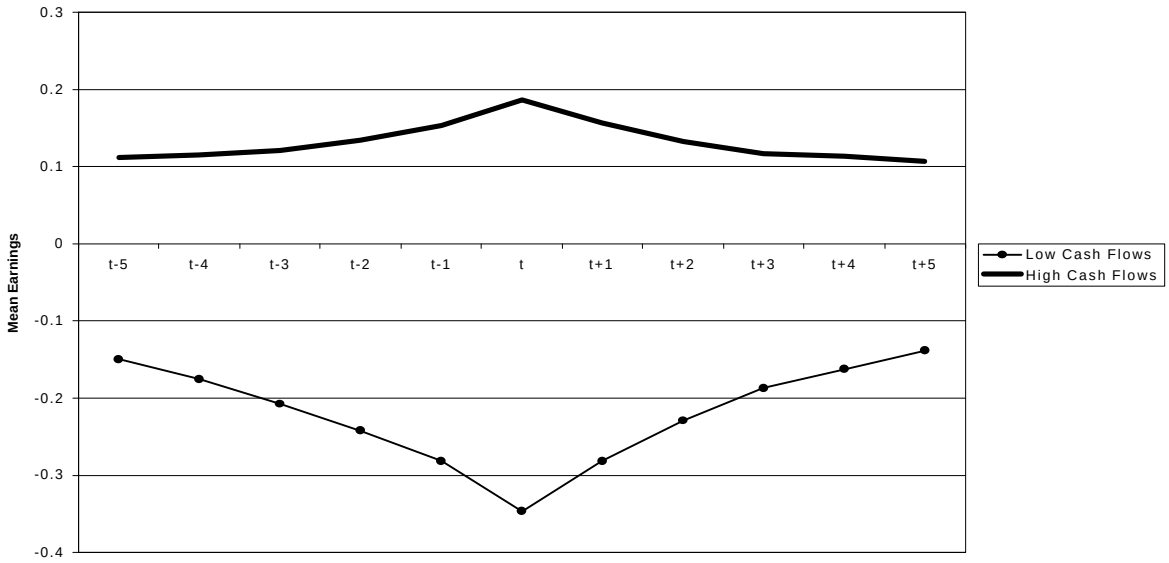


FIGURE 1 (cont.)

Figure 1c: Cash flows portfolios



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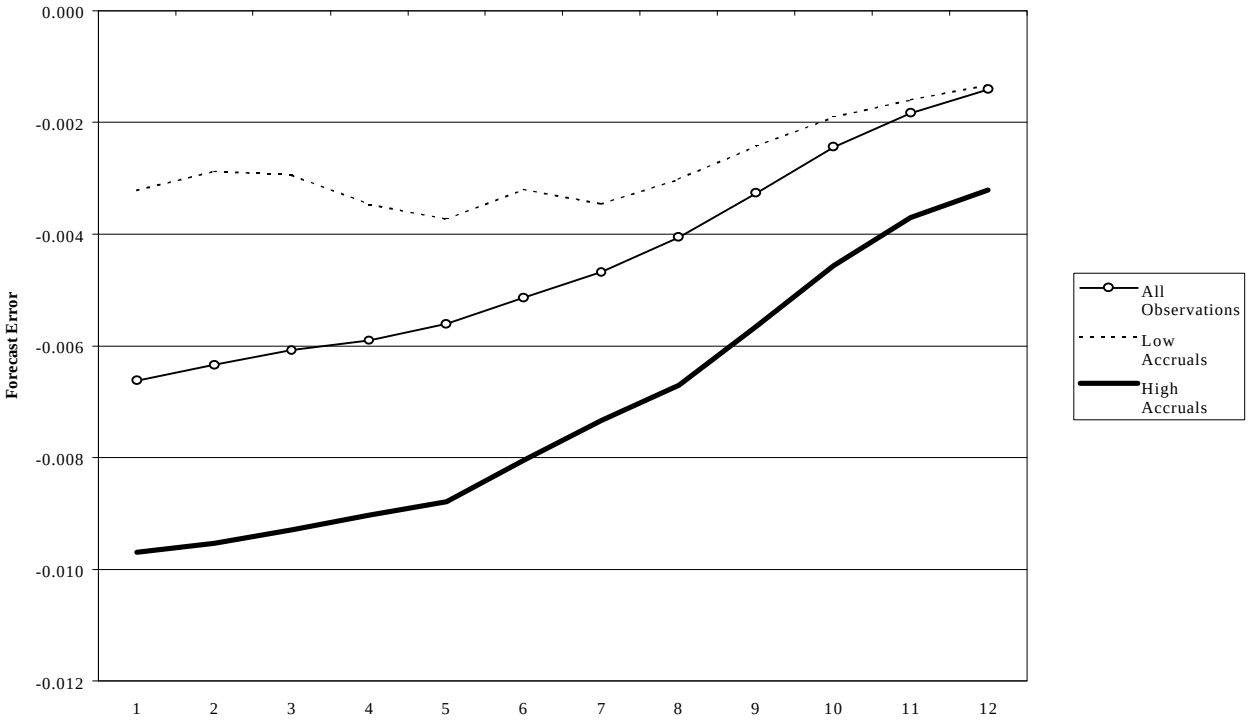
[a] The figures present mean earnings relative to portfolio formation year *t* based on rankings of *Earnings*, *Accruals*$_1$, and *CashFlows*. Firm-year observations are ranked annually and assigned in equal numbers to decile portfolios based on *Earnings*, *Accruals*$_1$, and *CashFlows* rankings. *Earnings* is operating income after depreciation; *Accruals*$_1$ equals the change in working capital accounts on the statement of cash flows (*Accruals*$_1$, discussed in the text); *CashFlows* is cash flows from operations on the statement of cash flows. All variables are scaled by average total assets. The figures present mean earnings for deciles 1 ('Low') and 10 ('High') for each ranking. The sample size in year *t* is 47,571 firm-years spanning 1988-1997.

FIGURE 2

Analyst Forecast Errors for Deciles of Accruals Portfolios in the 12 Months Following the Previous Year's Earnings Announcement[a]



[a] This figure presents mean forecast errors for months leading up to the annual earnings number being forecast. Month *1* is the first month following the prior year's earnings announcement, month *2* is the second month following the prior year's earnings announcement, and so on. Monthly Forecast Errors are calculated as realized earnings minus forecasted earnings in month *t*, all scaled by stock price in month *1*. Firm-year observations are ranked annually and assigned in equal numbers to decile portfolios based on $Accruals_1$. $Accruals_1$ equals the change in working capital accounts on the statement of cash flows (e.g. items 302, 303, 304, 305 and 307 in COMPUSTAT), scaled by average total assets. The figure presents mean forecast errors for deciles 1 ('Low Accruals') and 10 ('High Accruals'), as well as the overall sample ('All Observations'). Sample sizes are approximately 2,000 firm-years per decile in each month, and constitute observations in the initial sample of 47,571 firm-years for which analyst forecasts are available in month *1* on the I/B/E/S summary statistics file.

TABLE 1
Ordinary Least Squares Regressions of Future Earnings Performance on the Accrual and Cash Flow Components of Current Earnings Performance[a]

$$Earnings_{t+1} = g_0 + g_1 Accruals_t + g_2 CashFlows_t + u_t$$

Panel A: OLS regressions with continuous variables

Model	g_0	g_1	g_2	R^2
$Accruals_1$	-0.012	0.591	0.813	0.49
	(-19.2)	(99.7)	(213.5)	
$Accruals_2$	0.024	0.486	0.798	0.52
	(40.0)	(112.9)	(219.8)	

F-test of $g_1=g_2$ ($Accruals_1$): 1496.9
F-test of $g_1=g_2$ ($Accruals_2$): 4374.7

Panel B: OLS regressions with decile rankings[b]

Model	g_0	g_1	g_2	R^2
$Accruals_1$	-0.245	0.175	0.365	0.35
	(-120.6)	(76.1)	(158.9)	
$Accruals_2$	-0.293	0.233	0.400	0.40
	(-142.8)	(102.3)	(176.5)	

F-test of $g_1=g_2$ ($Accruals_1$): 5117.9
F-test of $g_1=g_2$ ($Accruals_2$): 4535.9

[a] The sample consists of 47,571 firm years from 1988 to 1997. *CashFlows* is cash flows from operations from the statement of cash flows. *Earnings* is operating income after depreciation. Accruals are measured in two ways. The first measure is $Accruals_1$, net cash flows due to changes in working capital accounts (e.g. items 302, 303, 304, 305 and 307 in COMPUSTAT). The second measure is $Accruals_2$, the difference between earnings before extraordinary items and cash flow from operations. *Earnings*, $Accruals_1$, $Accruals_2$, and *CashFlows* are all scaled by average total assets. t-statistics are shown in parentheses.

[b] OLS regressions with decile rankings substitute the portfolio rankings of $Accruals_1$/$Accruals_2$ and *CashFlows*, where the rankings are converted to a [0,1] scale. Rankings are obtained by annually ranking observations and assigning them in equal numbers to portfolios based on $Accruals_1$, $Accruals_2$ or *CashFlows*.

TABLE 2

Annual Mean Returns for Accruals Portfolios[a,b]

Panel A: Portfolios constructed on *Accruals$_1$*

	Raw returns			*Market-Adjusted Returns*			*Size-Adjusted Returns*		
Rank	*t+1*	*t+2*	*t+3*	*t+1*	*t+2*	*t+3*	*t+1*	*t+2*	*t+3*
Low	0.213	0.245	0.212	0.046	0.072	0.032	0.056	0.073	0.018
2	0.206	0.228	0.233	0.042	0.060	0.057	0.057	0.065	0.047
3	0.171	0.181	0.226	0.010	0.013	0.056	0.027	0.018	0.050
4	0.162	0.169	0.182	-0.001	0.005	0.015	0.013	0.011	0.014
5	0.141	0.154	0.182	-0.019	-0.013	0.013	-0.001	-0.005	0.011
6	0.158	0.167	0.149	-0.002	-0.001	-0.021	0.018	0.010	-0.027
7	0.155	0.173	0.200	-0.007	0.005	0.025	0.013	0.014	0.022
8	0.141	0.189	0.193	-0.023	0.021	0.020	-0.005	0.031	0.020
9	0.121	0.157	0.217	-0.043	-0.008	0.039	-0.028	-0.003	0.029
High	0.074	0.145	0.205	-0.088	-0.027	0.029	-0.070	-0.021	0.024
N[c]	38,429	30,630	24,027	38,429	30,630	24,027	37,511	29,922	23,493

Panel B: Portfolios constructed on *Accruals$_2$*

	Raw returns			*Market-Adjusted Returns*			*Size-Adjusted Returns*		
Rank	*t+1*	*t+2*	*t+3*	*t+1*	*t+2*	*t+3*	*t+1*	*t+2*	*t+3*
Low	0.196	0.244	0.231	0.029	0.070	0.051	0.040	0.083	0.036
2	0.205	0.216	0.223	0.039	0.046	0.048	0.056	0.043	0.037
3	0.175	0.197	0.208	0.012	0.029	0.032	0.029	0.031	0.025
4	0.165	0.197	0.206	0.003	0.032	0.035	0.016	0.034	0.031
5	0.157	0.153	0.163	-0.002	-0.015	-0.005	0.014	-0.009	-0.006
6	0.165	0.186	0.185	0.005	0.019	0.014	0.023	0.031	0.012
7	0.157	0.161	0.204	-0.002	-0.006	0.032	0.016	0.005	0.032
8	0.131	0.165	0.190	-0.031	-0.001	0.016	-0.014	0.008	0.010
9	0.104	0.169	0.180	-0.058	0.000	0.007	-0.039	0.007	0.001
High	0.084	0.126	0.222	-0.081	-0.042	0.044	-0.063	-0.033	0.037
N[c]	38,429	30,630	24,027	38,429	30,630	24,027	37,511	29,922	23,493

[a] Portfolios are formed based on two accruals measures. The first measure is *Accruals$_1$*, net cash flows due to changes in working capital accounts as shown on the statement of cash flows (e.g. items 302, 303, 304, 305 and 307 in COMPUSTAT). The second measure is *Accruals$_2$*, the difference between earnings before extraordinary items and cash flows from operations. *Accruals$_1$* and *Accruals$_2$* are both scaled by average total assets. Firm-year observations are ranked annually and assigned in equal numbers to decile portfolios based on *Accruals$_1$* or *Accruals$_2$*.

[b] Returns are calculated for three years after portfolio formation. Annual returns are calculated from the start of the fifth month subsequent to the fiscal year-end in which firms are assigned to portfolios. Market adjusted returns are calculated by deducting the value-weighted market portfolio from the raw returns. The size-adjusted returns are calculated by deducting the market returns for all firms in the size-matched decile, where size is measured as market capitalization.

[c] The sample size in each column represents the subsample of the initial COMPUSTAT sample (47,571, 1988-1997) with available returns on the CRSP tapes. Individual portfolio sample sizes vary across portfolios from a low of 1,457 (year *t+3*) to a high of 4,064 (year *t+1*).

TABLE 3

Non-Linear Generalized Least Squares Estimation of the Stock Price Reaction to Information in the Accrual and Cash Flow Components of Current Earnings About Future Earnings[a]

$$Earnings_{t+1} = g_0 + g_1 Accruals_t + g_2 CashFlows_t + n_{t+1}$$

$$Abnormal\ Return_{t+1} = b_0 + b_1\left(Earnings_{t+1} - g_0 - g_1^* Accruals_t - g_2^* CashFlows_t\right) + e_{t+1}$$

Panel A: Regressions using actual financial statement values

Parameter	*Estimate*	*Asymptotic standard error*
g_0	-0.002	0.001
g_1	0.595	0.037
g^*_1	1.047	0.045
g_2	0.789	0.005
g^*_2	0.912	0.027
b_0	0.050	0.005
b_1	1.095	0.037
Test of market efficiency:	$g_1=g^*_1$ and $g_2=g^*_2$	
Likelihood ratio statistic	110.0	
Marginal significance level	0.000	

Panel B: Regressions using decile rankings of financial statement values[b]

Parameter	*Estimate*	*Asymptotic standard error*
g_0	-0.183	0.002
g_1	0.156	0.003
g^*_1	0.339	0.021
g_2	0.311	0.003
g^*_2	0.338	0.020
b_0	0.109	0.013
b_1	0.738	0.032
Test of market efficiency:	$g_1=g^*_1$ and $g_2=g^*_2$	
Likelihood ratio statistic	88.3	
Marginal significance level	0.000	

[a] The sample consists of 38,429 firm-years from 1988 to 1997. *Earnings* is item #178 on COMPUSTAT, Operating Income After Depreciation. *Accruals* is the refined accrual measure, $Accruals_1$ (e.g. items 302, 303, 304, 305 and 307 in COMPUSTAT). *CashFlows* is item #308 in COMPUSTAT, Net Cash Flow – Operating Activities. *Earnings*, $Accruals_1$, and *CashFlows* are all scaled by average total assets. *Abnormal Return* is calculated as raw buy-hold return (inclusive of dividends and distributions) less the value-weighted market portfolio. The return cumulation period begins a full four months after fiscal year end.

[b] Firm-year observations are ranked annually and assigned in equal numbers to decile portfolios based on each of the financial statement variables: *Earnings*, $Accruals_1$ and *CashFlows*. The ranks variables are converted to a [0,1] scale.

TABLE 4

Ordinary Least Squares Regressions of Forecast Errors on Accruals Portfolios[a]

$$FError_{s,t+1} = b_0 + b_1 PortAcc_t + u_t$$

Month	b_0	$t(b_0)$	b_1	$t(b_1)$	R^2	*N*
1	-0.0033	-15.1***	-0.0063	-17.8***	.014	22,874
2	-0.0029	-13.7***	-0.0064	-18.2***	.014	22,744
3	-0.0028	-13.1***	-0.0063	-18.0***	.014	22,580
4	-0.0028	-13.8***	-0.0058	-17.0***	.013	22,390
5	-0.0027	-13.4***	-0.0055	-16.2***	.012	22,218
6	-0.0024	-12.3***	-0.0051	-15.5***	.011	22,015
7	-0.0023	-12.2***	-0.0045	-14.2***	.009	21,809
8	-0.0019	-10.0***	-0.0042	-13.6***	.008	21,564
9	-0.0014	-7.7***	-0.0036	-12.2***	.007	21,294
10	-0.0009	-5.2***	-0.0030	-10.9***	.006	20,937
11	-0.0004	-2.5**	-0.0027	-10.2***	.005	20,408
12	-0.0002	-1.3	-0.0023	-8.3***	.004	17,721

[a] The sample constitutes observations in the initial sample of 47,571 firm-years for which analyst forecasts are available in month *1* on the I/B/E/S summary statistics file. $FError_{s,t+1}$ is the monthly forecast error in month *s* following the announcement of year *t* earnings (i.e. prior year). Month *s=1* is the first month following the prior year's earnings announcement, month *s=2* is the second month following the prior year's earnings announcement, and so on. $FError_{s,t+1}$ is calculated as forecasted earnings in month *s* minus the realized earnings for year *t+1*, scaled by stock price in month *1*. *PortAcc* is the portfolio ranking of the firm-year based on $Accruals_1$ in year *t*, scaled to a [0,1] scale. $Accruals_1$ is calculated as the net change in working capital accounts as shown on the statement of cash flows (e.g. items 302, 303, 304, 305 and 307 in COMPUSTAT).

* Denotes significance at the 0.01 level using a 2-tailed t-test.
** Denotes significance at the 0.001 level using a 2-tailed t-test.
*** Denotes significance at the 0.0001 level using a 2-tailed t-test.

TABLE 5

Analysis of accruals of firms subject to SEC enforcement actions[a,b]

Panel A: Distribution by year of firms subject to SEC enforcement actions

Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
All Firms	936	4,930	5,124	5,111	5,270	5,551	5,913	6,335	7,029	7,574	6,373	60,146
SEC firms	3	10	18	7	19	14	8	3	0	0	0	82

Panel B: Mean difference in accruals for firms with SEC enforcement actions

		Accrual Measure	
		***Accruals*$_1$**	***Accruals*$_2$**
NON-SEC firms	mean	0.0190	-0.0533
SEC firms	mean	0.0883	0.0195
Test of mean difference		-4.53	-4.14
significance level		0.0001	0.0001

Panel C: Distribution of SEC enforcement actions across accrual portfolios[c]

	Accrual Portfolio									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
All Firms	6,009	6,015	6,017	6,013	6,015	6,018	6,015	6,015	6,017	6,012
SEC firms	4	6	5	5	2	7	4	8	11	30
Chi-Square Test		71.307								
significance level		0.001								

[a] The sample consists of 60,146 firm years from 1988 to 1997. Accruals are measured in two ways. The first measure is *Accruals*$_1$, net cash flows due to changes in working capital accounts (e.g. items 302, 303, 304, 305 and 307 in COMPUSTAT). The second measure is *Accruals*$_2$, the difference between *Earnings* and *CashFlows* where *Earnings* is operating income after depreciation and *CashFlows* is cash flows from operations from the statement of cash flows. *Earnings*, *Accruals*$_1$, *Accruals*$_2$, and *CashFlows* are all scaled by average total assets.

[b] Our sample is selected via a reading of the SEC Accounting and Auditing Enforcement Releases from 1987-1997.

[c] Firm-year observations are ranked annually and assigned in equal numbers to decile portfolios based on *Accruals*$_1$. Decile 1 is the lowest accrual portfolio.

TABLE 6

Logit Regression of Audit Opinion on Accrual Portfolios and Control Variables[a, b]

$$Unclean_t = h_0 + h_1 TA_t + h_2 CFO_t + h_3 LEV_t + h_4 TIE_t + h_5 PortAcc_0$$

Variable[c]	*Predicted Sign*	*Year (p-value in parentheses) t=0*	*t+1*	*t+2*	*t+3*
Intercept	-	-1.133	-1.343	-1.224	-1.330
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
TA	-/+	0.138	0.149	0.134	0.127
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
CFO	-	-1.298	-0.373	-0.142	-0.158
		(0.0001)	(0.056)	(0.529)	(0.563)
LEV	+	0.000	-0.001	-0.002	-0.004
		(0.925)	(0.426)	(0.481)	(0.378)
TIE	-	-0.013	-0.016	-0.017	-0.016
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
PortAcc	+	-0.500	-0.111	-0.052	-0.052
		(0.0001)	(0.042)	(0.402)	(0.486)
# Clean		15,529	11,704	8,746	6,764
# Unclean		7,044	5,925	4,744	3,223
Total N[d]		22,573	17,629	13,490	9,987
Model c^2		684.5***	573.6***	406.5***	257.2***
% concordant pairs(+tied)		61.4%	61.6%	61.3%	60.8%

[a] Regressions are performed for the year firms are assigned to portfolios, year *0*, and for the subsequent three years. All control variables in the regressions are contemporaneous with the dependent variable. The *t* subscripts refer to the year of the opinion (and control variables) relative to the year of portfolio formation (year *0*).

[b] Portfolios are formed using the refined accrual measure, $Accruals_1$, equal to net cash flows from changes in working capital accounts as shown on the statement of cash flows (e.g. items 302, 303, 304, 305 and 307 in COMPUSTAT). Firm-year observations are ranked annually and assigned in equal numbers to decile portfolios based on $Accruals_1$.

[c] $Unclean_t$ is a dummy variable for audit opinion, and is assigned the value of 0 for an unqualified opinion in year *t* and the value of 1 for any other opinion, including qualified, adverse or unqualified with explanatory language (e.g., ability to continue as a going concern). The control variables are:

$$TA_t = \log(Assets_t)$$

$$CFOTA_t = \frac{2 \times CFO_t}{Assets_t + Assets_{t-1}}$$

$$LEV_t = \frac{Debt_t}{Equity_t}$$

$$\Delta TIE_t = TIE_t - TIE_{t-3}$$

Assets is item #6 in COMPUSTAT, Total Assets. *CFO* is item #308, Net Cash Flow – Operating Activities. $PortAcc_0$ is the portfolio ranking of $Accruals_1$ in year *0*, converted to a [0,1] scale. *Debt* is the sum of items #9 and #34 in COMPUSTAT (Debt in Current Liabilities and Long Term Debt). *Equity* is item #216, Total Shareholders' Equity.

[d] The sample constitutes observations in the initial sample of 47,571 firm-years for which required control variables are also available on the COMPUSTAT annual database.

*** Denotes significance at the 0.001 level

TABLE 7

Logit Regression of Auditor Change on Accrual Portfolios and Control Variables[a, b]

$$\Delta Auditor_t = f_0 + f_1 \Delta Size_t + f_2 \Delta Fin_t + f_3 \Delta TIE_t + f_4 \Delta CFO_t + f_5 PortAcc_0$$

Variable[c]	*Predicted Sign*	*Year (p-value in parentheses)* *t=0*	*t+1*	*t+2*	*t+3*
Intercept	-	-3.002	-3.126	-3.285	-3.461
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
|DSize|	+	0.158	0.098	0.085	0.107
		(0.0001)	(0.029)	(0.148)	(0.141)
DFin	+	0.028	0.106	0.071	-0.027
		(0.422)	(0.039)	(0.3151)	(0.772)
DTIE	-	-0.001	-0.002	-0.003	-0.003
		(0.093)	(0.050)	(0.005)	(0.023)
DCFO	-	-0.542	-0.285	-0.991	-1.338
		(0.0003)	(0.0001)	(0.001)	(0.001)
PortAcc	+	-0.478	-0.372	-0.029	0.383
		(0.0001)	(0.002)	(0.823)	(0.021)
# Change		1,084	766	557	407
# No Change		24,280	18,764	14,198	10,416
Total N[d]		25,364	19,530	14,755	10,823
Model c^2		73.1***	30.3***	25.9***	25.0***
% concordant pairs (+tied)		60.5%	59.8%	61.0%	60.8%

[a] Regressions are performed for the year firms are assigned to portfolios, year *0*, and for the subsequent three years. All control variables in the regressions are contemporaneous with the dependent variable. The *t* subscripts represent the year of the auditor change (and control variables) relative to the year of portfolio formation (year *0*).

[b] Portfolios are formed using the refined accrual measure, $Accruals_1$, equal to net cash flows from changes in working capital accounts as shown on the statement of cash flows (e.g. items 302, 303, 304, 305 and 307 in COMPUSTAT). Firm-year observations are ranked annually and assigned in equal numbers to decile portfolios based on $Accruals_1$.

[c] $\Delta Auditor_t$ is a dummy variable assigned a value of 0 for no auditor change during year *t* and 1 if an auditor change occurs during year *t*. The control variables are:

$$\Delta Size_t = \frac{Assets_t - Assets_{t-3}}{Assets_{t-3}} \qquad \Delta TIE_t = TIE_t - TIE_{t-3}$$

$$\Delta Fin_t = \frac{\sum_{t=1}^{3} EqIss_{t-t} + \sum_{t=1}^{3} DebtIss_{t-t}}{Assets_{t-3}} \qquad TIE_t = \frac{OpEarn_t}{IntExp_t}$$

$$\Delta CFO_t = \frac{CFO_t - CFO_{t-3}}{Assets_{t-3}}$$

Assets is item #6 in COMPUSTAT, Total Assets. *CFO* is item #308, Net Cash Flow – Operating Activities. *OpEarn* is item #178, Operating Income After Depreciation. *IntExp* is item#15, Interest Expense. *EqIss* is item#108, Sale of Common and Preferred Stock (Statement of Cash Flows). *DebtIss* is item#111, Long Term Debt Issuance (Statement of Cash Flows). *PortAcc* is the portfolio ranking of $Accruals_1$ in year *0*, converted to a [0,1] scale.

[d] The sample constitutes observations in the initial sample of 47,571 firm-years for which required control variables are also available on the COMPUSTAT annual database.

*** Denotes significance at the 0.001 level

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