Is Institutional Ownership Associated with Earnings Management and the Extent to which Stock Prices Reflect Future Earnings?

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Abstract

Articles in the financial press suggest that institutional investors are overly focused on short-term profitability leading mangers to manipulate earnings fearing that a short-term profit disappointment will lead institutions to liquidate their holdings. This paper shows, however, that the absolute value of discretionary accruals *declines* with institutional ownership. The result is consistent with managers recognizing that institutional owners are better informed than individual investors, which reduces the perceived benefit of managing accruals. We also find that as institutional ownership increases, stock prices tend to reflect a greater proportion of the information in *future* earnings relative to current earnings. This result is consistent with institutional investors looking beyond current earnings compared to individual investors. Collectively, the results offer strong evidence that managers do not manipulate earnings due to pressure from institutional investors who are overly focused on short-term profitability.

1. Introduction

A number of articles in the financial press suggest that institutional investors pressure managers to achieve short-term profit goals at the expense of long-term equity value (e.g., Teitelman 1993; Coffee 1991; Jacobs 1991; Chote and Linger 1986; Drucker 1986; Dobrzynski, et al. 1986). According to Porter (1992), institutional investors are transient owners who are overly focused on short-term earnings. Fearing that a short-term profit disappointment will lead institutions to liquidate their holdings (leading to at least a temporary decline in equity value), managers are compelled to take actions that increase short-term profit. The most commonly cited action is cutting research and development expenditure (R&D). However, academic research has documented results at odds with this hypothesized behavior. Both Bushee (1998) and Wahal and McConnell (1997) find a *positive* relation between R&D and institutional ownership. A wide variety of options are available to manage earnings and managers are expected to weigh the costs and benefits of the alternatives before selecting a particular approach (Jiambalvo 1996). Earnings management via R&D would seem to be particularly costly since it has real cash flow effects and cuts in R&D are likely to interpreted as a negative signal by the stock market because R&D expenditures, on average, result in greater subsequent earnings (Lev and Sougiannis 1996). Thus, it may be that institutional ownership is associated with earnings management, but such earnings management is more subtle and less costly than management via R&D.

The purpose of our study is twofold. First, we examine the association between institutional ownership and the absolute value of discretionary accruals. This measure has the potential to reveal earnings management approaches (such as choices related to estimates of bad debts, estimates related to inventory obsolescence and timing of sales) that are subtle compared to management of R&D. Signing the relation between institutional ownership and the absolute value of discretionary

accruals is difficult because there are plausible competing explanations. On the one hand, it may be that institutional investors pressure management to achieve profit goals resulting in earnings management. On the other hand, institutional investors are acknowledged to have advantages in acquiring and processing information compared to individual investors (e.g., Hand 1990; Kim, et al. 1997). If managers recognize this advantage, management of accruals may be negatively associated with institutional ownership since sophisticated institutional owners are less likely to be "fooled" by management of accruals. Our results provide evidence of a negative relation between institutional ownership and the absolute value of discretionary accruals. Thus, the results are consistent with the view that institutional owners are relatively sophisticated and less likely, compared to individual investors, to be mislead by manipulation of earnings that is reflected in accruals.[1]

A second goal of our study is to examine the association between institutional ownership and the extent to which stock prices reflect future as opposed to current earnings. If institutional investors are overly focused on current earnings, we expect a negative relation between the extent of institutional ownership and the extent to which stock prices reflect future earnings relative to current earnings. If, however, institutional investors have an advantage in acquiring and processing information, then it is likely that there will be a positive association. Our results provide evidence that the association is positive which supports the idea that institutional investors possess an informational advantage and, compared to individual investors, are not overly focused on current earnings.

Our results contribute to the discussion regarding institutional investors by demonstrating that not only is a positive relation between institutional ownership and a comprehensive measure of

[1] Our results obtain after controlling for managerial ownership. Hence, we assume that other than institutional investors and managers, the only major investor category is individuals. A similar assumption is made in Bushee (1998) and in Lang and McNichols (1997).

earnings management (the absolute value of discretionary accruals) absent, the relation is actually negative consistent with managers recognizing that institutional investors are less likely to be "fooled" by earnings management. Our study is also the first to demonstrate that stock prices reflect relatively more information about future earnings relative to current earnings as institutional ownership increases. This result contradicts the notion that institutional investors are, compared to individual investors, more likely to fixate on current earnings. Rather, it is consistent with the view that institutional investors are sophisticated and have an advantage in acquiring and processing information.

The remainder of our paper is organized as follows. In the next section we briefly review the competing perspectives on institutional investors and develop our hypotheses. Section three outlines our research methodology while section four describes the data used in tests of competing views. Empirical findings are presented in section five and concluding comments are presented in the final section.

2. Hypothesis development

Institutional owners as transient investors

Institutional investors are often characterized as transient owners who are overly focused on current earnings. For example, Porter (1992) notes:

> "Perhaps the most basic weakness in the American system is transient ownership in which institutional agents are drawn to current earnings, unwilling to invest in understanding the fundamental prospects of companies, and unable and unwilling to work with companies to build long-term earnings power."

According to Jacobs (1991) firms cannot hope to establish a viable dialogue with such transient investors over the future prospects of the corporation. Graves (1988) argues that fund managers cannot afford to take a long-term view in their investment decisions since they are reviewed and

rewarded on the basis of quarterly, or at most, annual performance measures. Consistent with institutional transience, Potter (1992) and Kim, et al. (1996) report greater stock return volatility and trading volume surrounding earnings announcements of firms with higher institutional ownership. Further, Lang and McNichols (1997) find that institutional trading is related to the market's reaction to earnings announcements. However, Eames (1997) does not find significant changes in institutional holdings after earnings announcements.

Institutional owners as sophisticated investors

Contrary to the view that institutional owners are transient investors, who are overly focused on the short-term, is the view that they are sophisticated investors with advantages in acquiring and processing information. This perspective is supported by a survey conducted by Shiller and Pound (1989) who find that institutional investors spend more time performing investment analysis. Lev (1988) argues that well-endowed investors have access to information that is too costly for others to acquire. And given that institutional investors, on average, have more resources than individual investors, they are likely to be better informed. Schipper (1989) suggests that concentrated user groups with substantial sophistication are likely candidates for undoing earnings management. Thus Bushee (1998) argues that, given the size of their investments and their use of buy-side analysts, institutional investors reduce the incentive for earnings management. A similar perspective is taken by Hand (1990) who assumes that institutional investors (his proxy for sophisticated investors) are less likely to be surprised by gains related to debt-equity swaps.

Hypotheses

Critics of institutional investors (e.g., Drucker 1986; Porter 1992) argue that their short-term focus leads to earnings management. In particular, they assert that managers may cut R&D to improve profitability. Recent empirical work disputes this assertion. Indeed, both Bushee (1998) and Wahal

and McConnell (1997) find a *positive* relation between R&D and institutional ownership.[2] It may be, however, that firms manage earnings, in response to perceived pressure from institutional investors, but such management is more subtle than cutting R&D. Cutting R&D involves real cash flows, it is easily observable by market participants, and market participants are likely to interpret the cut as a negative signal regarding firm value since R&D expenditures, on average, are associated with increased subsequent earnings (Lev and Sougiannis 1996). In our study we investigate the relation between institutional ownership and the absolute value of discretionary accruals. Thus, our study has the potential to detect earnings management in response to pressure from institutional investors that is broader and subtler than earnings management via R&D. The focus on the absolute value of discretionary accruals recognizes that earnings management may be income decreasing as well as income increasing. In particular we expect that, if firms manage earnings in response to pressure from institutional investors, they will tend to manage earnings down when unmanaged earnings is high and up when unmanaged earnings is low.[3] The absolute value of discretionary accruals also captures negative accruals associated with big-baths in years where the management of earnings cannot feasibly lead to reported earnings greater than target earnings.

The argument that institutional owners are transient investors suggests a positive relation between the proportion of stock held by institutions and the absolute value of discretionary accruals. However, the argument that institutional owners are sophisticated investors who are more likely to

[2] While Bushee finds that firms, on average, are less likely to cut R&D when institutional ownership is high, he does identify a class of institutional owners (those with high portfolio turnover and momentum trading strategies) who are linked to cuts in R&D.

[3] Our research design, however, avoids specification of an unmanaged earnings *target* since Lim and Lustgarten (1998) show that spurious inferences can result from correlating discretionary accruals with deviation of unmanaged earnings to target earnings.

be able to undo earnings management suggests a negative relation. We address these competing views by conducting two-tailed test of the following null hypothesis:

> HYPOTHESIS 1. There is no relation between the level of institutional ownership and the absolute value of discretionary accruals.

According to Jacobson and Aaker (1993), the incentive to manage current financial performance depends upon investor knowledge of future-term performance. In the absence of future-term performance indicators, investors use current profitability as a signal of long-term performance (Jacobson 1987). Lack of knowledge of future performance creates an incentive and opportunity for managers to shift earnings from future to current periods. Investors with insight into future performance are not likely to be deceived by short-term earnings management, and thus managers have reduced incentives and opportunity to manage financial results when investors are well informed. Based on this argument, Jacobson and Aaker test the hypothesis that Japanese investors are better informed than their U.S. counterparts, and they demonstrate that stock prices in Japan reflect a greater proportion of the information in future earnings relative to current earnings. This result supports the contention that managerial incentives for earnings management is higher in the U.S. than in Japan. Our study addresses the contention whether, within the U.S., managerial incentives for earnings management is higher for firms with higher institutional ownership-a contention that would not be supported if the proportion of information in future as opposed to current earnings increases with institutional ownership. Accordingly, we test the following null hypothesis:

> HYPOTHESIS 2. The proportion of information in future earnings relative to current earnings, reflected in stock returns, is not related to the level of institutional ownership.

3. Research method

Analysis of Discretionary Accruals

We estimate discretionary accruals using the modified Jones (1991) model. Recent research (Dechow, et al.1995; Guay, et al. 1996) concludes that, of all the available models, the modified Jones (1991) model is the most powerful in detecting earnings management. Specifically, we estimate the following regression for every firm:

$$ACC_t/TA_{t-1} = a_1[1/TA_{t-1}] + a_2[(\Delta SAL_t - \Delta REC_t)/TA_{t-1}] + a_3[PPE_t/TA_{t-1}] + j_t \qquad (1)$$

where ACC is aggregate accruals, TA is total assets, ΔSAL is the change in net sales, ΔREC is the change in net receivables, PPE is gross property, plant and equipment, t and t-1 are time subscripts. Aggregate accruals are defined as in Dechow et al. (1995). Equation (1) is estimated using available time-series observations for each firm. The residuals (φ_t) obtained from this estimation process represent the firm-specific discretionary portion of accruals (DACC).

We then cross-sectionally relate the absolute value of discretionary accruals (|DACC|) to the level of institutional ownership. We measure the level of institutional ownership as the percentage of shares owned by institutional investors (PINST). A positive relation between the level of institutional ownership and the absolute value of discretionary accruals would be consistent with the argument that pressure from institutional investors leads to earnings management while a negative relation would be consistent with the argument that institutional owners are sophisticated investors who are better able to undo earnings management.[4]

[4] Apart from trying to manage earnings to reduce contractual constraints, managers may use discretionary accounting choices to communicate private information to the capital market (see Healy and Palepu, 1993; Diamond and Verrechia, 1991; Subramanyam, 1996). If higher levels of institutional ownership result in the reduction of information asymmetry between firm management and the capital market, the potential role for discretionary accruals to communicate private information is diminished.

Recognizing that institutional ownership is not the sole determinant of discretionary accounting choices, we control for several additional factors (managerial ownership, size, leverage, and extreme financial performance) that have been found to be related to earnings management. Prior research by Warfield et al. (1995) documents a negative relation between managerial ownership and the absolute value of discretionary accruals. Hence, we include the level of managerial ownership in our analysis to account for the potential reduction in the shareholder-manager conflict related to managerial ownership. The inclusion of firm size is motivated by positive accounting theory (see Watts and Zimmerman 1978). Positive accounting theory suggests that managers of large firms are more likely to exploit latitude in accounting to reduce political costs. However, the directional relationship between firm size and discretionary accruals is unclear. This is because managers of large firms may have reduced opportunities for exercising accounting discretion since larger firms are more likely to be closely scrutinized by security analysts.

Managers of firms that are closer to default on debt covenants are more likely to use the latitude provided by generally accepted accounting principles (GAAP) to manipulate earnings in an attempt to avoid covenant violation (Duke and Hunt 1990; Press and Weintrop 1990; DeFond and Jiambalvo 1994; Sweeney 1994). We use the leverage ratio as a measure of proximity to violating debt covenants. Consistent with prior research, we expect a positive association between leverage and the absolute value of discretionary accruals.[5] Finally, Dechow et al. (1995) suggest that tests of earnings management may be misspecified when discretionary accruals are correlated with firm performance. Consequently, we use a dummy variable set to 1 (0) if earnings before extraordinary items of a firm is (is not) in the top or bottom decile of the distribution of earnings scaled by lagged

[5] Earnings management to avoid covenant violation is expected to result in positive discretionary accruals. Our focus is on the absolute value of discretionary accruals which would increase when earnings management results in positive accruals.

total assets across firm-years used in our sample. We expect the coefficient on the dummy to be positive because absolute discretionary accruals are expected to be higher for firms with extreme performance.[6]

This leads to the following empirical specification:

$$|DACC|_{it} = \gamma_0 + \gamma_1 PINST_{it} + \gamma_2 MGR_{it} + \gamma_3 SIZE_{it} + \gamma_4 LEV_{it} + \gamma_5 EXPRF_{it} + \varepsilon_{it} \quad (2)$$

where PINST is the percentage of institutional ownership, MGR is the percentage of managerial ownership, SIZE is the logarithm of sales, LEV is total debt divided by lagged total assets and EXPRF is set to 1 if earnings (scaled by total assets) for a firm-year are in the top or bottom decile of earnings (scaled by total assets) for all firm-years.[7] Firm and time period are denoted by i and t respectively.

Analysis of the Extent of Future Earnings Reflected in Stock Prices

A second test examines whether the stock prices of firms with higher institutional ownership impound more or less information about future earnings relative to current earnings. We adopt an approach suggested by Kothari and Sloan (1992) to assess the extent to which stock prices reflect the relative dependence on current and future earnings.[8] They note that stock prices impound information that will only later be reflected in accounting earnings and suggest an equation of the following form:

$$R_{it,t-t} = \omega_0 + \omega_{1(t)} E_{it} / P_{it-t} + \zeta_{it} \quad (3)$$

[6] An alternative viewpoint is that the tests of earnings management are most likely to detect the presence of earnings management when firms report extreme performance (see McNichols and Wilson 1988). Hence, the extreme performance variable, EXPRF, could orthogonalize genuine discretionary accruals to PINST and thereby bias against finding a relationship between DACC and PINST. To check for the existence of such a bias, we re-estimate equation (2) without EXPRF. The tenor of our inferences is, however, unchanged.

[7] Inferences are unchanged when market value of equity is used to proxy for firm size.

[8] This approach has also been used by Jacobson and Aaker (1993) to demonstrate that stock prices in Japan reflect a greater proportion of the information in future as opposed to current earnings. Here we use the approach to analyze whether, within the U.S., the proportion of information in future versus current earnings is related to institutional ownership.

where $R_{it,t-t}$ is the buy-and-hold return for firm i over the period t-τ to t, E_{it} is income before extraordinary items for accounting period ended at time t and P_{it-t} is the stock price at end of period t-τ. $\omega_{1(t)}$ represents the market's response during the period t-τ to t to earnings information for the period ended at time t.

Because stock prices lead accounting earnings, as τ increases, it is more likely that the information contained in earnings at time t will be incorporated in the return over the period t-τ to t. This is because the market impounds information in prior periods that is later reflected in accounting earnings. To the extent that information contained in current accounting earnings has already been incorporated in stock prices of a previous period, the coefficient $\omega_{1(t)}$ will get smaller (larger) as the time interval τ gets smaller (larger) i.e., $\omega_{1(t=2)} > \omega_{1(t=1)}$. Thus, the ratio of $\omega_{1(t)}$ obtained for a longer time interval to that obtained for a shorter time interval ($\omega_{1(t=2)} / \omega_{1(t=1)}$) provides a measure of the extent to which information in current earnings has been impounded in prices in an earlier time period (see Figure 1). A higher ratio indicates that more information in current earnings has already been incorporated in past stock prices.

If institutional investors are myopically focused on short-term accounting earnings, the extent to which stock prices lead earnings will be lower for firms with higher institutional ownership. In other words, we expect the ratio ($\omega_{1(t=2)} / \omega_{1(t=1)}$) to be smaller for firms with large institutional ownership compared to firms with small institutional ownership. On the other hand, if institutional owners are sophisticated investors, then the stock price for firms with large institutional ownership would impound information in current earnings much earlier. Hence, the stock price of firms with large institutional ownership will be less sensitive to current period earnings (relative to future earnings) than stock prices of firms with small institutional ownership. Therefore, we expect the ratio ($\omega_{1(t=2)} / \omega_{1(t=1)}$) to be higher for firms with large institutional ownership compared to firms

with small institutional ownership. In our analysis, we classify firms into five quintiles of institutional ownership groups based on the percentage of institutional ownership. Next, we estimate parameter $\omega_{1(t)}$ for each ownership group separately for τ =1 and for τ =2. Then we compute the ratio $\omega_{1(t=2)}$ / $\omega_{1(t=1)}$ for each of the five groups and examine whether the ratio decreases with the level of institutional ownership.

4. Sample and descriptive statistics

To conduct the empirical tests outlined in the previous section we obtain data from two sources. First, we gather ownership data from the Disclosure Database distributed by Disclosure Incorporated for the years 1989 to 1995. The database reports the percentage of outstanding shares owned by institutions and corporate owners. This ownership data are reproduced in the database from SEC filings 13-F, 13-D, 13-G, 14-D, and Forms 3 and 4. In a comparative study of the reliability of ownership data from several databases, Anderson and Lee (1996) conclude that the Disclosure Database ranks very favorably over peer databases. Next, we obtain financial data and stock price data from the 1995 COMPUSTAT annual tapes.

We use data for a sample of 1,541 firms for our empirical analysis. From the Disclosure Database we obtain an initial sample of ownership data for 10,969 firms during the period 1989-95. Of these, a number of firms were not found in the 1995 COMPUSTAT tapes reducing the sample to 6,401 firms. We eliminate 772 firms that belong to the financial services or the utilities industry since the regulatory environment in these industries limits the magnitude of managerial discretion. We also drop 1,000 firms for which financial and/or stock price data are not available. This yields a sample of 4,629 firms. Finally, we eliminate 3,075 firms that do not have at least ten consecutive years of time-series data (in COMPUSTAT) to compute expected accruals as per the modified Jones' model. We impose this restriction to enable reasonable estimation of discretionary accruals.

For the remaining 1,554 firms we use observations for all available years to compute firm-specific discretionary accrual estimates for the period 1989 to 1995.[9] This yields 8,963 firm year observations pertaining to 1,554 firms for the period 1989-95. To reduce the effects of extreme observations we delete observations where the earnings, discretionary accruals and returns are more than three standard deviations from their pooled cross-sectional means.[10] We are left with 8,505 firm year observations for the period 1989-95 pertaining to 1,541 firms for our empirical analysis.

Panel A of Table 1 presents the descriptive statistics for the variables used in empirical tests. Of particular interest is the level of institutional ownership as measured by the percentage of their stockholdings relative to the total shares outstanding. The median and mean percentage institutional ownership is about 35%. The distribution of percentage institutional ownership is comparable to that reported in prior research (e.g., Eames, 1997, Bushee, 1998). For the median firm, institutional owners collectively own three times as much equity as managers (35.15 % stake of institutions compared with 10.98% of managers). Hence, institutions are likely to have substantial incentives to invest in gathering information about the firms they own. The mean and median total assets (unreported) are $1,487 million and $146 million respectively, indicating a positively skewed distribution of firm size. The average income before extraordinary items scaled by lagged total assets is positive (0.046). The average total accruals scaled by lagged total assets is negative (-0.038), primarily due to depreciation charges. The estimated discretionary accruals using the

[9] Note that the observations used in estimating discretionary accruals include the years 1989 to 1995--the period for which we have data for institutional ownership, our test variable. Unlike Dechow, et al. (1997), we do not use prediction errors for an out-of-sample period as our surrogate for discretionary accruals because we have no "event" to define an out-of-event period. Hence, we use all available time-series observations in determining the discretionary component of accruals. On average, we have about 17 time-series observations per firm to estimate the discretionary component of accruals.

[10] By deleting extreme discretionary accrual observations we may be eliminating observations that represent large negative accruals (e.g., big bath in bad years) or large positive accruals which may truly represent management discretion. To examine whether our results are sensitive to the outlier deletion, we include the deleted observations and re-ran tests that use the discretionary accrual estimates. We find that our inferences are unaffected by the inclusion of these outlier observations.

modified Jones (1991) model is, on average, negative (-0.005). The mean absolute value of discretionary accruals is 0.046. This is comparable to results obtained in prior research by Subramanyam (1996) and Clikeman (1996). As can be seen, the distribution of absolute discretionary accruals and income-increasing accruals is not unduly skewed as 47% of the 8505 discretionary accrual observations are positive. This suggests that the sample is not biased in favor of either income-increasing or income-decreasing accruals.

Panel B of Table 1 summarizes the cross-correlations between each pair of independent variables used to test hypothesis 1. Two correlation statistics in panel B are especially noteworthy. Size is highly associated with institutional ownership and the correlation between the two variables is 0.68 ($p < 0.01$). Hence, any analysis that does not include size will face a potentially large omitted-variable bias. Similarly, the strong negative correlation (-0.38, $p < 0.01$) between institutional ownership and managerial ownership highlights the importance of controlling for managerial ownership while examining the effects of institutional ownership and vice-versa.

5. Results

Analysis of Discretionary Accruals

Tests of hypothesis 1 examine the relation between the absolute value of discretionary accruals and the level of institutional ownership. We begin by examining the means of the absolute values of discretionary accruals in five quintiles of institutional ownership. As indicated in Table 2, the mean value of institutional ownership in the lowest quintile is 4.5% while the mean value is 69.5% in the highest quintile. The mean of the absolute values of discretionary accruals decreases from the lowest quintile (0.060) to the highest quintile (0.037). Both t-tests and Wilcoxon tests indicate that

the difference in location between quintiles 1 and 2, quintiles 2 and 3, and quintiles 3 and 4 are significant at the 0.01 level. Thus, the results contradict the idea that pressure from institutional owners leads to earnings management, and support the idea that institutional owners are sophisticated investors who are better able to undo earnings management which, ceteris paribus, reduces management's incentive to manipulate earnings.

Panel A of Table 3 presents results of a regression of the absolute value of discretionary accruals on institutional ownership using a fixed-year-effects model.[11] To address the cross-correlation and serial correlation inherent in a panel data approach, we also estimate the regression year-by year and present two Z statistics to test coefficient estimate significance across years as suggested by Bernard (1987). The first, *Z1*, assumes residual independence across years, and the second, *Z2*, relaxes this assumption.[12] The results suggest a strong significant negative relation between institutional ownership and absolute discretionary accruals. Multivariate tests, controlling for a variety of factors that influence discretionary accruals, are presented in panel B.[13] Again, the relation between the absolute value of discretionary accruals and institutional ownership is negative and statistically significant. As expected, we also find significant relations between discretionary accruals and firm size, leverage, and a dummy variable that captures extreme earnings

[11] Although test statistics are based on OLS standard errors, all inferences are insensitive to using White (1980) heteroscadasticity–consistent standard errors. Our inferences are also insensitive to using the Fama-Macbeth approach where a z-statistic for the coefficients is obtained by dividing the mean coefficient by the standard error of the yearly coefficients from the seven yearly regressions.

[12] *Z1* equals $(1/\sqrt{T})\sum_{j=1}^{T}(t_j/\sqrt{k_j/(k_j-2)})$ where T is the number of years, t_j is the t-statistic, and k_j is the degrees of freedom for year j (see Healy et al [1987]). *Z2* equals (mean t)/(std deviation t/$\sqrt{(T-1)}$) (see White [1984] and Bernard [1987]).

[13] The maximum condition index obtained in estimating equation (2) is 6.41 well below 30, the level at which multicollinearity could lead to ambiguous inferences (see Belsley, et al. 1980)

performance.[14] The relation between discretionary accruals and managerial ownership is not significant. This later result is puzzling given that prior research by Warfield et al. (1995) finds that managerial ownership is associated with discretionary accounting choices. There are at least two plausible explanations for this result. First, Warfield et al. (1995) measure non-discretionary accruals as the five-year average of prior period accruals whereas we use the modified Jones (1991) model. Second, as indicated before, institutional ownership may be an important correlated omitted variable in prior research (recall that the correlation between managerial ownership and institutional ownership is -0.38 and significant at the 0.01 level).

Analysis of the Extent of Future Earnings Reflected in Stock Prices

The results of estimating equation (3) using a pooled fixed-year effects model is reported in Table 4. Because our inferences are unchanged when *Z1* and *Z2* statistics are computed, we have chosen to report results only from the fixed-effects model for brevity. Moreover, the focus of our test in (3) is the *ratio* of coefficients for short and long term interval, not the coefficients themselves. Hence, deflated coefficient standard errors caused by lack of independence in error terms (that *Z1* and *Z2* are meant to correct) is of less concern here as compared to the estimates of equation (2).

As indicated in panel A of Table 4, we estimate equation (3) for two time periods (i.e., τ=1,2) in quintiles based on institutional ownership. Note that in each quintile, $\omega_{1(t=2)}$ is greater than $\omega_{1(t=1)}$. For example, in the lowest quintile of institutional ownership, $\omega_{1(t=2)}$ is 1.98 while $\omega_{1(t=1)}$ is 1.47. This is consistent with the notion that stock prices lead accounting earnings. (In other words, since the information in period t earnings is partially impounded in stock prices from period t-2 to

[14] We re-estimated regression (2) by standardizing both the dependent and independent variables as the value minus the sample mean divided by the its sample standard deviation. In such a revised specification, the coefficient on PINST is a negative 0.07 and is significant at $p < 0.01$.

t-1, the reaction to period t earnings will be greater for return window t-2 to t compared to return window t-1 to t).

Our primary focus in Table 4 is on the ratio of $\omega_{1(t=2)}$ to $\omega_{1(t=1)}$ in the lowest quintile of institutional ownership versus the ratio in the highest quintile of institutional ownership. We focus on the difference in the ratios between the lowest and the highest quintiles of institutional ownership because the difference in institutional ownership is pronounced for these groups and statistical power is enhanced. The ratio captures the extent to which prices lead accounting earnings, and results indicate that when institutional ownership is relatively high (mean = 69.5% in the highest quintile, see Table 2), the ratio is relatively high (2.73), and when institutional ownership is relatively low (mean = 4.5% in the lowest quintile, see Table 2), the ratio is relatively low (1.34). The results are consistent with the hypothesis that institutional owners are sophisticated investors since stock prices incorporate information earlier when institutional ownership is relatively high. If institutional owners were more focused on current earnings, compared to other investors, opposite results would obtain.

While we focus only on the lowest and highest quintiles, note that the ratio increases monotonically from the first to the fifth quintile. To test the statistical significance of the difference in the ratios between the lowest and highest quintiles we conduct a simulation analysis as in Jacobson and Aaker (1993). Essentially, we generate 1,000 normal observations with the mean and variance characteristics reported in Table 4 for $\omega_{1(t=2)}$ and $\omega_{1(t=1)}$. Using these simulated observations of $\omega_{1(t=2)}$ and $\omega_{1(t=1)}$, we obtain 1,000 ratios of the coefficients for the highest and lowest institutional ownership quintile. We find (results not reported) that the mean ratio of the simulated coefficients for the high institutional ownership quintile is greater than the mean ratio of the simulated coefficients for the low institutional ownership quintile at the 0.01 level (two-tailed

test).

The approach taken in panel B of Table 4 repeats the analysis in panel A controlling for various factors that are expected to affect the relation between earnings and returns. Specifically, we control for firm size, market to book, earnings persistence, earnings variability, leverage and managerial ownership. Each of these variables is interacted with earnings in estimating equation (3). Firm size (measured as the log of sales, a proxy for information environment), market to book (a proxy for growth opportunities), earnings persistence (measured by the auto-correlation of earnings) and earnings variability (measured by the standard deviation of annual earnings divided by lagged total assets) are included because studies of firm valuation have shown them to affect the earnings-return relation (e.g., Collins, et al. 1987; Kormendi and Lipe 1987; Collins and Kothari 1989). Leverage (total debt divided by market value of equity) and managerial ownership are included because they are related to accounting choices that affect the informativeness of earnings (Warfield, et al. 1995). As indicated, the results in panel B are similar to those in panel A. However, unlike panel A, the ratios are not monotonically increasing. Nevertheless, the ratio $\omega_{1(t=2)}/\omega_{1(t=1)}$ is larger in the upper quintile (2.47) compared to the lower quintile (1.48). Using the simulation approach described earlier, the difference in the ratios is significant at the 0.01 level (two-tailed test).[15]

Sensitivity analyses

In this section we examine the robustness of our results to a variety of factors. First, we explore alternative explanations for the negative relation between the absolute value of

[15] Table 1 shows that the distribution of stock returns is right-skewed. To check whether such skewness impacts inferences, we re-ran the tests of hypothesis 2 using a logarithmic transformation of returns (i.e., ln $(1+R_{it})$) as the dependent variable. The tenor of the conclusions is, however, unchanged.

discretionary accruals and institutional ownership. One plausible explanation for obtaining the negative relation is that discretionary accruals are correlated with firm characteristics that institutions find desirable. For example, Gompers and Metrick (1998) show that, on average, institutions prefer firms that are large, have high book-to-market ratios, and have lower returns in the previous year. O'Brien and Bhushan (1990) report that institutional investors typically invest in firms that are widely followed by security analysts. To control for these factors, we conduct a reverse regression of the level of institutional ownership against the absolute value of discretionary accruals and firm size, book-to-market, number of analysts following a firm, and lagged stock returns. We continue to obtain a strong negative relation between institutional ownership and the absolute value of discretionary accruals. This finding strengthens our confidence that the negative relation between institutional ownership and the absolute value of discretionary accruals is not obtained because of omitted variables.

Second, recognizing that the capacity for collective action by institutional owners increases with the concentration of institutional ownership (see Black, 1990 and Admati, Pfleiderer, and Zechner, 1994), we examine whether managerial discretion with respect to earnings decreases with higher average institutional ownership per owner. We find that average percentage institutional ownership per owner is negatively associated with absolute discretionary accruals. Furthermore, we continue to observe a significant negative relationship between percentage institutional ownership and the absolute value of discretionary accruals.

Third, Dechow, et al. (1997) suggest that the estimated discretionary accruals as per the Jones (1991) model may be contaminated with non-discretionary accruals. If such contamination causes the documented negative relation between discretionary accruals and institutional ownership, we expect to observe the same negative relation between institutional ownership and non-

discretionary accruals. However, we find (results not reported) no systematic relation between absolute non-discretionary accruals and the level of institutional ownership.

6.Conclusion

In this paper, we test two competing views of institutional owners. One view is that institutional owners are overly focused on current financial performance. Managers, fearing that a failure to meet a short-term profit goal will lead institutions to liquidate their holdings, exercise accounting discretion or take real economic actions (such as cutting research and development) to manage earnings. An opposing view is that institutional owners are sophisticated investors who are less likely to be fooled by earnings management which, in turn, reduces the incentive for such behavior. We find evidence of a strong negative relation between the absolute value of discretionary accruals and institutional ownership which supports the view that institutional owners are sophisticated investors. This relation holds in the presence of numerous control variables.

We also find that stock prices tend to reflect a relatively greater proportion of the information in future period earnings when institutional ownership is high compared to when institutional ownership is low. This result is also consistent with the view that institutional owners are sophisticated investors who look beyond current earnings in assessing firm value. Studies of firm valuation and contracting suggest a number of factors that need to be controlled when examining the earnings-return relation. Controlling for these factors, however, does not change inferences with respect to institutional ownership.

Overall, our results provide strong evidence supporting the contention that institutional owners are sophisticated investors and refuting the contention that managers manipulate earnings due to pressure from institutional investors who are overly focused on short-term profitability. This is not to say that *all* institutional owners are sophisticated investors, or that *no* managers are

pressured by institutional owners. Indeed, research by Bushee (1998) suggests that a sub-category of institutional investors (specifically those with high portfolio turnover, diversification and following a momentum trading strategy) may pressure managers to cut R&D. However, our research contributes to the debate regarding institutional ownership by demonstrating that *on average* earnings are less likely to be manipulated when institutional ownership is high, and stock prices are more likely to reflect future earnings when institutional ownership is high. Both results are consistent with institutional investors possessing information acquisition and information processing advantages. In future research, we hope to demonstrate that these advantages are evident in settings where prior research has documented inefficient processing of information. For example, prior research documents drift in security prices following earnings announcements. And more recently, Sloan (1996) documents that stock prices fail to reflect fully the information containing in accruals and cash flow components. Do these inefficiencies persist when instituional ownership is high?

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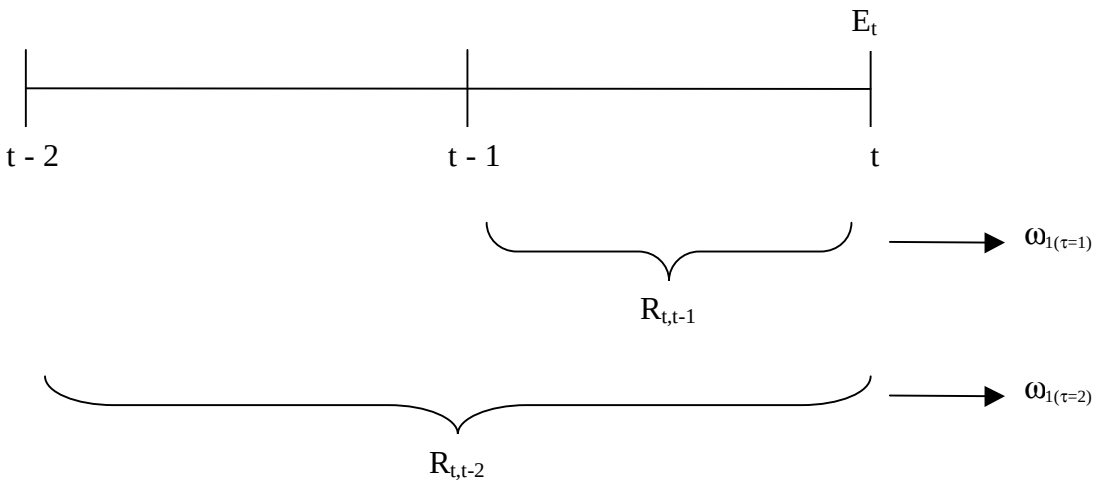
Figure 1
Timeline underlying the research design used to test H2



$R_{t,t-1}$ = stock return over the period t-1 to t

E_t = earnings for period ended at time t

$\omega_{1(\tau=1)}$ = proportion of earnings information at time t (E_t) impounded in stock prices during t-1 to t.

$\omega_{1(\tau=2)}$ = proportion of earnings information at time t (E_t) impounded in stock prices during t-2 to t.

Ratio = $\frac{?_{1(t=2)}}{?_{1(t=1)}}$ = proportion of information in E_t impounded in stock prices during period (t-2,t-1) relative to (t-1,t).

Table 1

Panel A: Descriptive statistics of select independent and dependent variables

Variable	Mean	Std.dev.	Median	First Quartile	Third Quartile
ACC	-0.038	0.082	-0.044	-0.082	0.000
DACC	-0.005	0.063	-0.003	-0.037	0.028
|DACC|*	0.046	0.044	0.032	0.014	0.064
PINST(%)	35.86	23.47	35.15	15.20	55.33
MGR(%)	18.12	20.38	10.98	2.58	27.05
SIZE	5.315	2.143	5.244	3.867	6.738
LEV	0.219	0.192	0.198	0.061	0.329
R	0.184	0.530	0.089	-0.137	0.367
E	0.046	0.104	0.049	0.011	0.092

*46.8% (53.2%) of the DACC observations were positive (negative).

|DACC| is measured as the absolute value of difference between accruals (ACC) and non-discretionary accruals using the Jones (1991) model modified in a manner similar to that suggested by Dechow et al (1995), PINST is the percentage of equity shares held by institutional investors, MGR represents percentage of shares held by inside owners, i.e., individuals (officers, directors, and principal owners) who can exercise significant influence over corporate affairs, SIZE is natural logarithm of the sales, LEV indicates the ratio of total debt scaled by lagged total assets, R is the annual stock return measure over a twelve month fiscal period and E is income before extraordinary items scaled by lagged total assets. The sample is comprised of 8505 firm-year observations drawn from the 1989-1995 fiscal years.

Panel B: Pearson correlation matrix of independent variables used to test H1

Variables	PINST	MGR	SIZE	LEV
MGR	-0.38**			
SIZE	0.68**	-0.15**		
LEV	0.04**	-0.00	0.24**	
EXPRF	-0.09**	0.03**	-0.21**	-0.16**

The sample is comprised of 8505 firm-year observations drawn from the 1989-1995 fiscal years. ** indicates that correlations are significant at the 0.01 level. PINST is the percentage of equity shares held by institutional investors, MGR represents percentage of shares held by inside owners, i.e., individuals (officers, directors, and principal owners) who can exercise significant influence over corporate affairs, SIZE is natural logarithm of the sales, LEV indicates the ratio of total debt scaled by lagged total assets and EXPRF is set to 1 (0) when a firm-year's earnings scaled by lagged total assets is (is not) in the top or the bottom decile of the distribution of earnings scaled by lagged total assets for the sample.

Table 2

Absolute discretionary accruals by quintiles of institutional ownership

Mean	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
PINST(%)	4.50	19.10	35.00	51.20	69.50
|DACC|	0.060	0.050**,++	0.044**,++	0.038**,++	0.037

The quintiles are based on PINST. Under each quintile, the mean PINST and |DACC| are reported. The total sample consists of 8505 firm-years. Hence, each quintile contains 1701 firm-years. **(++) indicates that the mean |DACC| for the quintile is significantly different from the mean |DACC| for the previous quintile using a two tailed t-test at the 1% level of significance (two tailed non-parametric Wilcoxon test at the 1% level of significance). |DACC| is measured as the absolute value of difference between accruals (ACC) and non-discretionary accruals using Jones (1991) model modified in a manner similar to that suggested by Dechow et al. (1995) and PINST is the percentage of equity shares held by institutional investors.

Table 3

Regression of absolute discretionary accruals on institutional ownership and other determinants of the magnitude of absolute discretionary accruals

$$|DACC|_{it} = \gamma_0 + \gamma_1 PINST_{it} + \gamma_2 MGR_{it} + \gamma_3 SIZE_{it} + \gamma_4 LEV_{it} + \gamma_5 EXPRF_{it} + u_{it} \quad (2)$$

	γ_0 (?)	γ_1 (+/–)	γ_2 (–)	γ_3 (?)	γ_4 (+)	γ_5 (+)	Adj.R^2
Panel A:							
Fixed effects coeff	**	-0.037					3.97
Fixed effects t-statistic	**	-18.40					51.23†
Fixed effects p-value	**	0.00					0.00
Z1		-18.54					
Z2		-18.07					
Panel B:							
Fixed effects coeff	**	-0.013	0.002	-0.004	0.010	0.012	7.18
Fixed effects t-statistic	**	-4.92	0.93	-12.54	3.65	8.72	60.78†
Fixed effects p-value	**	0.00	0.16	0.00	0.00	0.00	0.00
Z1		-4.75	1.07	-12.15	4.12	9.93	
Z2		-3.42	0.67	-10.83	4.96	7.73	

The sample is comprised of 8505 firm-year observations drawn from the 1989-1995 fiscal years. ** indicates that year-specific effects are not reported. † indicates that for Adj. R^2, the second row represents F-statistic instead of t-statistic. p-values are based on one-tailed t-tests where sign is predicted and based on two-tailed t-tests otherwise. *Z1* equals $(1/\sqrt{T})\sum_{j=1}^{T}(t_j/\sqrt{k_j/(k_j-2)})$ where T is the number of years, t_j is the t-statistic, and k_j is the degrees of freedom for year j (see Healy et al [1987]). *Z2* equals (mean t)/(std deviation $t/\sqrt{(T-1)}$) (see White [1984] and Bernard [1987]). |DACC| is measured as the absolute value of difference between accruals (ACC) and non-discretionary accruals using the Jones (1991) model modified in a manner similar to that suggested by Dechow et al (1995), PINST is the percentage of equity shares held by institutional investors, MGR represents percentage of shares held by inside owners, i.e., individuals (officers, directors, and principal owners) who can exercise significant influence over corporate affairs, LEV indicates the ratio of total debt scaled by lagged total assets, SIZE is natural logarithm of the sales EXPRF is set to 1 (0) when a firm-year's earnings scaled by lagged total assets is (is not) in the top or the bottom decile of the distribution of earnings scaled by lagged total assets for the sample.

Table 4

Stock market response to earnings, 12 and 24 month time intervals, by quintile of institutional ownership

Panel A: Without control variables

$$R_{it,t-t} = w_0 + w_{1(t)} E_{it} / P_{it-t} + z_{it} \quad (3)$$

	$w_{1(t=1)}$	$w_{1(t=2)}$	Ratio $w_{1(t=2)} / w_{1(t=1)}$
Quintile 1	1.47 (11.48)	1.98 (6.14)	1.34
Quintile 2	1.70 (11.65)	2.49 (9.72)	1.46
Quintile 3	1.92 (12.06)	3.67 (10.98)	1.92
Quintile 4	1.99 (8.95)	4.65 (11.61)	2.34
Quintile 5	1.96 (8.38)	5.35 (9.77)	2.73

Panel B: With control variables

$$R_{it,t-t} = w_0 + w_{1(t)}\, E_{it}/P_{it-t} + w_2\,(E_{it}/P_{it-t} * SIZE) + w_3\,(E_{it}/P_{it-t} * M/B) + w_4\,(E_{it}/P_{it-t} * PERS)$$
$$+ w_5\,(E_{it}/P_{it-t} * EVAR) + w_6\,(E_{it}/P_{it-t} * LEV) + w_7\,(E_{it}/P_{it-t} * MGR) + z_{it}$$

	$w_{1(t=1)}$	$w_{1(t=2)}$	**Ratio** $w_{1(t=2)} / w_{1(t=1)}$
Quintile 1	0.94 (2.16)	1.39 (1.73)	1.48
Quintile 2	2.62 (4.46)	2.48 (2.45)	0.95
Quintile 3	1.93 (2.68)	3.42 (2.68)	1.77
Quintile 4	0.73 (0.69)	4.38 (2.47)	6.00
Quintile 5	2.74 (2.21)	6.77 (2.45)	2.47

The sample is comprised of 8505 firm-year observations drawn from the 1989-1995 fiscal years. The ratio ($\omega_{1(t=2)} / \omega_{1(t=1)}$) provides a measure of the sensitivity of stock prices to current earnings relative to future earnings, i.e., a higher ratio represents a lower sensitivity of stock returns to current earnings relative to future earnings. Simulation tests indicate that the ratio for the fifth quintile is greater than the ratio for the first quintile at $p < 0.01$. Pooled fixed-effects based t-statistics are reported in parentheses. Our inferences are unchanged when Z1 and Z2 coefficients are computed or when pooled fixed-effects model is adjusted for White (1980) heteroscadasticity –consistent standard errors. $R_{it,t-t}$ is the buy-and-hold return for firm i over the period t-τ to t, E_{it} is income before extraordinary items and P_{it-t} is the stock price at end of period t-τ. $\omega_{1(t)}$ represents the market's response to earnings information. LEV indicates the ratio of total debt scaled by lagged total assets, SIZE is natural logarithm of the sales, EVAR refers to earnings variability and is measured as the standard deviation of earnings scaled by lagged total assets, M/B refers to the market to the book ratio and is measured as the ratio of the market value of equity to the book value of equity, PERS refers to persistence of earnings measured as the AR(1) coefficient from a regression of a firm's earnings (scaled by lagged total assets) on lagged earnings, and MGR represents percentage of shares held by inside owners, i.e., individuals (officers, directors, and principal owners) who can exercise significant influence over corporate affairs. For brevity, we suppress the coefficient estimates for the various control variables.