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Corporate Disclosure Practices, Institutional Investors, and Stock Return Volatility

BRIAN J. BUSHEE* AND CHRISTOPHER F. NOE†

ABSTRACT

This paper investigates whether a firm's disclosure practices affect the composition of its institutional investor ownership and, hence, its stock return volatility. The findings indicate that firms with higher *AIMR* disclosure rankings have greater institutional ownership, but the particular types of institutional investors attracted to greater disclosure have no net impact on return volatility. However, yearly improvements in disclosure rankings are associated with increases in ownership primarily by "transient" institutions, which are characterized by aggressive trading based on

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short-term strategies. Firms with disclosure ranking improvements resulting in higher transient ownership are found to experience subsequent increases in stock return volatility.

[KEYWORDS: corporate disclosure; institutional investors; stock return volatility.]

1. Introduction

Increasingly, managers are turning to investor-relations consulting firms for help in attracting certain types of investors. These consulting firms generally advocate targeting institutional investors with long investment horizons and screening out investors who trade frequently, with the goal of achieving a stable ownership base that will not destabilize a firm's stock price based on short-term developments (Anand [1991], Elgin [1992], and Byrne [1999]). Targeting activities often involve improved corporate disclosure practices and specially tailored road-show presentations (Elgin [1992] and Byrne [1999]). However, recent anecdotal evidence in the popular press indicates that improved disclosure could attract institutions that trade aggressively and actually exacerbate stock price volatility around news announcements (Fox [1997] and Serwer [1997]). These articles imply that there are potentially important links between a firm's disclosure practices, the composition of its institutional investor ownership, and the volatility of its stock price.

Prior research has provided evidence on each of these links individually. Lang and Lundholm [1993] find that analysts' assessments of corporate disclosure practices are weakly positively associated with firms' stock return volatility. They conjecture that stock return volatility proxies for information asymmetry, which managers are trying to reduce through improved disclosure. Healy, Hutton, and Palepu [1999] report that sustained increases in analysts' assessments of corporate disclosure practices result in higher levels of institutional ownership, which they cite as a benefit of improved disclosure. However, Sias [1996] and Potter [1992] both provide evidence that higher institutional ownership is associated with higher stock return volatility. These latter two findings raise the possibility that the positive association between analysts' assessments of disclosure practices and stock return volatility documented in Lang and Lundholm [1993] is due to an indirect link between disclosure and volatility through the attraction of institutional investors. In this paper, we classify institutional investors based on their expected preferences for corporate disclosure practices and their expected impact on stock return volatility to examine this potential indirect link between disclosure and volatility.

There are several potential reasons for managers to be concerned about stock return volatility. First, high stock return volatility can increase a firm's perceived riskiness, thereby raising its cost of capital (Froot, Perold, and Stein [1992]). To the extent that stock price becomes a noisier signal of firm value, high stock return volatility can also make stock-

price-based compensation less effective and/or more costly (Baiman and Verrecchia [1995] and Jorgensen [1998]). Lastly, shareholder class-action lawsuits have been shown to be associated with sudden, large stock price drops, a specific form of stock return volatility (Francis, Philbrick, and Schipper [1994] and Grundfest and Perino [1998]).

We categorize institutions based on various aspects of their trading behavior and find significant differences in the sensitivity of institutional investors to corporate disclosure practices, as measured by the Association for Investment Management and Research *(AIMR)* ratings of disclosure. These ratings represent analysts' assessments of the informativeness of corporate disclosure practices and encompass both qualitative and quantitative aspects of disclosure (Lang and Lundholm [1993; 1996] and Healy, Hutton, and Palepu [1999]). The findings indicate that transient institutions, which trade aggressively based on short-term trading strategies, invest more heavily in firms with higher disclosure rankings and add to their holdings in response to increases in disclosure rankings. This evidence is consistent with transient institutions valuing more forthcoming disclosure practices because such practices lessen the price impact of trades, facilitating the realization of short-term trading gains. Quasi-indexer institutions, which hold large, diversified portfolios and trade very infrequently, also invest more heavily in firms with higher disclosure rankings. However, they tend to sell their holdings in firms that experience decreases in disclosure rankings but do not immediately increase holdings in response to disclosure rating improvements. These findings are consistent with quasi-indexers relying on corporate disclosure as a low-cost mechanism for monitoring firm performance. Finally, dedicated institutions, which are characterized by large, stable holdings in a small number of firms, show no sensitivity to disclosure rating levels or changes, suggesting that corporate disclosure practices are not a significant factor affecting these institutions' investment decisions.

We use these findings to examine the direct and indirect effects of corporate disclosure practices on stock return volatility. The findings indicate that high disclosure rankings are directly associated with lower subsequent stock return volatility. We also find that higher levels of transient ownership are associated with higher future stock return volatility, which, combined with the finding that high disclosure rankings are positively associated with transient ownership, indicates that improved disclosure is indirectly associated with higher stock return volatility through transient institutional ownership. However, this indirect effect is offset by the fact that higher quasi-indexer ownership, which is also associated with higher disclosure ratings, is associated with lower future stock return volatility. Thus, firms with high disclosure ratings experience relatively lower stock return volatility if both quasi-indexer and transient institutions are significant equity holders, as the indirect volatility effects of ownership by these types of institutions cancel each other out.

When managers significantly change their firms' disclosure practices, these indirect effects no longer offset each other. We find that changes in transient ownership are positively associated with future changes in stock return volatility, while changes in ownership by quasi-indexers institutions do not precede volatility changes. As a result, improvements in disclosure rankings that are associated with higher transient institutional ownership result in an increase in stock return volatility that is not immediately offset by changes in quasi-indexer institutional ownership. These findings are robust to various measures of stock return volatility, including systematic and unsystematic risk measures, stock return volatility around earnings announcements, and the number of days firms experience large stock price movements.

These findings contribute to the voluntary disclosure literature by suggesting that improved corporate disclosure practices could lead to an indirect cost, namely, attracting a shortsighted institutional investor base that results in a more volatile stock price. Several prior studies have documented many beneficial capital markets effects associated with improved disclosure, including lower equity and debt costs (Botosan [1997], Sengupta [1998], and Botosan and Plumlee [2000]), narrower bid–ask spreads (Welker [1995], Healy, Hutton, and Palepu [1999], and Leuz and Verrecchia [2000]), and greater stock price responsiveness to earnings (Price [1998]). Moreover, this research has also found that firms improving their disclosure practices experience increased analyst following and institutional investor ownership (Lang and Lundholm [1996] and Healy, Hutton, and Palepu [1999]). Our work indicates that attracting institutions with improved disclosure is not always beneficial and managers faced with decisions about whether to change their firms' disclosure practices should weigh any potential benefits of improved disclosure against the possibility of exacerbating stock return volatility. In addition, our work offers a possible explanation for the positive association between disclosure and stock return volatility documented in other studies (Lang and Lundholm [1993] and Leuz and Verrecchia [2000]).

This paper also contributes to the literature on institutional investors and stock return volatility, which has produced conflicting findings up to this point. Potter [1992] documents a positive association between the level of institutional investor holdings in a firm and the level of stock return volatility on days surrounding earnings announcements. In contrast, El-Gazzar [1998] finds a negative association using a different sample period and a different set of control variables. Gompers and Metrick [1998] document a negative contemporaneous association between annual stock return volatility and institutional ownership, but Sias [1996] finds that increases in institutional investor holdings precede increases in stock return volatility. This paper finds that both levels of and changes in daily stock return volatility, measured both annually and around earnings announcements, appear to be partly driven by increased transient institution holdings. In addition, levels of and changes in the incidence

of large, one-day stock price movements, a form of stock return volatility that is linked to shareholders class-action lawsuits, are also positively associated with ownership by transient institutions.

Section 2 discusses the potential links between corporate disclosure practices, different types of institutional investors, and stock return volatility. Section 3 describes the data used in our tests. Section 4 presents findings on the association between corporate disclosure practices and institutional ownership, and section 5 reports findings on the effects of corporate disclosure practices and institutional ownership on stock return volatility. Finally, section 6 provides a summary and conclusions.

2. Empirical Predictions

2.1 CORPORATE DISCLOSURE PRACTICES AND INSTITUTIONAL OWNERSHIP

Institutional investors could be sensitive to corporate disclosure practices for a number of reasons. First, institutional investors could be attracted to firms with more informative disclosure practices if such disclosure reduces the price impact of trades (Healy, Hutton, and Palepu [1999]). Prior research finds that institutions tend to invest more heavily in firms with greater average trading volumes, consistent with institutions preferring firms for which trades are likely to have a lower price impact (Falkenstein [1996] and Gompers and Metrick [1998]). Diamond and Verrecchia [1991] show that greater disclosure reduces the information asymmetry between the firm and investors, which lessens price impacts of trades by reducing both bid–ask spreads and the amount of information potentially revealed by large trades.[1]

Second, institutions could be sensitive to corporate disclosure practices if disclosure influences the potential for profitable trading opportunities. Profit opportunities could be eroded if more forthcoming disclosure provides a substitute for private information collection. Alternatively, Kim and Verrecchia [1994] argue that the profit-making ability of sophisticated investors lies in their superior ability to interpret the implications of public signals, indicating that greater disclosure could enhance profit opportunities. Thus, the effect of disclosure on the profit opportunities of an institution likely depends on its information-gathering and processing capabilities.

Finally, corporate disclosure practices could be important to institutions if they rely on public disclosure for corporate governance activities. Bushman et al. [2000] argue that a critical input to the effective operation of corporate governance mechanisms is information about how and why equity value is changing. Smith [1996] reports that *CALPERS* uses

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[1] Welker [1995], Healy, Hutton, and Palepu [1999], and Leuz and Verrecchia [2000] provide empirical evidence that disclosure is positively associated with stock market liquidity as proxied by lower bid–ask spreads.

"screens" based on public data to choose which of its portfolio firms to target for shareholder activism. Thus, institutions that are active in corporate governance and/or do not have the resources to engage in private information collection will likely prefer firms with more forthcoming disclosure.

Overall, the importance of corporate disclosure practices to institutional investors depends on their investment horizons, information-gathering capabilities, and governance activities. To capture key differences along these dimensions, we use the methodology of Bushee [1998; 2001] to separate institutions into three groups based on prior investment behavior. The first group of institutions, called "transient" institutions, is characterized as having high levels of portfolio turnover and diversification. These characteristics reflect the fact that transient institutions tend to be short-term-focused investors with little interest in long-term capital appreciation or dividends (Porter [1992]). Because transient institutions focus on attaining short-term returns from their position in a firm's stock, high liquidity will likely be important to them so that the price impact of their trading does not erode any potential trading gains. Thus, transient institutions are expected to be attracted to firms with more informative disclosure practices.

The second group of institutions, called "dedicated" institutions, is characterized as taking large stakes in firms and having low portfolio turnover, both of which are consistent with a "relationship" approach to investing (Porter [1992] and Dobrzynski [1993]). Due to their large, stable ownership positions, dedicated institutions often have better access to private information about their portfolio firms (Porter [1992]). As a result, public disclosure is less important in monitoring firms and is potentially costly if it reveals proprietary information. Because dedicated institutions are not frequent traders, the liquidity benefits of disclosure are likely to be less important to them than to other types of institutions. Thus, dedicated institutions are likely to be indifferent to disclosure practices or even prefer firms with less forthcoming disclosure.

The final group of institutions, called "quasi-indexers," is characterized as having low portfolio turnover and highly diversified holdings. These characteristics suggest a passive, buy-and-hold strategy of investing (Porter [1992]). This strategy is prevalent among institutions like public pensions and bank trusts, which have substantial sums to invest and/or lack the resources to actively manage their portfolios. Like dedicated institutions, the low portfolio turnover of these institutions limits the importance of disclosure in reducing price impacts of trading. However, for quasi-indexers with large, diversified portfolios, corporate disclosures are often a cost-effective method of monitoring firm performance, indicating that quasi-indexers should prefer firms with more forthcoming disclosure.

We examine the sensitivity of institutional investors to corporate disclosure practices using both a levels and a changes approach. Consistent findings across these two approaches increase our confidence that insti-

tutional investors are responding to the benefits of disclosure per se rather than to some omitted factor that is associated with either disclosure levels or changes (e.g., a restructuring event that leads to greater disclosure and also affects institutional ownership). Moreover, the changes analysis provides a timeliness measure of how quickly institutions respond to changes in corporate disclosure practices. Based on their propensity to trade, we expect transient institutions to respond more quickly to changes in disclosure than either quasi-indexer or dedicated institutions.

2.2 CORPORATE DISCLOSURE PRACTICES, INSTITUTIONAL OWNERSHIP, AND STOCK RETURN VOLATILITY

One commonly cited benefit of disclosure is that, by mitigating information asymmetry, it reduces the magnitude of periodic surprises about a firm's performance and makes its stock price less volatile (Lang and Lundholm [1993] and Healy, Hutton, and Palepu [1999]). High stock return volatility is potentially undesirable for firms because it can increase their perceived riskiness and cost of capital (Froot, Perold, and Stein [1992]), make stock-price-based compensation less effective and/or more costly (Baiman and Verrecchia [1995] and Jorgensen [1998]), and increase the likelihood of a lawsuit in the wake of a big stock price decline (Francis, Philbrick, and Schipper [1994] and Grundfest and Perino [1998]). Prior research provides mixed evidence on how disclosure is associated with stock return volatility. Patell [1976] reports evidence that firms' stock return volatility drops in the weeks after voluntary earnings forecasts are issued. However, Lang and Lundholm [1993] find a weak positive association between analysts' assessments of corporate disclosure practices and firms' stock return volatility. They conjecture that a positive association could result if stock return volatility proxies for information asymmetry and managers are attempting to reduce this asymmetry with improved disclosure.

Another potential explanation for such an association is that improved disclosure attracts greater holdings by transient institutions, whose aggressive trading behavior and alleged propensity to engage in large-scale selling when faced with bad news indirectly lead to higher stock return volatility (Porter [1992]). Prior research suggests that high levels and large changes of institutional ownership are associated with higher future stock return volatility (Sias [1996] and Potter [1992]). Moreover, Chan and Lakonishok [1993; 1995] find that both individual trades and packages of trades by institutional investors have sizable price impacts over short horizons, with high turnover institutions producing the largest price impacts. Thus, more forthcoming disclosure that attracts transient institutions should result in higher stock return volatility, ceteris paribus. Alternatively, if improved disclosure attracts quasi-indexer or dedicated institutions, disclosure could have an opposite indirect effect of lowering stock return volatility due to the passive trading behavior of these institutions. The goal of our empirical tests is to separate the direct effect of

corporate disclosure practices on stock return volatility from the indirect effects of disclosure on volatility through the attraction of different types of institutional investors.

We examine the effect of corporate disclosure practices and institutional ownership on future stock return volatility using both a levels and a changes approach. Specifically, we test whether having a certain composition of institutional ownership resulting from a given level of or change in corporate disclosure practices has a significant impact on stock return volatility going forward. We do not examine stock return volatility contemporaneous with disclosure practices and institutional ownership to guard against the possibility of any documented association being the result of some exogenous volatility shock that drives changes in both institutional ownership and disclosure.

3. Data Description

The primary variable required for the analysis is a measure of corporate disclosure practices. We measure disclosure using the annual ranking of corporate disclosure practices published by the Association for Investment and Management Research (AIMR). We have a comprehensive data set for all firms rated by AIMR between 1982 and 1996, which results in a sample of 4,314 firm-year observations after we ensured the availability of other variables necessary for the analysis. The objective of the AIMR disclosure assessment project is "to improve corporate communication between the investment community and the management of publicly owned corporations" (AIMR [1995–96]). The AIMR rankings capture analysts' assessments of the informativeness of various aspects of firms' disclosure practices and have been used in prior research as a proxy for corporate disclosure practices (Lang and Lundholm [1993; 1996], Welker [1995], Sengupta [1998], Bamber and Cheon [1998], Healy, Hutton, and Palepu [1999], and Botosan and Plumlee [2000]).[2]

The ratings of firms' disclosure practices are undertaken on an annual basis by industry-specific subcommittees. The subcommittees rank firms' disclosure practices on three dimensions: (1) annual report/10-K disclosures, (2) interim report/10-Q disclosures, and (3) investor relations activities. The reported final scores reflect the consensus of the subcommittee. No individual analyst rankings are disclosed. This policy reduces some of the potential for analysts to bias their assessment of a firm's dis-

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[2] Rankings capture analysts' assessments of both the frequency and usefulness of firms' disclosure practices. The following excerpts from reports reflect these sentiments: "Pacific Enterprises received the second-highest rating for its investor relations program because of the frequent and timely calls from the investor relations contact and quarterly conference calls with key management personnel" (AIMR [1995–96]) and "Bear Stearns was taken to task for insufficient detail on the composition of earnings, product mix, and strategy; some subcommittee members commented that better articulation of these would make for a more powerful story" (AIMR [1993–94]). See Healy, Hutton, and Palepu [1999] for a detailed description of AIMR analyst ranking guidelines.

closure practices in order to strengthen individual relations with management (Healy, Hutton, and Palepu [1999]).[3]

One complication of using the *AIMR* database is that different industries are rated on different scales because analysts within each industry are only responsible for that industry's rankings. In addition, the raw scales occasionally change over time in the same industry. As a result, raw disclosure scores across industries and/or across time are not comparable. To address this problem, we follow prior research and convert raw disclosure scores into percentile ranks within each industry-year (Lang and Lundholm [1993; 1996] and Healy, Hutton, and Palepu [1999]).

Another complication is determining the period for which the disclosure rating applies. Although *AIMR*'s annual survey of corporate disclosure practices is typically released sometime around November, we assume that the annual disclosure period covered by an *AIMR* report ends on June 30. For example, we assume that the *AIMR* report for 1995–96 reflects disclosure practices for the time period between July 1, 1995 and June 30, 1996. We choose this time period because by midway through the year, firms will likely have completed every activity (e.g., published their annual reports) that is rated by *AIMR*.[4] Figure 1 presents a time line that illustrates this example and shows when our other variables are calculated relative to the disclosure period.

We obtain data on institutional holdings from the *Spectrum* database, which contains all 13-F filings between 1980 and 1997, to measure the percentage ownership relative to total shares outstanding for each of the three groups of institutions discussed earlier: transient (TRA_t), dedicated (DED_t), and quasi-indexers (QIX_t). Institutions are classified into these three groups using a factor and cluster analysis approach described in Bushee [1998; 2001].[5] Table 1 describes the mean portfolio

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[3] An important question concerning these rankings is whether they reflect disclosure per se or other attributes that analysts find desirable (e.g., recent performance). Botosan [1997] constructed a checklist to assess annual report disclosure quality and found that it was positively associated with *AIMR* annual report/10-K rankings. This correlation provides some support for the fact that the *AIMR* scores do, in fact, proxy for aspects of firms' disclosure practices.

[4] If the subcommittees do not consider any disclosures after the annual report for a December fiscal year-end firm, it is possible that some date in April or May would be a better cutoff for the end of the disclosure period. However, we only have institutional holdings data at the end of each calendar quarter (e.g., March 31 and June 30). Thus, using an earlier date is impractical because it would precede the release of the annual report for most firms.

[5] This approach begins with a large number of variables that have been used to describe institutional investor trading behavior and portfolio characteristics. To account for the high degree of multicollinearity among these variables, principal factor analysis is used to generate a small number of common factors that explain the shared variance among the original variables. Institutions are then classified into groups using k-means cluster analysis on the factor scores. Like Bushee [2001], we drop the earnings momentum factor from the cluster analysis because (1) directional trading sensitivity to earnings is not an important theoretical factor in this study and (2) the momentum factor produces time-series instability in the Bushee [1998] classification scheme.
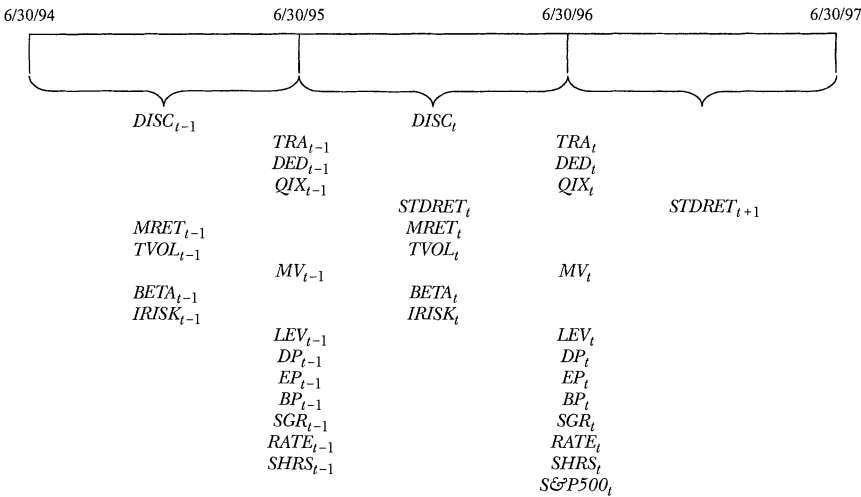
6/30/94   6/30/95   6/30/96   6/30/97

$DISC_{t-1}$ $DISC_t$
                    TRA_{t-1} TRA_t
                    DED_{t-1} DED_t
                    QIX_{t-1} QIX_t
                                $STDRET_t$ $STDRET_{t+1}$
$MRET_{t-1}$ $MRET_t$
$TVOL_{t-1}$ $TVOL_t$
                    MV_{t-1} MV_t
$BETA_{t-1}$ $BETA_t$
$IRISK_{t-1}$ $IRISK_t$
                    LEV_{t-1} LEV_t
                    DP_{t-1} DP_t
                    EP_{t-1} EP_t
                    BP_{t-1} BP_t
                    SGR_{t-1} SGR_t
                    $RATE_{t-1}$ $RATE_t$
                    $SHRS_{t-1}$ $SHRS_t$
                                                $S\&P500_t$

FIG. 1.—Time line depiction of empirical analysis for the 1995–96 *AIMR* report. $DISC_t$ = percentile rank of the *AIMR* annual disclosure score; TRA_t, DED_t, and QIX_t = percentage ownership by transient, dedicated, and quasi-indexer institutions relative to total shares outstanding; $STDRET_{t+1}$ = log of the standard deviation of daily stock returns measured over a year's time (minimum of 125 observations); $MRET_t$ = market-adjusted buy-and-hold stock return measured over a year's time (minimum of 125 observations); $TVOL_t$ = average monthly trading volume relative to total shares outstanding measured over a year's time; MV_t = log of the market value of equity ($CS\#24 \times CS\#25$); $BETA_t$ = market-model beta calculated from daily stock returns measured over a year's time (minimum of 125 observations); $IRISK_t$ = log of the standard deviation of market-model residuals calculated from daily stock returns measured over a year's time (minimum of 125 observations); LEV_t = ratio of debt ($CS\#34 + CS\#9$) to assets ($CS\#6$); DP_t = ratio of dividends ($CS\#21$) to market value of equity ($CS\#24 \times CS\#25$); EP_t = ratio of income before extraordinary items ($CS\#18$) to market value of equity ($CS\#24 \times CS\#25$); BP_t = ratio of book value of equity ($CS\#60$) to market value of equity ($CS\#24 \times CS\#25$); SGR_t = percentage change in annual sales ($CS\#12$); $RATE_t$ = S&P stock rating (9 = A+, . . . , 1 = not rated) (*Quarterly Compustat PDA*); $SHRS_t$ = log of shares outstanding; $S\&P500_t$ = one if the portfolio firm is in the *S&P 500 Index*, and zero otherwise.

characteristics of the three types of institutional investors. Transient institutions have high portfolio turnover (high *PTURN* factor) and diversified portfolios (low *BLOCK* factor). Dedicated institutions have low turnover and more concentrated holdings, whereas quasi-indexer institutions have low turnover and diversified holdings. The proportion of institution-years in each group is roughly similar to that reported in Bushee [1998; 2001].

Our primary measure of stock return volatility ($STDRET_t$) is the log of the standard deviation of daily stock returns, which is used in Sias [1996]. Using daily stock returns from *CRSP*, we measure $STDRET_t$ over annual periods between July 1 and June 30 to correspond to the assumed disclosure period. Firm-years with greater than 125 missing daily return observations during the year are dropped from the sample. Our empirical analyses are also replicated using other measures of stock return volatility, including the systematic and unsystematic components of volatility (measured as *BETA* and *IRISK*, which are defined below), stock

TABLE 1

Portfolio Characteristics of Institutional Investor Groups

$PTURN$ = portfolio turnover factor; $PT1$ = the institution's quarterly portfolio turnover percentage; $PT2$ = the institution's quarterly portfolio turnover percentage using only sales transactions; $STAB1$ = percentage of the institution's holdings held continuously for two years; $STAB2$ = percentage of the institution's portfolio firms held continuously for two years; $BLOCK$ = block size factor; $LBPH$ = percentage of the institution's holdings held in large blocks (greater than a 5% stake); $LBPF$ = percentage of the institution's portfolio firms held in large blocks (greater than a 5% stake); APH = institution's average percentage ownership in its portfolio firms; $CONC$ = institution's average investment size in its portfolio firms (millions \$); N = number of institution-years in group.

| | | Institutional Investor Groups[1] | | |
Factor[2]		TRA	DED	QIX
PTURN	Mean	1.472	−0.228	−0.442
	Std. Dev.	0.819	0.691	0.488
PT1	Mean	0.774	0.414	0.368
	Std. Dev.	0.174	0.146	0.103
PT2	Mean	0.557	0.231	0.229
	Std. Dev.	0.236	0.153	0.138
STAB1	Mean	0.335	0.578	0.569
	Std. Dev.	0.245	0.281	0.276
STAB2	Mean	0.461	0.713	0.700
	Std. Dev.	0.266	0.250	0.272
BLOCK	Mean	−0.196	2.122	−0.292
	Std. Dev.	0.428	1.349	0.361
LBPH	Mean	0.032	0.382	0.026
	Std. Dev.	0.056	0.213	0.047
LBPF	Mean	0.014	0.213	0.009
	Std. Dev.	0.024	0.128	0.018
APH	Mean	0.009	0.063	0.008
	Std. Dev.	0.009	0.044	0.007
CONC	Mean	5.910	14.772	5.817
	Std. Dev.	7.864	43.139	10.540
N		3,454	1,785	10,696

[1] TRA = transient institutional investors, DED = dedicated institutional investors, and QIX = quasi-indexer institutional investors. Institutions are classified into these groups using the factor and cluster analysis approach described in Bushee [1998; 2001].

[2] The numbers in the rows corresponding to *PTURN* and *BLOCK* are factor scores, which have a mean of zero and a standard deviation of one across the entire distribution of institutional investors. Listed below each factor are the means and standard deviations of the variables that comprise the factor. These variables are calculated at the end of each calendar quarter for every institution on the Spectrum database. Quarterly values are averaged over all available quarters to calculate year-end values for each institution. These values are used in the factor and cluster analysis.

return volatility around earnings announcements, and the incidence of large one-day stock price movements.

We include a large number of control variables to capture previously documented determinants of corporate disclosure practices, institutional

ownership, and stock return volatility. Annual market-adjusted returns ($MRET_t$) proxy for firm performance, which has been shown to be positively associated with changes in disclosure, institutional ownership, and stock return volatility (Lang and Lundholm [1993], Lang and McNichols [1997], and Sias [1996]). The level of trading volume in the stock ($TVOL_t$), measured as the average monthly volume over the year divided by average shares outstanding, controls for institutional investor preferences for more liquid stocks (Falkenstein [1996], Eames [1998], and Gompers and Metrick [1998]). Firm size, measured as the log of market value (MV_t), captures differences in institutional ownership and stock return volatility between small and large firms (Sias [1996], Eames [1998], and Gompers and Metrick [1998]). An indicator variable for whether the firm is listed in the *S&P 500* ($S\&P500_t$) is included to measure preferences by institutions for firms listed in this index (Bushee [2001]).

We include beta ($BETA_t$), calculated from a market model using daily stock returns over an annual period, idiosyncratic risk ($IRISK_t$), measured as the standard deviation of market model residuals over an annual period, and leverage (LEV_t), measured as debt-to-assets, to proxy for various dimensions of firm risk. Higher levels of systematic risk and leverage are associated with higher levels of institutional ownership and greater stock return volatility (Badrinath, Gay, and Kale [1989] and Skinner [1989]). Higher levels of idiosyncratic risk are associated with lower levels of institutional ownership (Bushee [2001]).

We also include a number of variables to capture changes in fundamental growth and income ratios upon which institutions might base their trading decisions (Bushee [2001] and Gompers and Metrick [1998]). These include dividend yield (DP_t), the earnings–price ratio (EP_t), the book–price ratio (BP_t), and sales growth (SGR_t). Finally, we control for the *S&P* stock rating ($RATE_t$), which is a measure of the prudence of the investment for the institution, because some institutions avoid stocks with lower ratings due to fiduciary concerns (Badrinath, Gay, and Kale [1989] and Del Guercio [1996]). All of the control variables are measured for a given year at the points in time indicated in figure 1 using data from *CRSP* and *Compustat*.

Table 2 provides descriptive statistics for all of the variables used in the empirical tests. Because we use an industry rank for our disclosure measure, we adopt the approach of prior research and adjust all other variables by the industry mean in the empirical tests (Healy, Hutton, and Palepu [1999]). However, for ease of interpretation, we present statistics on the unadjusted variables in this table. We also windsorize the extreme 1% of all variables, except for indicator, disclosure, and ownership variables, to reduce the impact of outliers.[6] Panel A presents the variables used in the levels tests. After removing observations due to missing data,

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[6] If we run our tests without winsorizing variables, the magnitude and significance levels of the coefficients on the main variables of interest (disclosure and institutional ownership) are quantitatively similar.

TABLE 2
Descriptive Statistics[1]

For panel A: $DISC_t$ = percentile rank of the *AIMR* annual disclosure score; TRA_t, DED_t, and QIX_t = percentage ownership by transient, dedicated, and quasi-indexer institutions relative to total shares outstanding; $STDRET_{t+1}$ = log of the standard deviation of daily stock returns measured over a year's time (minimum of 125 observations); $MRET_t$ = market-adjusted buy-and-hold stock return measured over a year's time (minimum of 125 observations); $TVOL_t$ = average monthly trading volume relative to total shares outstanding measured over a year's time; MV_t = log of the market value of equity (*CS#24* × *CS#25*); $BETA_t$ = market-model beta calculated from daily stock returns measured over a year's time (minimum of 125 observations); $IRISK_t$ = log of the standard deviation of market-model residuals calculated from daily stock returns measured over a year's time (minimum of 125 observations); LEV_t = ratio of debt (*CS#34* + *CS#9*) to assets (*CS#6*); DP_t = ratio of dividends (*CS#21*) to market value of equity (*CS#24* × *CS#25*); EP_t = ratio of income before extraordinary items (*CS#18*) to market value of equity (*CS#24* × *CS#25*); BP_t = ratio of book value of equity (*CS#60*) to market value of equity (*CS#24* × *CS#25*); SGR_t = percentage change in annual sales (*CS#12*); $RATE_t$ = S&P stock rating (9 = A+, . . . , 1 = not rated) (*Quarterly Compustat PDA*); $S\&P500_t$ = one if the portfolio firm is in the *S&P 500 Index*, and zero otherwise.

For panel B: $\Delta DISC_t = DISC_t - DISC_{t-1}$; $\Delta TRA_t = TRA_t - TRA_{t-1}$; $\Delta DED_t = DED_t - DED_{t-1}$; $\Delta QIX_t = QIX_t - QIX_{t-1}$; $\Delta STDRET_{t+1} = STDRET_{t+1} - STDRET_t$; $\Delta MRET_t = MRET_t - MRET_{t-1}$; $\Delta TVOL_t = TVOL_t - TVOL_{t-1}$; $\Delta MV_t = MV_t - MV_{t-1}$; $\Delta LEV_t = LEV_t - LEV_{t-1}$; $\Delta DP_t = DP_t - DP_{t-1}$; $\Delta EP_t = EP_t - EP_{t-1}$; $\Delta BP_t = BP_t - BP_{t-1}$; $\Delta SGR_t = SGR_t - SGR_{t-1}$; $\Delta RATE_t = RATE_t - RATE_{t-1}$; $\Delta SHRS_t = abs(SHRS_t - SHRS_{t-1})$; and $SHRS_t$ = log of shares outstanding.

Panel A: Variables Used in Levels Analysis (N = 4,314)

	Mean	Median	Std. Dev.	Q1	Q3
$DISC_t$	0.5202	0.5354	0.3113	0.2500	0.8000
TRA_t	0.0963	0.0828	0.0710	0.0467	0.1283
DED_t	0.1008	0.0790	0.0880	0.0399	0.1374
QIX_t	0.2883	0.2934	0.1239	0.1997	0.3751
$STDRET_{t+1}$	−4.0031	−4.0513	0.3538	−4.2405	−3.7987
$MRET_t$	−0.0010	−0.0233	0.2849	−0.1744	0.1416
$TVOL_t$	0.1515	0.1236	0.1095	0.0836	0.1804
MV_t	7.3577	7.3945	1.3885	6.4393	8.2961
$BETA_t$	0.9563	0.9518	0.4060	0.6846	1.2114
$IRISK_t$	−4.1200	−4.1669	0.3484	−4.3583	−3.9170
LEV_t	0.2373	0.2253	0.1557	0.1233	0.3231
DP_t	0.0286	0.0274	0.0205	0.0135	0.0407
EP_t	0.0382	0.0643	0.1627	0.0401	0.0954
BP_t	0.6386	0.5879	0.3846	0.3685	0.8426
SGR_t	0.0754	0.0655	0.1579	−0.0049	0.1382
$RATE_t$	5.6345	6.0000	2.8704	4.0000	8.0000
$S\&P500_t$	0.6310	1.0000	0.4826	0.0000	1.0000

Panel B: Variables Used in Changes Analysis (N = 4,065)

	Mean	Median	Std. Dev.	Q1	Q3
$\Delta DISC_t$	0.0013	0.0000	0.2310	−0.1111	0.1211
ΔTRA_t	−0.0010	−0.0009	0.0616	−0.0286	0.0272
ΔDED_t	0.0045	0.0015	0.0620	−0.0194	0.0284
ΔQIX_t	0.0036	0.0032	0.0685	−0.0328	0.0403
$\Delta STDRET_{t+1}$	0.0072	0.0000	0.2237	−0.1671	0.1855
$\Delta MRET_t$	−0.0195	−0.0176	0.2913	−0.2474	0.2126
$\Delta TVOL_t$	0.0052	0.0031	0.0365	−0.0203	0.0292
ΔMV_t	0.1034	0.0968	0.2444	−0.0823	0.2919
ΔLEV_t	0.0010	−0.0016	0.0357	−0.0238	0.0223
ΔDP_t	−0.0008	0.0000	0.0062	−0.0045	0.0031
ΔEP_t	−0.0182	−0.0038	0.0401	−0.0283	0.0167
ΔBP_t	−0.0189	−0.0127	0.1372	−0.1070	0.0733
ΔSGR_t	−0.0073	−0.0050	0.1181	−0.0855	0.0745
$\Delta RATE_t$	0.1750	0.0000	1.4475	0.0000	0.0000
$\Delta SHRS_t$	0.0921	0.0166	0.1566	0.0038	0.0780

[1]See figure 1 for a time line that describes the periods over which the variables are calculated.

we have a sample mean and median disclosure rank slightly above 50%. The table also indicates that firms rated by the *AIMR* tend to be larger, low-risk, value firms, with 63% of the sample listed in the *S&P 500 Index*. Summing the holdings by the three types of institutional investors, the average percentage of institutional ownership relative to total shares outstanding is much higher than that reported in prior studies (Bushee [1998; 2001]). This finding is likely due to the fact that institutions invest more heavily in larger, low-risk firms (Gompers and Metrick [1998]).

Panel B of table 2 presents variables used in the changes tests. The annual changes in our disclosure measure are mostly clustered around zero, with 50% of the sample experiencing a disclosure rank change of less than 12 percentage points. The changes in dedicated (ΔDED_t) and quasi-indexer (ΔQIX_t) ownership are significantly greater than zero, even though we control for time-series changes in institutional ownership.[7] This significant difference again likely arises from the fact that firms rated by *AIMR* have size, growth, and risk attributes that are attractive to institutions.[8]

4. Is Institutional Ownership Associated with Corporate Disclosure Practices?

4.1 LEVELS ANALYSIS

To test whether ownership by different types of institutional investors is associated with corporate disclosure practices, controlling for other variables that explain institutional ownership, we estimate the following regression:

$$
\begin{aligned}
INST_t = \alpha &+ \beta_1 DISC_t + \beta_2 MRET_t + \beta_3 TVOL_t + \beta_4 MV_t + \beta_5 BETA_t \\
&+ \beta_6 IRISK_t + \beta_7 LEV_t + \beta_8 EP_t + \beta_9 BP_t + \beta_{10} DP_t + \beta_{11} SGR_t \\
&+ \beta_{12} RATE_t + \beta_{13} S\&P500_t + \varepsilon_t
\end{aligned} \tag{1}
$$

where *INST* represents *TRA, DED*, or *QIX*.

To remove the effects of cross-sectional correlation inherent in panel data, we adopt a "Fama-Macbeth" approach to estimating (1) and all subsequent regression analyses (Bernard [1987]). This procedure involves two steps. First, the regression model in (1) is estimated separately for

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[7] Because prior work has documented significant time trends in institutional ownership (e.g., Gompers and Metrick [1998]), we subtract the mean change in average institutional ownership in the economy for a given type of institution from the change in a firm's institutional ownership by that type to obtain the variables shown in table 2.

[8] All of the pairwise correlations among the control variables in panel B are less than 0.30 (except for the correlation between ΔMV_t and ΔMAR_t), whereas there are numerous, large, pairwise correlations among the levels variables in panel A (not reported). To test for the influence of multicollinearity in our tests, we performed variance inflation factor tests for each regression. Kennedy [1992] cites a *VIF* score of 10 as the benchmark for serious multicollinearity problems. None of the *VIF*s was above 2.1, indicating that multicollinearity is not likely to significantly influence our results.

each of the 15 years of data in our sample. Next, the coefficients from each of these regressions are averaged across all years. These average values are then reported along with a significance level based on the sample standard deviation of the individual coefficient estimates.[9]

Table 3 presents the findings of this analysis. Consistent with our predictions, the levels of ownership by both transient institutions (*TRA*) and quasi-indexer institutions (*QIX*) are significantly positively associated with *AIMR* disclosure rankings.[10] Although both types of institutional investors exhibit similar sensitivity to corporate disclosure practices, the control variables show that the classification scheme is discriminating between two very different types of institutions. Transient institutions prefer firms with recent strong stock market performance, suggesting return-momentum trading strategies, and firms with higher betas, low dividend yields, and high sales growth, all of which are consistent with preferences for riskier growth firms. In contrast, quasi-indexers prefer firms with recent weak market performance and high book-to-price ratios, consistent with contrarian value strategies, and firms with high stock ratings listed in the *S&P 500*, indicating concerns about fiduciary responsibility. Both types prefer firms with less idiosyncratic risk and higher levels of trading volume. The latter finding suggests that quasi-indexers are also concerned about liquidity.[11]

The level of dedicated ownership is unrelated to *AIMR* disclosure rankings, consistent with our arguments that this type of institution does not value the benefits of more forthcoming disclosure. Moreover, very few of the control variables explain dedicated preferences for stocks, and the average adjusted R^2 is less than 5%, which is consistent with the findings in Bushee [2001]). Dedicated institutions tend to invest in value firms with high book-to-price ratios that pay low dividends and have low stock ratings, which suggests a strategy of investing in underperforming firms with the intention of creating value by helping to turn around the company.

We also performed the empirical tests on the separate *AIMR* scores for each dimension of disclosure rated by analysts (not reported). For approximately half of our sample firms, the industry subcommittee reports

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[9] This procedure for calculating standard errors assumes there is no serial correlation in the coefficients across time. We also calculated standard errors using an adjustment for serial correlation provided in Abarbanell and Bernard [2000]. This adjustment produced no meaningful differences in significance levels for the main variables of interest in any of our regression analyses.

[10] Not surprisingly, the overall level of institutional ownership (not reported) is significantly associated with *AIMR* disclosure rankings, confirming the findings of Healy, Hutton, and Palepu [1999].

[11] A joint estimation of the three regressions in table 3 (not reported) confirmed that the coefficients on *MRET, TVOL, MV, IRISK, DP, SGR, RATE*, and *S&P500* were significantly different from each other in the *TRA* and *QIX* regressions. The coefficients on *DISC* in the *TRA* and *QIX* regressions were not significantly different from each other, indicating that both types of institutions exhibit similar sensitivity to corporate disclosure practices.

TABLE 3
Regression of Institutional Ownership on Ratings of Corporate Disclosure Practices[1]

TRA_t, DED_t, and QIX_t = percentage ownership by transient, dedicated, and quasi-indexer institutions relative to total shares outstanding; $DISC_t$ = percentile rank of the *AIMR* annual disclosure score; $MRET_t$ = market-adjusted buy-and-hold stock return measured over a year's time (minimum of 125 observations); $TVOL_t$ = average monthly trading volume relative to total shares outstanding measured over a year's time; MV_t = log of the market value of equity ($CS\#24 \times CS\#25$); $BETA_t$ = market-model beta calculated from daily stock returns measured over a year's time (minimum of 125 observations); $IRISK_t$ = log of the standard deviation of market-model residuals calculated from daily stock returns measured over a year's time (minimum of 125 observations); LEV_t = ratio of debt ($CS\#34 + CS\#9$) to assets ($CS\#6$); DP_t = ratio of dividends ($CS\#21$) to market value of equity ($CS\#24 \times CS\#25$); EP_t = ratio of income before extraordinary items ($CS\#18$) to market value of equity ($CS\#24 \times CS\#25$); BP_t = ratio of book value of equity ($CS\#60$) to market value of equity ($CS\#24 \times CS\#25$); SGR_t = percentage change in annual sales ($CS\#12$); $RATE_t$ = S&P stock rating (9 = A+, . . . , 1 = not rated) (*Quarterly Compustat PDA*); $S\&P500_t$ = one if the portfolio firm is in the *S&P 500 Index*, and zero otherwise.

	TRA_t	DED_t	QIX_t
Intercept	−0.0065	0.0030	−0.0172
	(0.183)	(0.743)	(0.042)
$DISC_t$	0.0173	−0.0044	0.0269
	(0.000)	(0.409)	(0.000)
$MRET_t$	0.0545	−0.0042	−0.0269
	(0.000)	(0.513)	(0.009)
$TVOL_t$	0.2559	0.0018	0.1585
	(0.000)	(0.914)	(0.000)
MV_t	0.0016	0.0011	0.0065
	(0.209)	(0.698)	(0.079)
$BETA_t$	0.0189	−0.0133	0.0023
	(0.013)	(0.017)	(0.709)
$IRISK_t$	−0.0227	−0.0208	−0.0916
	(0.030)	(0.031)	(0.000)
LEV_t	0.0166	0.0024	0.0085
	(0.080)	(0.812)	(0.548)
DP_t	−0.5230	−0.3492	−0.0921
	(0.000)	(0.059)	(0.534)
EP_t	0.0361	−0.0111	0.0306
	(0.064)	(0.511)	(0.001)
BP_t	0.0075	0.0096	0.0086
	(0.191)	(0.059)	(0.066)
SGR_t	0.0358	−0.0129	−0.0058
	(0.001)	(0.290)	(0.452)
$RATE_t$	−0.0004	−0.0030	0.0054
	(0.437)	(0.000)	(0.000)
$S\&P500_t$	0.0030	0.0082	0.0605
	(0.540)	(0.138)	(0.000)
Average Adjusted R^2	0.264	0.041	0.237

[1]For each independent variable in these regressions, the first row is the mean coefficient from 15 annual regressions between 1982 and 1996, and the second row is a two-sided *p*-value that tests whether this coefficient is significantly different from zero. The *p*-value uses a standard deviation calculated from the 15 annual coefficients. The average adjusted R^2 is the average across the 15 annual regressions. The total sample size is 4,314, while the annual sample sizes range between 193 and 402.

provide separate rankings of (1) annual report disclosures, (2) interim report disclosures, and (3) investor relations activities. We find that transient ownership is significantly positively related to the rankings of interim report disclosures and investor relations activities but unrelated to the annual report rankings, suggesting that transient investors are sensitive to more timely information released throughout the year. Such timely disclosure practices likely contribute to keeping the market for a firm's stock liquid, likely the key benefit of disclosure for transient institutions. Quasi-indexer ownership is significantly positively related to rankings of both annual and interim report disclosures but unrelated to rankings of investor relations activities. This result implies that quasi-indexers are more sensitive to the informativeness of mandatory reports than to investor relations activities, which is consistent with their fragmented ownership positions and reliance on corporate disclosures to monitor firm performance. Similar to the result for the total disclosure score, dedicated institutions are not sensitive to any of the three components of the *AIMR* scores.

4.2 CHANGES ANALYSIS

The prior section documents statistically significant associations between corporate disclosure practices and certain types of institutional ownership. To test the robustness of these findings, we next test whether year-to-year changes in *AIMR* disclosure rankings lead to significant rebalancing of institutional investor holdings. This test also sheds light on how quickly different types of institutions respond to changes in corporate disclosure practices. We take first differences in the equation (1) specification, with some slight modifications, to obtain the following regression:

$$
\begin{aligned}
\Delta INST_t = \ & \alpha + \beta_1 \Delta DISC_t^+ + \beta_2 \Delta DISC_t^- + \beta_3 QDISC_{t-1} + \beta_4 QINST_{t-1} \\
& + \beta_5 \Delta MRET_t + \beta_6 TVOL_{t-1} + \beta_7 \Delta MV_t + \beta_8 BETA_{t-1} \\
& + \beta_9 IRISK_{t-1} + \beta_{10} \Delta LEV_t + \beta_{11} \Delta EP_t + \beta_{12} \Delta BP_t \\
& + \beta_{13} \Delta DP_t + \beta_{14} \Delta SGR_t + \beta_{15} \Delta RATE_t + \beta_{16} \Delta SHRS_t + \varepsilon_t \quad (2)
\end{aligned}
$$

where *INST* represents *TRA*, *DED*, or *QIX*.

We calculate the annual change in disclosure ($\Delta DISC_t$) as the difference between *AIMR* disclosure rankings in two adjacent years (see figure 1).[12] To test for any asymmetry in responses to disclosure increases and decreases, we estimate a piecewise regression and define $\Delta DISC_t^+$ ($\Delta DISC_t^-$)

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[12] To mitigate concerns that the change in *AIMR* disclosure ranking is due to some factor other than actual disclosure changes (e.g., stock market performance), we read industry subcommittee reports for clues about the cause of large score changes. In almost every case, the analysts comment on the sources of large changes in disclosure, citing factors such as changes in annual report detail (e.g., segment information, *MD&A* quality) and in access to management. The fact that changes in *AIMR* disclosure rankings represent real changes in firms' disclosure practices is also supported by the analysis in Healy, Hutton, and Palepu [1999].

to be equal to $\Delta DISC_t$ for increases (decreases) in disclosure ranking, and zero otherwise. Also, because many firms have little or no change in annual disclosure ranking, we include the prior level of disclosure in the regression to test whether institutions are attracted to firms with higher prior disclosure rankings. We control for the prior level of ownership by institution type to capture the fact that the firms with small institutional investor bases are likely to experience larger changes in ownership. To prevent a mechanical association between prior $AIMR$ disclosure rankings and/or institutional ownership and the changes in those variables, we use the quintile ranking of the prior levels in the regression specification. These variables are identified as $QDISC_{t-1}$ and $QINST_{t-1}$. We use the prior year's level of liquidity, beta, and idiosyncratic risk, rather than the contemporaneous changes in those variables, because those changes are potentially endogenous with changes in institutional ownership (Eames [1998]).[13] We remove the $S\&P500_t$ variable because there are few yearly instances of changes in $S\&P\ 500\ Index$ status. Finally, we add the absolute value of the change in log shares outstanding ($\Delta SHRS_t$) to proxy for any stock issuances or repurchases that might trigger significant changes in firms' disclosure practices and/or institutional ownership.[14]

Table 4 presents the findings of this analysis. The coefficient on $\Delta DISC_t^+$ is positive and statistically significant for transient institutions, which indicates that these institutions increase holdings in firms that improve their $AIMR$ disclosure rankings. Transient institutions also increase their holdings in firms with higher prior $AIMR$ disclosure rankings, as indicated by the positive and statistically significant coefficient on $QDISC_{t-1}$. These findings suggest that transient institutions prefer firms whose stocks have liquid markets that allow short-term trading strategies to be executed without profits being eroded by transaction costs. The coefficient on $\Delta DISC_t^-$ is positive but not significantly different from zero or from the coefficient on $\Delta DISC_t^+$. These less significant findings for disclosure ranking decreases could be due to the fact that once transient institutions have invested in a firm, a decrease in disclosure would not necessarily trigger an immediate sale because transients could be holding their positions until trading profits are realized or until liquidity improves again.

Quasi-indexers are also sensitive to changes in disclosure but only when $AIMR$ disclosure rankings decline. The positive coefficient on $\Delta DISC_t^-$ is statistically different from zero and from the coefficient on $\Delta DISC_t^+$, indicating that quasi-indexers decrease their holdings in firms with decreases in $AIMR$ disclosure rankings. This finding suggests that disclosure

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[13] However, all of our main findings are quantitatively similar when the contemporaneous changes in liquidity, beta, and idiosyncratic risk are used.

[14] The requirement of two years of data for the changes test reduces the sample by 249 firm-years. If we run the levels tests on this smaller sample, the results are virtually identical to those reported.

TABLE 4
Regression of Changes in Institutional Ownership on Changes in Ratings of Corporate Disclosure Practices[1]

$\Delta TRA_t = TRA_t - TRA_{t-1}$; $\Delta DED_t = DED_t - DED_{t-1}$; $\Delta QIX_t = QIX_t - QIX_{t-1}$; TRA, DED, and QIX = percentage ownership by transient, dedicated, and quasi-indexer institutions relative to total shares outstanding; $\Delta DISC_t^+$ ($\Delta DISC_t^-$) = one if $\Delta DISC_t$ is greater (less) than zero, and zero otherwise; $\Delta DISC_t = DISC_t - DISC_{t-1}$; $DISC$ = percentile rank of the $AIMR$ annual disclosure score; $QTRA_{t-1}$, $QDED_{t-1}$, and $QQIX_{t-1}$ = quintile rank of TRA_{t-1}, DED_{t-1}, and QIX_{t-1}; $\Delta MRET_t = MRET_t - MRET_{t-1}$; $MRET$ = market-adjusted buy-and-hold stock return measured over a year's time (minimum of 125 observations); $\Delta TVOL_t = TVOL_t - TVOL_{t-1}$; $TVOL$ = average monthly trading volume relative to total shares outstanding measured over a year's time; $\Delta MV_t = MV_t - MV_{t-1}$; MV = log of the market value of equity ($CS\#24 \times CS\#25$); $BETA_{t-1}$ = market-model beta calculated from daily stock returns measured over a year's time (minimum of 125 observations); $IRISK_{t-1}$ = log of the standard deviation of market-model residuals calculated from daily stock returns measured over a year's time (minimum of 125 observations); $\Delta LEV_t = LEV_t - LEV_{t-1}$; LEV = ratio of debt ($CS\#34 + CS\#9$) to assets ($CS\#6$); $\Delta DP_t = DP_t - DP_{t-1}$; DP = ratio of dividends ($CS\#21$) to market value of equity ($CS\#24 \times CS\#25$); $\Delta EP_t = EP_t - EP_{t-1}$; EP = ratio of income before extraordinary items ($CS\#18$) to market value of equity ($CS\#24 \times CS\#25$); $\Delta BP_t = BP_t - BP_{t-1}$; BP = ratio of book value of equity ($CS\#60$) to market value of equity ($CS\#24 \times CS\#25$); $\Delta SGR_t = SGR_t - SGR_{t-1}$; SGR = percentage change in annual sales ($CS\#12$); $\Delta RATE_t = RATE_t - RATE_{t-1}$; $RATE$ = S&P stock rating ($9 = A+, \dots, 1$ = not rated) (*Quarterly Compustat PDA*); $\Delta SHRS_t = abs(SHRS_t - SHRS_{t-1})$; $SHRS$ = log of shares outstanding.

	ΔTRA_t	ΔDED_t	ΔQIX_t
Intercept	0.0307	0.0248	0.0296
	(0.000)	(0.000)	(0.000)
$\Delta DISC_t^+$	0.0119	0.0063	−0.0108
	(0.027)	(0.550)	(0.236)
$\Delta DISC_t^-$	0.0077	−0.0039	0.0240
	(0.364)	(0.604)	(0.001)
$QDISC_{t-1}$	0.0017	−0.0003	0.0020
	(0.048)	(0.702)	(0.046)
$QTRA_{t-1}$	−0.0168		
	(0.000)		
$QDED_{t-1}$		−0.0131	
		(0.000)	
$QQIX_{t-1}$			−0.0165
			(0.000)
$\Delta MRET_t$	0.0154	−0.0034	−0.0264
	(0.039)	(0.392)	(0.001)
$TVOL_{t-1}$	0.0943	0.0716	0.0575
	(0.003)	(0.001)	(0.025)
ΔMV_t	0.0582	−0.0080	0.0240
	(0.000)	(0.269)	(0.013)
$BETA_{t-1}$	0.020	−0.0015	0.0058
	(0.618)	(0.681)	(0.142)
$IRISK_{t-1}$	0.0023	−0.0139	−0.0240
	(0.618)	(0.022)	(0.000)
ΔLEV_t	−0.0248	0.0212	−0.0414
	(0.305)	(0.236)	(0.093)
ΔDP_t	−0.4138	0.3220	0.0657
	(0.029)	(0.108)	(0.819)
ΔEP_t	0.0252	0.0247	0.0026
	(0.105)	(0.144)	(0.916)

<div align="center">TABLE 4 — continued</div>

ΔBP_t	0.0029	−0.0237	0.0152
	(0.634)	(0.055)	(0.260)
ΔSGR_t	0.0230	−0.0111	−0.0073
	(0.001)	(0.136)	(0.358)
$\Delta RATE_t$	0.0009	−0.0027	−0.0009
	(0.552)	(0.052)	(0.632)
$\Delta SHRS_t$	0.0002	−0.0111	−0.0348
	(0.974)	(0.161)	(0.000)
Average Adjusted R^2	0.287	0.127	0.163

[1]For each independent variable in these regressions, the first row is the mean coefficient from 14 annual regressions between 1983 and 1996, and the second row is a two-sided p-value that tests whether this coefficient is significantly different from zero. The p-value uses a standard deviation calculated from the 14 annual coefficients. The average adjusted R^2 is the average across the 14 annual regressions. The total sample size is 4,065, while the annual sample sizes range between 187 and 383.

decreases impair these institutions' ability to monitor firm performance cost-effectively, thereby triggering a reduction in their holdings to prevent future losses from adverse managerial action that cannot be detected through less forthcoming disclosure. Quasi-indexers do not significantly increase their holdings in firms with improvements in disclosure, but they do invest more heavily in firms that have high prior *AIMR* disclosure rankings. This finding suggests that quasi-indexers do respond to disclosure improvements, albeit more slowly than transient institutions, which is consistent with their lower portfolio turnover. This delayed response could also be due to the longer investment horizons of quasi-indexers, which give them incentives to ensure any increase in disclosure is permanent before investing in a firm.

Finally, consistent with the levels analysis, there are no significant associations between changes in dedicated institutional ownership and changes in *AIMR* disclosure rankings. Both sets of results imply that the large, stable ownership positions of dedicated institutions likely provide them direct channels of information from firms and limit any benefit of public disclosure.[15]

One complication with the changes analysis is that a firm's disclosure ranking could change solely due to changes in disclosure practices by other firms in the industry. In fact, a firm could improve its disclosure practices yet have its ranking drop if many other firms in the industry improve their disclosure by greater amounts. We compared changes in raw disclosure scores and changes in industry ranks for a sample of 3,155

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[15] We also examined changes in the components of the disclosure score, similar to the levels analysis. Although the coefficient signs and magnitudes are consistent with the levels analysis, only the coefficient on changes in interim reporting quality in the ΔQIX regression is statistically significant. Both the smaller sample size and lower dispersion in *AIMR* component score ranking changes likely reduce the power of this test.

firms from 1986 to 1996 for which we had raw scores.[16] For observations in which the change in disclosure ranking was negative (positive), the change in raw disclosure score was also negative (positive) in 75% (79%) of the cases. When we re-run the regression specified in equation (2) on the subsample of firms for which there is agreement in raw and rank changes, the results are similar to those in table 4 except the significant positive coefficient on $\Delta DISC_t^+$ in the ΔTRA_t regression is now significantly different from the insignificant positive coefficient on $\Delta DISC_t^-$. Similar results are found when we use changes in raw disclosure scores in place of the changes in disclosure rankings.[17] We also ran the analysis on the full sample using only changes in disclosure rankings in the top and bottom quintiles of disclosure changes. The results were quantitatively similar to those reported for the above agreement subsample.

Although we argue that our findings indicate that institutional investors react to disclosure levels and changes, it is difficult to prove causality using our approach. Our findings would also be consistent with managers improving disclosure in response to exogenous changes in the composition of their institutional investor base. While this interpretation may be plausible with quasi-indexer institutions, which might demand improved disclosure to facilitate monitoring, it is unlikely that managers would respond to demands of transient institutions. It is also possible that disclosure changes and institutional investor changes are both driven by some omitted factor. This alternative explanation is impossible to dismiss. However, our extensive set of control variables limits the likelihood that the documented association stems from some unknown omitted factor. Moreover, the consistency between the levels and changes findings increases our confidence that institutional investors are sensitive to corporate disclosure practices.[18]

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[16] We dropped 95 observations from this sample because the rating committee seemed to change the scale on which they scored disclosure practices in the industry. For these industry-years, the minimum percentage change in raw disclosure scores is greater than a 100% increase.

[17] For the sample of 1,016 observations where the change in raw disclosure scores is not in the same direction as the change in ranked scores (including observations where one of the change variables equals zero), the signs on the coefficients are similar to those in table 4, but the coefficient on $\Delta DISC_t^+$ ($\Delta DISC_t^-$) in the ΔTRA_t (ΔQIX_t) regression is only significant at the 0.10 level.

[18] One potential omitted variable is analyst following, which may be correlated with both *AIMR* disclosure rankings and institutional ownership. Including this variable is problematic because the level of institutional ownership and analyst following are simultaneously determined (O'Brien and Bhushan [1990]). We included the number of analysts as an additional control variable and found that the level of analyst following is significantly associated with the level of transient and quasi-indexer ownership but changes in analyst following are unrelated to changes in institutional ownership. Including analyst following did not materially change the significance of the coefficient on the disclosure variable in either regression. Thus, our main findings are not sensitive to the inclusion of an analyst following variable.

5. Are Corporate Disclosure Practices and Institutional Ownership Associated with Subsequent Stock Return Volatility?

5.1 LEVELS ANALYSIS

To test whether corporate disclosure practices and the level of ownership by different types of institutional investors have any consequences for subsequent stock return volatility, we modify (1) to obtain the following regression:

$$STDRET_{t+1} = \alpha + \beta_1 DISC_t + \beta_2 TRA_t + \beta_3 DED_t + \beta_4 QIX_t + \beta_5 MRET_t$$
$$+ \beta_6 TVOL_t + \beta_7 MV_t + \beta_8 LEV_t + \beta_9 EP_t + \beta_{10} BP_t + \beta_{11} DP_t$$
$$+ \beta_{12} SGR_t + \beta_{13} RATE_t + \beta_{14} S\&P500_t + \varepsilon_t. \tag{3}$$

We use control variables that are contemporaneous with our measures of disclosure and institutional ownership, rather than contemporaneous with stock return volatility, because we are more concerned about controlling for factors that drive future volatility and are correlated with disclosure and institutional ownership than we are in trying to maximize explanatory power in this regression. We do not include the prior level of volatility ($STDRET_t$) or its components (beta and idiosyncratic risk) in this regression, so that our variables are explaining the level of volatility rather than the change in volatility.[19]

We first estimate (3) with only $AIMR$ disclosure rankings and the control variables as regressors. The first column of table 5 reveals that our measure of disclosure is significantly associated with future stock return volatility. The negative sign on this coefficient suggests that firms with more forthcoming disclosure experience lower future stock return volatility, when we control for other factors that affect volatility. Table 5 indicates that such factors include higher trading volume, smaller size, higher leverage, lower dividend yield and earnings–price ratios (growth firms), higher book-to-price ratios (potentially undervalued firms), lower stock ratings, and $S\&P\ 500$ membership.

The second column of table 5 contains a regression specification that includes only ownership by the various types of institutions along with the control variables. The second column of table 5 reveals that higher transient ownership leads to higher future stock return volatility, whereas higher quasi-indexer and dedicated ownership contribute to lower future volatility. These findings are not surprising given the propensity of transient institutions to trade actively based on short-term news, while dedicated and quasi-indexer institutions tend to hold stocks for longer periods.

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[19] Because we use the Fama-McBeth methodology to estimate this regression, we do not need to control for market-wide volatility because this variable would be a constant across all firms in each yearly regression.

TABLE 5

Regression of Future Stock Return Volatility on Ratings of Corporate
Disclosure Practices and Institutional Ownership[1]

$STDRET_{t+1}$ = log of the standard deviation of daily stock returns measured over a year's time (minimum of 125 observations); $DISC_t$ = percentile rank of the $AIMR$ annual disclosure score; TRA_t, DED_t, and QIX_t = percentage ownership by transient, dedicated, and quasi-indexer institutions relative to total shares outstanding; $MRET_t$ = market-adjusted buy-and-hold stock return measured over a year's time (minimum of 125 observations); $TVOL_t$ = average monthly trading volume relative to total shares outstanding measured over a year's time; MV_t = log of the market value of equity ($CS\#24 \times CS\#25$); LEV_t = ratio of debt ($CS\#34 + CS\#9$) to assets ($CS\#6$); DP_t = ratio of dividends ($CS\#21$) to market value of equity ($CS\#24 \times CS\#25$); EP_t = ratio of income before extraordinary items ($CS\#18$) to market value of equity ($CS\#24 \times CS\#25$); BP_t = ratio of book value of equity ($CS\#60$) to market value of equity ($CS\#24 \times CS\#25$); SGR_t = percentage change in annual sales ($CS\#12$); $RATE_t$ = S&P stock rating (9 = A+, . . . , 1 = not rated) (*Quarterly Compustat PDA*); $S\&P500_t$ = one if the portfolio firm is in the S&P *500 Index*, and zero otherwise.

	$STDRET_{t+1}$	$STDRET_{t+1}$	$STDRET_{t+1}$
Intercept	0.0134	0.0033	0.0113
	(0.703)	(0.922)	(0.734)
$DISC_t$	−0.0206		−0.0158
	(0.031)		(0.098)
TRA_t		0.3408	0.3450
		(0.004)	(0.004)
DED_t		−0.2402	−0.2378
		(0.010)	(0.012)
QIX_t		−0.3227	−0.3164
		(0.000)	(0.000)
$MRET_t$	−0.0245	−0.0492	−0.0492
	(0.539)	(0.214)	(0.211)
$TVOL_t$	0.4065	0.3859	0.3849
	(0.000)	(0.000)	(0.000)
MV_t	−0.0515	−0.0491	−0.0482
	(0.000)	(0.000)	(0.000)
LEV_t	0.1528	0.1544	0.1584
	(0.002)	(0.001)	(0.001)
DP_t	−1.2586	−1.1120	−1.0939
	(0.001)	(0.002)	(0.002)
EP_t	−0.8420	−0.8690	−0.8641
	(0.000)	(0.000)	(0.000)
BP_t	0.0388	0.0436	0.0431
	(0.031)	(0.021)	(0.022)
SGR_t	0.0252	0.0014	0.0044
	(0.437)	(0.969)	(0.903)
$RATE_t$	−0.0094	−0.0075	−0.0074
	(0.003)	(0.008)	(0.009)
$S\&P500_t$	0.0314	0.0475	0.0481
	(0.017)	(0.001)	(0.001)
Average Adjusted R^2	0.335	0.361	0.359

[1]For each independent variable in these regressions, the first row is the mean coefficient from 15 annual regressions between 1982 and 1996, and the second row is a two-sided *p*-value that tests whether this coefficient is significantly different from zero. The *p*-value uses a standard deviation calculated from the 15 annual coefficients. The average adjusted R^2 is the average across the 15 annual regressions. The total sample size is 4,314, while the annual sample sizes range between 193 and 402.
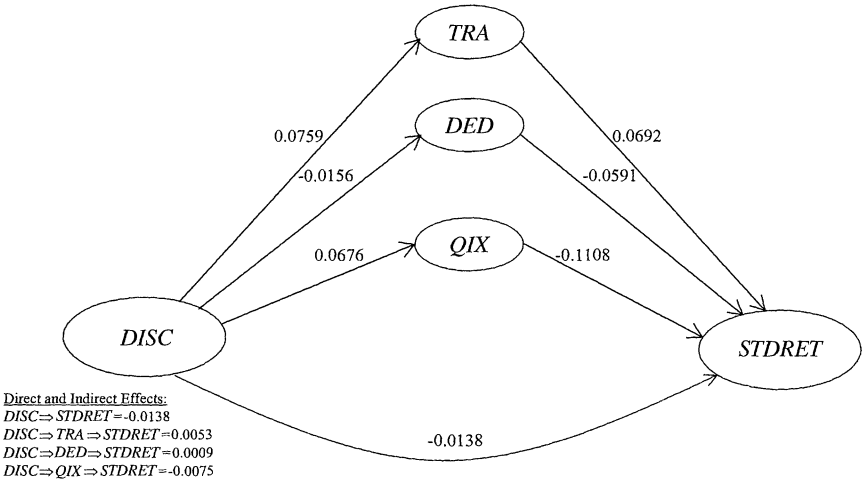
FIG. 2.—Standardized coefficients from levels regressions. *DISC* is percentile rank of the *AIMR* annual disclosure score. *TRA*, *DED*, and *QIX* are the percentage ownership by transient, dedicated, and quasi-indexer institutions respectively, relative to total shares outstanding. *STDRET* is the log of the standard deviation of daily stock returns measured over the subsequent year. Path coefficients between *DISC* and *TRA/DED/QIX* are taken from the table 3 regressions. Path coefficients between *TRA/DED/QIX* and *STDRET* are taken from the last regression in table 5. Path coefficients are standardized by dividing the relevant coefficient by the ratio of the standard deviation of the dependent variable and the standard deviation of the independent variable. The direct effect of *DISC* on *STDRET* is represented by the path coefficient between *DISC* and *STDRET*. The indirect effects of *DISC* on *STDRET* through the relations with *TRA/DED/QIX* are obtained by multiplying the relevant path coefficients together.

Combined with table 3, the findings in table 5 indicate that disclosure practices have a positive indirect effect on future stock return volatility through the attraction of transient institutions and a negative indirect effect on volatility through the attraction of higher quasi-indexer ownership. To sort out the magnitudes of the direct and indirect effects of disclosure on stock return volatility, we estimate (3), which contains both disclosure and institutional ownership variables. The findings from this regression are described in the final column of table 5. The magnitudes and significance levels on the coefficients of the institutional ownership variables are virtually identical to column 2, but the coefficient on $DISC_t$ is smaller in magnitude than in column 1 and only weakly statistically significant.[20] Thus, there appears to be a net indirect effect of disclosure on future stock return volatility through institutional ownership that

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[20] If the residuals from the regressions in table 3 were correlated with the residuals from the table 5 regressions, joint estimation of the system would be needed. The correlations among residuals are generally insignificant and small in magnitude (less than 0.15) and a joint estimation of the system produced no meaningful differences from the reported findings.

explains part of the association between disclosure and future volatility observed in column 1.[21]

Figure 2 uses a path analysis diagram to provide further insight into the direct and indirect effects of disclosure on future stock return volatility (Pedhazur [1982]). To construct this figure, we first standardize the average regression coefficients from tables 3 and 5 to make effect sizes comparable across tables and between regressors. Coefficients are standardized by dividing each coefficient by the ratio of the standard deviation of the dependent variable to the standard deviation of the regressor. Next, we multiply the standardized coefficient estimate of the impact of disclosure on transient ownership from table 3 by the standardized estimate of the impact of transient ownership on future stock return volatility from table 5 to obtain the indirect effect of disclosure on future volatility through transient ownership. We repeat this procedure for the other types of institutional ownership as well. The direct effect of disclosure on future stock return volatility is the standardized coefficient on $DISC_t$ from column 3 of table 5. Figure 2 indicates that the negative indirect effect on future stock return volatility of attracting quasi-indexers is slightly greater than the positive indirect effect of attracting transient ownership. Overall, the path diagram suggests that firms with more forthcoming disclosure experience significantly lower levels of future stock return volatility as long as they attract both quasi-indexer and transient institutions.[22]

5.2 CHANGES ANALYSIS

The findings from the prior section indicate that the link between disclosure practices and the composition of a firm's institutional investor base has almost no net effect on future stock return volatility. However, because transient and quasi-indexer institutions have asymmetric responses to changes in our disclosure measure, as documented in table 4, it is interesting to test how the disclosure–ownership link affects future stock return volatility when corporate disclosure practices are changed. To test whether changes in institutional holdings have any consequences for future stock return volatility around the times when firms change

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[21] If we include the prior level of beta and idiosyncratic risk, the coefficient on the disclosure variable becomes statistically insignificant, while the institutional ownership variables retain their significance. Thus, the level of disclosure variable does not influence changes in volatility, while the level of institutional ownership does.

[22] As a robustness check, we verified all of our findings using an alternative measure of daily stock return volatility. This measure adjusts for daily autocorrelations in returns caused by nonsynchronous trading and is calculated as the square root of the sum of squared daily returns plus twice the sum of the product of adjacent daily returns (French, Schwert, and Stambaugh [1987]). Because nonsynchronous trading is likely to be a more significant problem in small firms and our sample is composed of mostly large firms, this adjustment should not have a large impact on our findings. Using this alternative measure of volatility produces quantitatively similar results to those reported.

their disclosure practices, we take first differences of (3) to obtain the following regression:

$$\Delta STDRET_{t+1} = \quad \alpha + \beta_1 \Delta DISC_t^+ + \beta_2 \Delta DISC_t^- + \beta_3 \Delta TRA_t + \beta_4 \Delta DED_t$$
$$+ \beta_5 \Delta QIX_t + \beta_6 \Delta MRET_t + \beta_7 \Delta TVOL_t + \beta_8 \Delta MV_t$$
$$+ \beta_9 \Delta LEV_t + \beta_{10} \Delta EP_t + \beta_{11} \Delta BP_t + \beta_{12} \Delta DP_t$$
$$+ \beta_{13} \Delta SGR_t + \beta_{14} \Delta RATE_t + \beta_{15} \Delta SHRS_t + \varepsilon_t. \quad (4)$$

Once again, we use a piecewise analysis to allow the coefficient on disclosure changes to differ for increases and decreases. As in (2), we also replace the *S&P 500 Index* indicator with the absolute value of change in shares outstanding to control for significant equity transactions.

The first column in table 6 presents the findings from estimating (4) with only the change in our disclosure measure along with the control variables. The coefficient on $\Delta DISC_t^+$ is positive, indicating that improved disclosure leads to increases in stock return volatility, but it is not significant at conventional levels. The findings also indicate that reductions in disclosure have no significant impact on future changes in stock return volatility. The control variables in this regression have signs and significance levels consistent with the analysis in table 5, except for the change in trading volume, which is negatively associated with future changes in stock return volatility. This finding is likely due to mean reversion in the volume variable that leads to a subsequent drop in stock return volatility relative to the base year. The coefficient on $\Delta SHRS_t$ is significantly positive, which indicates that significant equity transactions result in relatively more positive changes in future stock return volatility.

The second column of table 6 presents the findings from estimating (4) with only the ownership variables along with the controls. The coefficient on ΔTRA_t is positive and statistically significant, indicating that increases in ownership by transient institutions are associated with significant increases in stock return volatility. This result is consistent with the levels analysis presented in table 5. Also consistent with the levels analysis in table 5 is the statistically significant negative coefficient on ΔDED_t. However, changes in quasi-indexer ownership are not associated with changes in future stock return volatility, suggesting that the dampening effect on stock return volatility of infrequent trading by quasi-indexer institutions is not as strong an effect in the short term as the exacerbation of volatility by transient institutions that aggressively trade in a stock.

The final column of table 6 presents the regression findings from (4), which allows a comparison of direct and indirect effects of disclosure changes on changes in future stock return volatility. Including the change in our disclosure measure in this regression does not greatly affect the coefficients on the institutional ownership variables. Controlling for changes in institutional ownership slightly strengthens the statistical significance

TABLE 6
Regression of Future Changes in Stock Return Volatility on Changes in Ratings of Corporate Disclosure Practices and Changes in Institutional Ownership[1]

$\Delta STDRET_{t+1} = STDRET_{t+1} - STDRET_t$; $STDRET$ = log of the standard deviation of daily stock returns measured over a year's time (minimum of 125 observations); $\Delta DISC_t^+$ ($\Delta DISC_t^-$) = one if $\Delta DISC_t$ is greater (less) than zero, and zero otherwise; $\Delta DISC_t = DISC_t - DISC_{t-1}$; $DISC_t$ = percentile rank of the *AIMR* annual disclosure score; $\Delta TRA_t = TRA_t - TRA_{t-1}$; $\Delta DED_t = DED_t - DED_{t-1}$; $\Delta QIX_t = QIX_t - QIX_{t-1}$; *TRA*, *DED*, and *QIX* = percentage ownership by transient, dedicated, and quasi-indexer institutions relative to total shares outstanding; $\Delta MRET_t = MRET_t - MRET_{t-1}$; *MRET* = market-adjusted buy-and-hold stock return measured over a year's time (minimum of 125 observations); $\Delta TVOL_t = TVOL_t - TVOL_{t-1}$; *TVOL* = average monthly trading volume relative to total shares outstanding measured over a year's time; $\Delta MV_t = MV_t - MV_{t-1}$; *MV* = log of the market value of equity (*CS#24* × *CS#25*); $\Delta LEV_t = LEV_t - LEV_{t-1}$; *LEV* = ratio of debt (*CS#34* + *CS#9*) to assets (*CS#6*); $\Delta DP_t = DP_t - DP_{t-1}$; *DP* = ratio of dividends (*CS#21*) to market value of equity (*CS#24* × *CS#25*); $\Delta EP_t = EP_t - EP_{t-1}$; *EP* = ratio of income before extraordinary items (*CS#18*) to market value of equity (*CS#24* × *CS#25*); $\Delta BP_t = BP_t - BP_{t-1}$; *BP* = ratio of book value of equity (*CS#60*) to market value of equity (*CS#24* × *CS#25*); $\Delta SGR_t = SGR_t - SGR_{t-1}$; *SGR* = percentage change in annual sales (*CS#12*); $\Delta RATE_t = RATE_t - RATE_{t-1}$; *RATE* = S&P stock rating (9 = A+, . . . , 1 = not rated) (*Quarterly Compustat PDA*); $\Delta SHRS_t = abs(SHRS_t - SHRS_{t-1})$; *SHRS* = log of shares outstanding.

	$\Delta STDRET_{t+1}$	$\Delta STDRET_{t+1}$	$\Delta STDRET_{t+1}$
Intercept	−0.0110	−0.0099	−0.0123
	(0.785)	(0.807)	(0.762)
$\Delta DISC_t^+$	0.0380		0.0421
	(0.104)		(0.082)
$\Delta DISC_t^-$	−0.0029		−0.0020
	(0.922)		(0.947)
ΔTRA_t		0.2734	0.2583
		(0.003)	(0.005)
ΔDED_t		−0.2204	−0.2226
		(0.046)	(0.048)
ΔQIX_t		(0.278)	(0.262)
		(0.487)	(0.516)
$\Delta MRET_t$	0.0493	0.0407	0.0400
	(0.000)	(0.009)	(0.012)
$\Delta TVOL_t$	−0.6052	−0.6061	−0.6010
	(0.000)	(0.000)	(0.000)
ΔMV_t	−0.0196	−0.0247	−0.0262
	(0.349)	(0.245)	(0.213)
ΔLEV_t	0.2573	0.2773	0.2808
	(0.005)	(0.003)	(0.003)
ΔDP_t	−0.6608	−0.3808	−0.4498
	(0.468)	(0.666)	(0.616)
ΔEP_t	−0.5154	−0.5156	−0.5148
	(0.000)	(0.000)	(0.000)
ΔBP_t	0.1233	0.1131	0.1129
	(0.001)	(0.003)	(0.004)
ΔSGR_t	0.0017	−0.0085	−0.0118
	(0.942)	(0.695)	(0.573)
$\Delta RATE_t$	−0.0003	−0.0008	−0.0011
	(0.909)	(0.785)	(0.696)
$\Delta SHRS_t$	0.0966	0.0978	0.0978
	(0.000)	(0.000)	(0.000)
Average Adjusted R^2	0.066	0.077	0.075

[1]For each independent variable in these regressions, the first row is the mean coefficient from 14 annual regressions between 1983 and 1996, and the second row is a two-sided *p*-value that tests whether this coefficient is significantly different from zero. The *p*-value uses a standard deviation calculated from the 14 annual coefficients. The average adjusted R^2 is the average across the 14 annual regressions. The total sample size is 4,065, while the annual sample sizes range between 187 and 383.
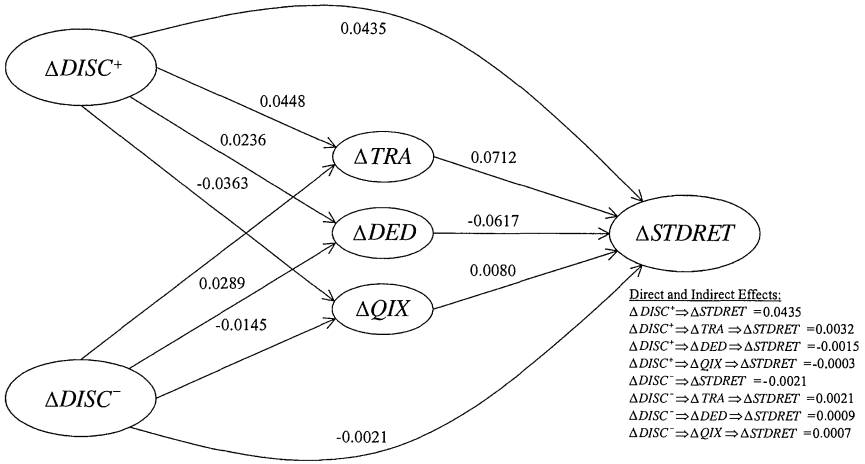
FIG. 3.—Standardized coefficients from changes regressions. $\Delta DISC^+$ ($\Delta DISC^-$) is the annual change in the percentile rank of the *AIMR* annual disclosure score for firms with increases (decreases) in rankings. ΔTRA, ΔDED, and ΔQIX are the annual changes in percentage ownership by transient, dedicated, and quasi-indexer institutions, respectively, relative to total shares outstanding. $\Delta STDRET$ is the annual change in the log of the standard deviation of daily stock returns measured over the subsequent year. Path coefficients between $\Delta DISC$ and $\Delta TRA/\Delta DED/\Delta QIX$ are taken from the table 4 regressions. Path coefficients between $\Delta TRA/\Delta DED/\Delta QIX$ and $\Delta STDRET$ are taken from the last regression in table 6. Path coefficients are standardized by dividing the relevant coefficient by the ratio of the standard deviation of the dependent variable and the standard deviation of the independent variable. The direct effects of $\Delta DISC$ on $\Delta STDRET$ are represented by the path coefficient between $\Delta DISC^+/\Delta DISC^-$ and $\Delta STDRET$. The indirect effects of $\Delta DISC$ on $\Delta STDRET$ through the relations with $\Delta TRA/\Delta DED/\Delta QIX$ are obtained by multiplying the relevant path coefficients together.

on the $\Delta DISC_t^+$ coefficient to the point where it becomes marginally significant. If we control for future changes in disclosure (not reported), however, current increases in this variable no longer significantly explain future changes in stock return volatility, while the significance of changes in transient ownership is unaffected. Thus, the positive association between disclosure changes and future changes in stock return volatility is likely driven by mean reversion in extreme disclosure changes.[23]

Figure 3 presents a path diagram that allows a comparison of the magnitude of the direct and indirect effects of disclosure changes on future changes in stock return volatility. The direct effect of improved disclosure on future changes in stock return volatility, though only marginally statistically significant, is much larger in magnitude than the statistically significant indirect effect of improved disclosure on volatility through increases in transient ownership. However, the significant indirect effect of disclosure changes on future changes in stock return vola-

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[23] A joint estimation of the equations (2) and (4) produced no meaningful differences from the reported findings.

tility through attracting transient institutions is much larger in magnitude than the other indirect effects. This finding suggests that the offsetting indirect effects observed in the levels analysis from table 5 do not carry over to the changes specification in table 6. This finding is due to the asymmetric responses of transient and quasi-indexer institutions to disclosure changes and to the much larger impact of changes in transient ownership on future changes in stock return volatility. Thus, firms that make significant improvements in their disclosure practices are likely to experience an increase in stock return volatility, at least in the short term, due to the attraction of transient ownership that is not immediately offset by an increase in quasi-indexer ownership.

5.3 OTHER MEASURES OF STOCK RETURN VOLATILITY

We examined other forms of stock return volatility that might be more important to managers than the standard deviation of stock returns over a given year. First, we divided our total risk measures in tables 5 and 6 into systematic (*BETA*) and unsystematic (*IRISK*) components (not reported). When unsystematic risk is the dependent variable, the coefficients on levels of and changes in disclosure scores and institutional ownership are virtually identical to those reported in tables 5 and 6. When systematic risk is the dependent variable, there are no significant direct associations between disclosure and future betas in levels or changes. Thus, disclosure practices only have a significant direct impact on idiosyncratic risk. For future levels of beta, the same significant associations with the levels of transient (+), quasi-indexer (−), and dedicated (−) ownership are observed as for total volatility and unsystematic risk, indicating that similar indirect effects of disclosure on total volatility also exist for beta. However, only changes in transient ownership are significantly associated with future changes in beta, indicating that greater transient ownership is associated with a greater sensitivity of a firm's stock price to market movements.

Next, we tested the impact of corporate disclosure practices and institutional ownership on stock return volatility around earnings announcements. We replaced the annual volatility variables with the average stock return volatility in the five days surrounding quarterly earnings announcements and repeated the analysis in tables 5 and 6 (not reported). The levels regressions produced the same significant associations among disclosure, transient ownership, quasi-indexer ownership, and future stock return volatility as in table 5. In the changes analysis, the key variables were consistent in sign with the table 6 regression but not statistically significant at conventional levels. Thus, there is some evidence that our findings apply to stock return volatility around earnings announcements when looking at levels of our disclosure and institutional ownership measures.

Lastly, we examined the frequency of "large" one-day stock price increases and decreases. Managers might be concerned about the frequency of large one-day drops in price because such drops are frequently

cited as the trigger for securities lawsuits (Francis, Philbrick, and Schipper [1994] and Grundfest and Perino [1998]). We calculated the percentage of trading days in a given year in which the firm's stock price changed by more than 1% and by more than 5%. We repeated the table 5 and 6 analyses using the level of and change in these percentages (not reported). The findings for both levels and changes were of similar sign and significance when the dependent variable was number of days with 1% price changes and number of days with 1% price declines. When we examined the number of days with greater than 5% stock price changes and declines, only the TRA_t and ΔTRA_t variables were significant in the levels and changes specifications, respectively, while the disclosure variables lost their significance. Overall, these findings indicate that the indirect effect of disclosure on future stock return volatility through transient ownership applies to other measures of volatility that might be more salient to managers, namely, systematic risk, stock return volatility around earnings announcements, and the number of days with large stock price changes.

6. Conclusions

This paper provides evidence on the impact of corporate disclosure practices on the composition of a firm's institutional investor base and the volatility of its stock price. Our findings support prior work by Healy, Hutton, and Palepu [1999] in showing that institutional investors are attracted to firms with more forthcoming disclosure. Further examination of the characteristics of institutional investors that tend to be attracted to firms with more highly regarded disclosure practices reveals that two very different types of institutions value more forthcoming disclosure. One type of institution attracted to disclosure, quasi-indexers, exhibits long investment horizons and low portfolio turnover. Attracting this type of institution helps reduce the volatility of a firm's stock price. However, disclosure also attracts transient institutions, which exacerbate a firm's stock return volatility with their short investment horizons and aggressive trading strategies.

We show that the net effect on stock return volatility of having both of these types of institutions own shares in a firm is roughly zero. However, when firms improve their disclosure practices, transient institutions immediately increase their holdings, whereas quasi-indexers do not, leading to a significant increase in firms' stock return volatility. Thus, this paper has important implications for firms contemplating changes in their disclosure practices. Specifically, managers faced with decisions about whether to change their firms' disclosure practices must weigh any potential benefits of improved disclosure against the potential cost of attracting investors that exacerbate stock return volatility.

REFERENCES

ABARBANELL, J., AND V. BERNARD. "Is the U.S. Stock Market Myopic?" *Journal of Accounting Research* 38 (Autumn 2000): 221–42.

ANAND, V. "Big and Small Companies Are Marketing Their Stock." *Investor's Daily* (January 25, 1991): 8.

ASSOCIATION FOR INVESTMENT MANAGEMENT AND RESEARCH, CORPORATE INFORMATION COMMITTEE. *Report of Association for Investment Management and Research Corporate Information Committee.* New York: AIMR, 1993–94.

_____. *An Annual Review of Corporate Reporting Practices.* Charlottesville, Va.: AIMR, 1995–96.

BADRINATH, S.; G. GAY; AND J. KALE. "Patterns of Institutional Investment, Prudence, and the Managerial Safety-Net Hypothesis." *Journal of Risk and Insurance* 56 (December 1989): 605–29.

BAIMAN, S., AND R. VERRECCHIA. "Earnings and Price-Based Compensation Contracts in the Presence of Discretionary Trading and Incomplete Contracting." *Journal of Accounting and Economics* 20 (July 1995): 93–121.

BAMBER, L., AND Y. CHEON. "Discretionary Management Earnings Forecast Disclosures: Antecedents and Outcomes Associated with Forecast Venue and Forecast Specificity Choices." *Journal of Accounting Research* 36 (Autumn 1998): 167–90.

BERNARD, V. "Cross-Sectional Dependence and Problems in Inference in Market-Based Accounting Research." *Journal of Accounting Research* 25 (Spring 1987): 1–48.

BOTOSAN, C. "Disclosure Level and the Cost of Equity Capital." *The Accounting Review* 72 (July 1997): 323–49.

BOTOSAN, C., AND M. PLUMLEE. "A Re-examination of Disclosure Level and Expected Cost of Equity Capital." Working paper, University of Utah, 2000.

BUSHEE, B. "The Influence of Institutional Investors on Myopic R&D Investment Behavior." *The Accounting Review* 73 (July 1998): 305–33.

_____. "Do Institutional Investors Prefer Near-Term Earnings Over Long-Run Value?" *Contemporary Accounting Research* 18 (Summer 2001).

BUSHMAN, R.; Q. CHEN; E. ENGEL; AND A. SMITH. "The Sensitivity of Corporate Governance Systems to Timeliness of Accounting Earnings." Working paper, University of Chicago, 2000.

BYRNE, J. "When Capital Gets Antsy." *Business Week* (September 13, 1999): 72–76.

CHAN, L. K. C., AND J. LAKONISHOK. "Institutional Trades and Intraday Stock Price Behavior." *Journal of Financial Economics* 33 (April 1993): 173–200.

_____. "The Behavior of Stock Prices Around Institutional Trades." *Journal of Finance* 50 (September 1995): 1147–74.

DEL GUERCIO, D. "The Distorting Effect of the Prudent-Man Laws of Institutional Equity Investments." *Journal of Financial Economics* 40 (January 1996): 31–62.

DIAMOND, D., AND R. VERRECCHIA. "Disclosure, Liquidity, and the Cost of Capital." *Journal of Finance* 66 (September 1991): 1325–55.

DOBRZYNSKI, J. "Relationship Investing." *Business Week* (March 15, 1993): 68–75.

EAMES, M. "Institutional Investor Myopia, Ownership, Earnings, and Returns." Working paper, Santa Clara University, 1998.

EL-GAZZAR, S. "Predisclosure Information and Institutional Ownership: A Cross-Sectional Examination of Market Revaluations During Earnings Announcement Periods." *The Accounting Review* 73 (January 1998): 119–30.

ELGIN, P. "Strategic Pairings Uncork Blessings for Investors, Issuers." *Corporate Cashflow* 13 (September 1992): 7–8.

FALKENSTEIN, E. "Preferences for Stock Characteristics as Revealed by Mutual Fund Portfolio Holdings." *Journal of Finance* 51 (March 1996): 111–35.

FOX, J. "Learn to Play the Earnings Game (and Wall Street Will Love You)." *Fortune* (March 31, 1997): 76–79.

FRANCIS, J.; D. PHILBRICK; AND K. SCHIPPER. "Shareholder Litigation and Corporate Disclosures." *Journal of Accounting Research* 32 (Autumn 1994): 137–64.

FRENCH, K.; G. SCHWERT; AND R. STAMBAUGH. "Expected Stock Returns and Volatility." *Journal of Financial Economics* 19 (September 1987): 3–29.

FROOT, K.; A. PEROLD; AND J. STEIN. "Shareholder Trading Practices and Corporate Investment Horizons." *Journal of Applied Corporate Finance* (September/October 1992): 42–58.

GOMPERS, P., AND A. METRICK. "How Are Large Institutions Different from Other Investors? Why Do These Differences Matter?" Working paper, Harvard Business School, 1998.

GRUNDFEST, J., AND M. PERINO. "Securities Litigation Reform: The First Year's Experience. A Statistical and Legal Analysis of Class Action Securities Fraud Litigation Under the Private Securities Litigation Reform Act of 1995." Working paper, Stanford Law School, 1998.

HEALY, P.; A. HUTTON; AND K. PALEPU. "Stock Performance and Intermediation Changes Surrounding Increases in Disclosure." *Contemporary Accounting Research* 16 (Fall 1999): 485–520.

JORGENSEN, B. "Hedging and Performance Evaluation." Working paper, Harvard Business School, 1998.

KENNEDY, P. *A Guide to Econometrics.* 3d ed. Cambridge, Mass.: The M.I.T. Press, 1992.

KIM, O., AND R. VERRECCHIA. "Market Liquidity and Volume Around Earnings Announcements." *Journal of Accounting and Economics* 17 (January 1994): 41–67.

LANG, M., AND R. LUNDHOLM. "Cross-Sectional Determinants of Analyst Ratings of Corporate Disclosures." *Journal of Accounting Research* 31 (Autumn 1993): 246–71.

_____. "Corporate Disclosure Policy and Analysts." *The Accounting Review* 71 (October 1996): 467–92.

LANG, M., AND M. MCNICHOLS. "Institutional Trading and Corporate Performance." Working paper, Stanford University, 1997.

LEUZ, C., AND R. VERRECCHIA. "The Economic Consequences of Increased Disclosure." *Journal of Accounting Research* 38 (Supplement 2000): 91–124.

O'BRIEN, P., AND R. BHUSHAN. "Analyst Following and Institutional Ownership." *Journal of Accounting Research* 28 (Supplement 1990): 55–76.

PATELL, J. "Corporate Forecasts of Earnings per Share and Stock Price Behavior: Empirical Tests." *Journal of Accounting Research* 14 (Autumn 1976): 246–76.

PEDHAZUR, E. *Multiple Regression in Behavioral Research.* New York: Holt, Rinehart & Winston, 1982.

PORTER, M. *Capital Choices: Changing the Way America Invests in Industry.* Boston: Council on Competitiveness/Harvard Business School, 1992.

POTTER, G. "Accounting Earnings Announcements, Institutional Investor Concentration, and Common Stock Returns." *Journal of Accounting Research* 30 (Spring 1992): 146–55.

PRICE, R. "Price Responsiveness of Informed Investors to Increases in Financial Statement Disclosure Quality." Working paper, College of William and Mary, 1998.

SENGUPTA, P. "Corporate Disclosure Quality and the Cost of Debt." *The Accounting Review* 73 (October 1998): 459–74.

SERWER, A. "The Scariest Tech Stock Ever! The Ups and Downs of Ascend." *Fortune* (November 10, 1997): 223–24.

SIAS, R. "Volatility and the Institutional Investor." *Financial Analysts Journal* (March/April 1996): 13–20.

SKINNER, D. "Options Markets and Stock Return Volatility." *Journal of Financial Economics* 23 (June 1989): 61–78.

SMITH, M. "Shareholder Activism by Institutional Investors: Evidence from CALPERS." *Journal of Finance* 51 (March 1996): 227–51.

WELKER, M. "Disclosure Policy, Information Asymmetry, and Liquidity in Equity Markets." *Contemporary Accounting Research* 11 (Spring 1995): 801–27.