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External Monitoring, ESG, and Information Content of Discretionary Accruals

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Abstract: Discretionary accruals reflect the management's accounting choices made within the flexibility of accounting standards. Discretionary accruals can be used by the management to better reflect the economic value of the firm and to signal their private information about a firm's future prospects to the market, but they can also be used opportunistically by managers. However, the prior literature documents mixed evidence related to the information content in discretionary accruals. Thus, we examine the association between discretionary accruals and analysts' forecast dispersion to provide further evidence on the information content in discretionary accruals. Moreover, as greater external monitoring and rigorous ESG management allow less room for manager's manipulation of discretionary accruals, we investigate whether greater external monitoring by institutional owners and higher ESG scores moderate the relationship between discretionary accruals and analysts' disagreements on long-term EPS growth forecasts. We find a positive association between discretionary accruals and analysts' forecast dispersion, which suggests there is low information content in discretionary accruals. Furthermore, we find that a greater concentration in institutional ownership, greater blockholders' institutional ownership, and a positive ESG score mitigate the positive relationship between discretionary accruals and analysts' forecast dispersion. Thus, better external monitoring and higher quality ESG enhance the information credibility of a firm's disclosure.

Keywords: discretionary accruals; analyst forecast; institutional ownership; ESG; governance

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1. Introduction

The prior literature examines the information content in discretionary accruals but finds mixed evidence [1,2]. In examining the information content in earnings, studies have mainly used a research design regressing future earnings or current stock returns on the different components of earnings [1,2]. However, given the mixed evidence related to the information content in discretionary accruals, alternative research approaches are needed. In this paper, we address this need by investigating the relationship between discretionary accruals and analysts' forecast dispersion.

In this paper, we examine whether discretionary accruals increase or decrease the uncertainty of a firm's future performance, leading to higher or lower forecast dispersion. We find that firms characterized by a higher level of discretionary accruals are associated with significantly greater dispersion in analysts' forecasts. This is consistent with low information content in discretionary accruals.

We also show that greater external monitoring and higher quality ESG can attenuate the positive relationship between discretionary accruals and dispersion in analysts' forecasts. Specifically, greater institutional ownership and a positive ESG score weaken the positive relationship between discretionary accruals and the dispersion in analysts' forecasts. The results indicate that external monitoring and ESG increase the credibility of a firm's disclosure by limiting the opportunism of managers and thus reducing the forecast's dispersion.

Lastly, as a robustness check, we use analysts' forecast error rather than analysts' forecast dispersion to measure the uncertainty and divergence in analysts' beliefs. We find results consistent with our primary analyses, albeit weaker.

This study contributes to the literature in several ways. First, the prior literature documents mixed evidence regarding the information content in discretionary accruals. Some studies show that discretionary accruals can be used by the management to better reflect the economic value of the firm and to signal their private information about a firm's future prospects to the market, which suggests there is increased information content in discretionary accruals [2–4]. However, other papers document the opportunistic use of discretionary accruals by the management to manipulate or to influence earnings for a number of reasons [5–9], and find evidence that such opportunistic use of discretionary accruals reduces the information content in earnings [1]. Given the mixed evidence related to the information content in discretionary accruals, alternative research approaches are needed. In this paper, we address this need by investigating the relationship between discretionary accruals and analysts' forecast dispersion.

Second, we contribute to the literature by examining the information environment that is unique to each firm. The parameters that define the information environment of a firm are potential sources of information opacity that analysts and investors face when forecasting the firm's future performance [10–16]. An implication from this literature is that analysts and investors may fixate on earnings and do not realize the lack of persistence with a large accruals component [1]. This leads to the question as to whether analysts and investors are more likely to over extrapolate earnings with a large accruals component when forming their own expectations of long-term future earnings' growth. Our results suggest that while analysts seem to be misled by the discretionary component in earnings in forming their expectations of long-term future earnings' growth, external and governance mechanisms mitigate the adverse effect of discretionary accruals on analysts' forecasts.

One limitation of this paper is that our findings may be driven by correlated omitted variables, i.e., it is subject to a potential endogeneity problem. For example, the firm's information environment may drive the positive association between discretionary accruals and analysts' forecast dispersion. Although we include various variables to control for the firm's information environment, we acknowledge that we are not able to completely control for all correlated variables. Thus, we hope that future research could use alternative research methods to examine the information content in discretionary accruals. For example, future research could try to use CEO turnover as an exogenous shock to a firm's accounting choices and the analysts following to re-examine this research question.

The remainder of our paper proceeds as follows. Section 2 reviews the previous literature and develops hypotheses. Section 3 provides the data description and Section 4 present the empirical results. Section 5 concludes the paper.

2. Related Literature and Hypothesis Development

Earnings have two components, cash flow from operations and total accruals. Total accruals can be decomposed into discretionary accruals, which reflect the results of management's accounting choices made within the flexibility of accounting standards, and non-discretionary accruals, which reflect the firm's operating and investment activities. However, the prior literature documents mixed evidence regarding the information content in discretionary accruals.

Discretionary accruals can be used by the management to better reflect the economic value of the firm and to signal their private information about a firm's future prospects to the market [2,17]. Consistent with this claim, a stream of research provides evidence of the information content in discretionary accruals [2–4]. For example, Subramanyam [2] found a positive association between stock returns and discretionary accruals, and Bowen et al. [3] found a positive association between accounting discretion, future cash flows, and returns on assets. In a more recent paper, Moscariello, Fera, and Cinque [18] found that the information content in discretionary accruals improves around a global financial crisis.

However, numerous papers have documented the opportunistic use of discretionary accruals by the management to manipulate or to influence earnings for a number of reasons. For example, the management may manipulate earnings to increase the stock price prior to an initial public offering [7] and before a seasoned equity offering [9], to avoid reporting losses and violating debt covenants [8], and to enjoy higher managerial compensation [5,6]. Studies further have found evidence that such opportunistic use of discretionary accruals deteriorates the quality of reported earnings, and thus reduces the information content in earnings. For example, Richardson et al. [1] found that less reliable accruals are less persistent compared to more reliable accruals. Moreover, Windisch [19], using a sample of publicly listed German firms, found that the information content in accruals declined after the introduction of the stricter enforcement regime.

In examining the information content in earnings, studies have mainly used a research design regressing future earnings or current stock returns on the different components of earnings [1,2]. However, given the mixed evidence related to the information content in discretionary accruals, alternative research approaches are needed. In this paper, we address this need by investigating the relationship between discretionary accruals and analysts' forecast dispersion.

Analysts' major source of information is financial disclosure by the firm [20–22]. Thus, the information content in the earnings' numbers is expected to be associated with analysts' forecasts. We examine one of the characteristics of analysts' forecasts, analysts' forecast dispersion. Analysts' forecast dispersion represents the uncertainty and divergence in analysts' beliefs and the lack of consensus or agreement [23,24]. Thus, if discretionary accruals are used to signal managers' private information about the future value of the firm, we expect uncertainty about the firm to decrease, which is expected to result in lower forecast dispersion. However, if discretionary accruals are used opportunistically by managers, we expect the information environment of the firm to become more opaque, leading to greater divergence in analysts' beliefs and a lack of consensus. This, in turn, is expected to result in higher forecast dispersion. Given the contrasting predictions, we state our first hypothesis in the null form as follows:

Hypothesis 1 (H1). *Discretionary accruals are not associated with analysts' forecast dispersion.*

We further explore factors that may influence the association between discretionary accruals and analysts' forecast dispersion. We propose that the following two firm-specific factors may influence the association cross-sectionally: institutional ownership and ESG.

Callen, Fang, and Zhang [25] found evidence that financial reporting quality decreases at firms with weak external monitoring. Institutional investors strengthen the external monitoring of the firm because they have incentives to protect their investment and would directly perform monitoring activities and demand more credible financial information [26–28]. Prior studies document that institutional ownership is positively associated with an improvement in the financial reporting of numbers through the quicker recognition of earnings' management activities, constraints on opportunistic accruals' management, and the lower likelihood of fraud [29,30].

In addition to direct monitoring, institutional investors can enhance the monitoring and governance of the firm by strengthening their monitoring over the board. Monitoring the board to make sure that they perform their fiduciary duties allows the institutional investors to maximize their returns on investments [31]. McCahery et al. [32], in their survey paper, provide support for this by reporting that 45% of the institutional investors engage the board in private discussions without management's presence. Consequently, greater institutional ownership is likely to constrain the opportunistic use of discretionary accruals by the management.

We measure institutional ownership in three ways. First, we use the percentage of shares owned by institutional investors. Second, we use the concentration of holdings by institutions following Burns et al. [33]. Burns et al. [33] found evidence consistent

with a high concentration of institutional holdings inducing greater monitoring. The logic behind this finding is that firms with a concentration of institutional ownership have stronger incentives to incur the costs associated with higher levels of monitoring. Third, we use the percentage of ownership of institutional blockholders because the prior literature documents better monitoring of the management by institutional blockholders, which leads to an improvement in financial reporting quality [34–36].

However, given the contrasting expectations related to the association between discretionary accruals and analysts' forecast dispersion, it is not clear whether and how institutional ownership moderates the association. Thus, we state our second hypothesis in the null form as follows:

Hypothesis 2 (H2). *Institutional ownership does not affect the association between discretionary accruals and analysts' forecast dispersion.*

In addition to the external monitoring provided by institutional auditors, governance mechanisms within the firm can affect the association between discretionary accruals and analysts' forecast dispersion. The prior literature documents that the choice of an auditor by the board/audit committee affects the quality of financial information. Moreover, numerous papers document the role the board of directors and its sub-committees (e.g., audit committee, compensation committee) play in reducing agency problems of the firm. Furthermore, certain provisions the company has in place to protect its shareholders are documented, such as poison pills, equal voting rights, etc. Please see Dechow, Ge, and Schrand [37] for a review of this literature.

Given that corporate governance is a complex construct and that no single indicator is superior to others, some papers, such as Larcker et al. [38], have used a composite measure derived from principal component analysis using 39 structural measures of corporate governance (e.g., board characteristics, stock ownership, mix of executive compensation, etc.). More recently, researchers have used ESG (environmental, social, and governance) scores provided by MCSI ESG KLD [39]. Fulfilling ESG requires sound corporate governance mechanisms to prevent agency problems. Requiring a higher level of standards for ESG disclosure can improve monitoring and limit managerial discretion, leading to lower agency problems. Thus, papers have examined the association between CSR disclosure (measured with the ratings provided by KLD) and discretionary accruals, earnings' management, and information asymmetry. For example, Kim et al. [40] found that CSR firms have lower levels of discretionary accruals, and Cho et al. [41] showed that CSR performance decreases information asymmetry. Moreover, Goncalves, Gaio, and Ferro [42] found that more socially responsible companies have higher quality financial reporting. We use MSCI ESG KLD's measures of environmental, social, and governance practices, which they express as strengths and concerns, and a net score of the strengths minus the concerns scores. We construct an aggregate ESG rating by summing all the strengths and subtracting all the concerns, and also use the net score to measure the rating in each dimension (i.e., environment, social, and governance). Thus, positive values on the aggregate ESG rating and the individual dimension ratings indicate higher quality ESG. Thus, firms with a positive ESG rating score are expected to limit the managements' opportunistic use of discretionary accruals.

However, given the contrasting expectations related to the association between discretionary accruals and analysts' forecast dispersion, it is not clear whether and how the ESG score would moderate the association. Thus, we state our third hypothesis in the null form as follows:

Hypothesis 3 (H3). *The ESG score does not affect the association between discretionary accruals and analysts' forecast dispersion.*

3. Data Description

3.1. Data and Sample Selection Procedures

We sourced calendar year-end financial statement data from the CRSP/Compustat Merged—Fundamentals Annual file. Our selection of firms included domestic, primary stocks but excluded foreign stocks listed on the NYSE, AMEX, and NASDAQ exchanges between 1991 and 2020. We also used analysts' long-term growth estimates (hereafter, LTG) dataset sourced from the I/B/E/S over the period from 1991 to 2020. We obtained institutional ownership data from Thomson Reuters Stock Ownership, and ESG index from MCSI ESG KLD database.

We first excluded stocks that have a SIC code between 6000–6999, which are classified as financial firms, closed-end mutual funds, American Depository Receipts (ADRs), unit investment trusts, real estate investment trusts (REITS), and American trusts. This is because such entities have an unusual relationship between risk, return, fundamentals, and financial distress when compared to 'normal' industrial firms [43]. Then we applied the filters to exclude following items in the sample. These are consistent with both the finance and accounting literatures.

- Stocks that have market price below USD 5 or total assets that are less than USD 1 million.
- Data that have negative or infinite net sales/net income or book-to-market ratio.
- Observations where the value for either total accruals, current accruals, or debt scaled by average total assets are greater than 100%.
- Observations that do not have data to compute total accruals or the variables needed to estimate discretionary accruals.

Finally, we winsorize variables at the 0.5% level to ensures that our measurements are not driven by extreme observations.

3.2. Defining Variables

We measured the discretionary accruals derived from three alternative discretionary accruals models; Jones [44] model, modified Jones model of Dechow et al. [45], and performance-matched model of Kothari et al. [46]. We used the absolute value of the discretionary accruals rather than the signed measure because prior research indicates that firms may engage in income smoothing [47,48]. Thus, we believe using the unsigned discretionary accruals is a better measure to capture the managements' opportunistic use of discretionary accruals.

Specifically, we estimated the following models each year using all firm-year observations in the same two-digit SIC code to measure discretionary accruals;

Jones [44] model

$$\frac{\mathrm{TACR_{it}}}{\mathrm{TA_{it\ -1}}} = \alpha_0 + \alpha_1 \times \frac{1}{\mathrm{TA_{it\ -1}}} + \alpha_2 \times \frac{\Delta \mathrm{SALE_{it}}}{\mathrm{TA_{it\ -1}}} + \alpha_3 \times \frac{\mathrm{PPEGT_{it}}}{\mathrm{TA_{it\ -1}}} + \epsilon_{\mathrm{it}} \quad (1)$$

where $\mathrm{TACR_{it}}$ is the total accruals for firm i in year t, $\mathrm{TA_{it}}$ is the total assets for firm i in year t, $\Delta \mathrm{SALE_{it}}$ are the change in sales for firm i in year t and $\mathrm{PPEGT_{it}}$ are the total gross plant property and equipment for firm i in year t. The absolute value of residual of this regression is our estimate for the Jones [44] discretionary accruals measure, $\mathrm{Abs\_DA_{it}}$.

Modified Jones model [45]

$$\frac{\mathrm{TACR_{it}}}{\mathrm{TA_{it\ -1}}} = \alpha_0 + \alpha_1 \times \frac{1}{\mathrm{TA_{it\ -1}}} + \alpha_2 \times \frac{\Delta \mathrm{SALE_{it}} - \Delta \mathrm{AR_{it}}}{\mathrm{TA_{it\ -1}}} + \alpha_3 \times \frac{\mathrm{PPEGT_{it}}}{\mathrm{TA_{it\ -1}}} + \epsilon_{\mathrm{it}} \quad (2)$$

where $\Delta \mathrm{AR_{it}}$ is the change in accounts receivable for firm i in year t. The absolute value of residual of this regression is our estimate for the modified Jones discretionary accruals measure of Dechow et al. [45], $\mathrm{Abs\_DA_{it}}$ ¯ modified.

Performance-matched model [46]

$$\frac{\text{TACR}_{\text{it}}}{\text{TA}_{\text{it}-1}} = \alpha_0 + \alpha_1 \times \frac{1}{\text{TA}_{\text{it}-1}} + \alpha_2 \times \frac{\Delta\text{SALE}_{\text{it}}}{\text{TA}_{\text{it}-1}} + \alpha_3 \times \frac{\text{PPEGT}_{\text{it}}}{\text{TA}_{\text{it}-1}} + \alpha_4 \times \text{ROA}_{\text{it}} + \epsilon_{\text{it}} \quad (3)$$

where ROA_{it} is the return on assets for firm i in year t. The absolute value of residual of this regression is our estimate for the performance-matched discretionary accruals measure of Kothari et al. [46], $\text{Abs\_DA}_{\text{it}}$ ¯ matched.

The main dependent variable is analysts' forecast dispersion and we measured it as a standard deviation of analysts' LTG forecast in a given year (*Forecast Dispersion*). In a robustness check, we used the absolute value of forecast error as an alternative dependent variable (*Absolute Forecast Error*). *Absolute Forecast Error* is the absolute difference between the mean of analysts' forecasts and the two-digit SIC code industry mean of forecasts in a given year normalized by the industry mean.

We measured external monitoring with three institutional ownership measures: *IO*, *HHI*, and *Blockholders*. Institutional ownership was obtained from Thomson Reuters Stock Ownership. *IO* represents percentage of common shares held by institutions. *HHI* measures the ownership concentration of institutional owners, and it is calculated as a Herfindahl index across all institutions. The Herfindahl index is the sum of the squares of the percentage ownership by institutions. *Blockholders* is the percentage of common shares held by the institutional blockholders, where blockholders are defined as institutions holding more than 5 percent of common shares.

We measured the quality of ESG with data acquired from MSCI ESG KLD. We constructed an aggregate ESG rating by summing all strengths and subtracting all concerns in all dimensions. We normalized the score to range between -1 and 1 for reasonable comparison. *Positive ESG* equals one if the ESG score is positive, and zero otherwise. The positive ESG score indicates that a firm is well managed in line with shareholders/stakeholders interests, and thus have strong governance. We also constructed the rating score for the environmental, social, and governance dimensions individually, after which *Positive Governance*, *Positive Environment*, and *Positive Social* were defined in a similar way as *Positive ESG*. Since MSCI ESG KLD dataset is updated up to the year of 2018, the sample for the ESG score regression is smaller than the main sample.

3.3. Control Variables for the Information Environment of a Stock

We also included several firm-specific characteristics as control variables for the information environment of a firm to rule out the possibility that the results we find are not driven by firm's information environment. $Ln\ Size_{it}$ is the logarithm of the market capitalization of firm i in year t. $Ln\ BM_{it}$ is the logarithm of book-to-market of firm i in year t. $NSeg_{it}$ are the number of segments or the level of corporate diversification ratio of firm i in year t. We calculated this variable from the Compustat historical segments file. It is defined as the unique sum of Segment ID (SID) codes that are listed for firm i in year t. We also included the number of analysts following to control for the role of information intermediary in shaping the information environment of a company. Specifically, $NumAnalyst_{it}$ are the number of analysts following firm i in year t.

Summary statistics for the variables used in the multivariate empirical analysis are presented in Table 1. For the main sample in Panel A, the mean of *Forecast Dispersion* and *Absolute Forecast Error* is 7.549 and 0.678, respectively. Thus, we can conjecture that the dispersion in analysts' LTG forecast is not negligible. As for the measures of institutional ownership and the ESG score, Panel B and C show that the average institutional ownership is 0.65% and the average of the normalized ESG score is 0.003.

Table 1. Sample statistics of regression data over the period of 1991–2020. The sample consists of firms traded on the NYSE, AMEX, and NASDAQ covered by Compustat and I/B/E/S between 1991 and 2020. *Forecast Disperison* is the standard deviation of analysts' forecasts in a given year. *Absolute Forecast Error* is the absolute difference between the mean of analysts' forecasts and the two-digit SIC code industry mean of forecasts in a given year normalized by the industry mean. *Abs_DA* is the absolute value of Jones discretionary accruals measure. *Ln_BM* is a logarithm of book-to-market and *Ln_Size* is a logarithm of market capitalization. *NumAnalysts* is the total number of analysts who forecast a firm's LTG in a given year. *NSeg* is the total number of unique segments that a firm has in a given year.

Panel A: Main Sample Period of 1991–2020

Variables	Obs	Mean	Std. Dev.
Forecast Dispersion	23,609	7.549	13.647
Absolute Forecast Error	23,609	0.678	1.351
Abs_DA	23,609	0.051	0.087
Ln_BM	23,609	−0.988	0.790
Ln_size	23,609	7.196	1.772
NumAnalyst	23,609	6.958	5.835
Nseg	23,609	1.396	0.898

Panel B: Institutional Ownership Sample Period of 1991–2020

Variables	Obs	Mean	Std. Dev.
Forecast Dispersion	23,383	7.501	13.558
Absolute Forecast Error	23,383	0.674	1.339
Abs_DA	23,383	0.051	0.088
IO	23,383	0.646	0.276
HHI	23,412	0.079	0.087
Blockholders	19,549	0.573	0.640
Ln_BM	23,383	−0.897	0.735
Ln_size	23,383	6.615	1.573
NumAnalyst	23,383	6.156	5.252
Nseg	23,383	1.169	0.536

Panel C: ESG sample period of 1991–2018

Variables	Obs	Mean	Std. Dev.
Forecast Dispersion	13,232	7.791	14.923
Absolute Forecast Error	13,232	1.007	5.290
Abs_DA	13,232	0.042	0.065
ESG score	13,232	0.003	0.383
Ln_BM	13,232	−0.892	0.709
Ln_size	13,232	7.215	1.608
NumAnalyst	13,232	7.135	6.640
Nseg	13,232	1.404	0.894

Panel D: Correlation Matrix

	Forecast Dispersion	*Absolute Forecast Error*	*Abs_DA*	*IO*	*HHI*	*Blockholders*
Forecast Dispersion	1.000					
Absolute Forecast Error	0.589	1.000				
Abs_DA	0.049	0.011	1.000			
IO	0.060	0.037	0.004	1.000		
HHI	0.031	0.062	−0.007	−0.254	1.000	
Blockholders	0.042	0.066	0.022	−0.402	0.720	1.000
ESG score	−0.039	−0.016	0.007	−0.120	0.034	0.035
Ln_BM	−0.001	0.046	−0.096	−0.033	0.027	0.066
Ln_size	−0.048	−0.051	−0.107	0.065	−0.269	−0.363
NumAnalyst	0.011	−0.052	−0.005	0.034	−0.145	−0.177
Nseg	−0.022	0.010	−0.038	0.022	−0.028	−0.063

Table 1. *Cont.*

	ESG Score	*Ln_BM*	*Ln_size*	*Num Analyst*	*Nseg*
ESG Score	1.000				
Ln_BM	−0.027	1.000			
Ln_size	−0.036	−0.223	1.000		
NumAnalyst	0.028	−0.179	0.522	1.000	
Nseg	−0.051	0.060	0.172	−0.019	1.000

Panel D of Table 1 provided the correlation matrix of variables. As we expected, *Abs_DA* and *Forecast Dispersion* are positively related. The institutional ownership measures (*IO*, *HHI*, and *Blockholders*) are also positively related to *Forecast Dispersion* and *Absolute Forecast Error*. In contrast to the institutional ownership measures, ESG score is negatively related to *Forecast Dispersion*. However, the correlation matrix is for descriptive purposes only and the moderating role of institutional ownership and ESG score will be observed in the multivariate analysis.

4. Multivariate Empirical Analysis

In this section, we document the relationship between discretionary accruals and analysts' LTG forecast dispersion, and then, the role of external monitoring and ESG in their relationship.

4.1. Analysts' Forecast Dispersion and Discretionary Accruals

To test H1, we use the level of dispersion in analysts' LTG forecast in a given year as a measure of the level of confusion or disagreement among analysts. To test whether there is information content in discretionary accruals, we estimate the following regression

$$\begin{aligned}\text{Forecast Dispersion}_{it} = \beta 0 + \ \beta 1\ \text{DA}_{it} + \beta 2\ \ln \text{BM}_{it} + \beta 3\ \ln \text{Size}_{it} \\ + \beta 4\ \text{NumAnalyst}_{it} + \ \beta 5\ \text{NSeg}_{it} + \epsilon_{it}\end{aligned} \quad (4)$$

where $\text{Forecast Dispersion}_{it}$ is the standard deviation in the analysts' LTG forecast in a given year, and DA_{it} is one of the three measures of discretionary accruals: *Abs_DA*, *Abs_DA_modified*, or *Abs_DA_matched*. Table 2 displays the results of this test.

We find that discretionary accruals have a positive relationship with LTG dispersion that is both economically significant and statistically significant at the 1% level. A one standard deviation increase in *Abs_DA* (approximately 8.7%) translates to an increase of 44.72% in the LTG dispersion. This suggests that discretionary accruals are associated with greater uncertainty in analysts' forecasts, which is consistent with discretionary accruals having limited information content when used opportunistically by managers.

Our control variables also largely conform with our expectations. The coefficient on the control variable for corporate diversification *Nseg* has a negative coefficient, consistent with the argument and evidence contained in Thomas [15]. This suggests that it is more difficult for analysts to evaluate firms with a greater level of corporate diversification. The negative coefficient on *LnSize* is also consistent with less analysts' forecast dispersion at larger firms potentially due to the better information environment. The negative coefficient on *Ln_BM* suggests that analysts' dispersion is higher at high growth firms. Interestingly, the coefficient on *NumAnalyst*, the proxy for the number of analysts following a firm, is positive. This indicates that analyst following increases disagreement, which is inconsistent with the argument of Ho and Michaely [13]. This effect is likely due to the fact that many firms only have a single analyst following. In such cases, analyst dispersion will be zero. If the analyst following increases to two, then there would be a significant increase in dispersion over the single analyst summary forecast. Hence, as the number of analysts following a firm increase, we would expect dispersion to increase. The results with alternative measures of discretionary accruals are also similar.

Table 2. The relationship between Forecast Dispersion and Discretionary Accruals. This table estimates the relationship between discretionary accruals and forecast dispersion. The dependent variable is *Forecast Disperison*, the standard deviation of analysts' forecasts in a given year. The main variable of interest is *Abs_DA*, the absolute value of Jones discretional accruals measure. As a robustness check, we also provide results with *Abs_DA*, the absolute value of modified Jones, and *Abs_DA_matched*, the absolute value of performance matched. The regressions control for *Ln_BM*, *Ln_Size*, *NumAnalysts*, and *NSeg*. Year and industry fixed effects are also included. The standard errors are clustered at the firm level and t-stats are reported in parenthesis. **, and *** indicate statistical significance at the 5%, and 1% levels, respectively.

Dependent Variable	***Forecast Dispersion***		
DA =	(1) *Abs_DA*	(2) *Abs_DA_modified*	(3) *Abs_DA_matched*
DA	5.119 ***	6.898 ***	5.300 ***
	(5.08)	(6.34)	(5.11)
Ln_BM	−0.780 ***	−0.514 **	−0.779 ***
	(−3.51)	(−2.07)	(−3.51)
Ln_size	−1.109 ***	−1.078 ***	−1.110 ***
	(−11.68)	(−10.65)	(−11.70)
NumAnalyst	0.062 **	0.061 **	0.062 **
	(2.49)	(2.41)	(2.49)
Nseg	−0.608 ***	−0.526 ***	−0.607 ***
	(−4.39)	(−3.80)	(−4.38)
Observations	23,609	21,487	23,609
R-squared	0.106	0.107	0.106

Overall, the results in Table 2 suggest that discretionary accruals is associated with greater uncertainty in analysts' forecasts, which is consistent with discretionary accruals having limited information content when used opportunistically by managers.

4.2. Effect of Institutional Investors

Greater external monitoring by institutional investors leads to less room for managerial opportunism. Hence, the credibility of a firm's disclosure increases. Therefore, we posit that greater external monitoring by institutional investors weakens the positive relationship between discretionary accruals and forecast dispersion documented in Section 4.1. To test H2, we estimate the following model

$$\begin{aligned}\text{Forecast Dispersion}_{it} = {} & \beta 0 + \beta 1\ \text{Abs}_{\text{DA}\,it} + \beta 2\ \text{Abs}_{\text{DA}\,it} \times \text{Institutional Investor}_{it} \\ & + \beta 3\ \text{lnBM}_{it} + \beta 4\ \text{lnSize}_{it} + \beta 5\ \text{NumAnalyst}_{it} + \beta 6\ \text{NSeg}_{it} + \epsilon_{it}\end{aligned} \quad (5)$$

where *Institutional Investor* is one of the three measures of institutional ownership (*IO*, *HHI*, *Blockholder*) as defined in Section 3.2.

The results are presented in Panel A of Table 3. (In all panels in Table 3, we present the results with *Abs_DA* for simplicity, but the results with *Abs_DA_modified* and *Abs_DA_matched* are similar.) In columns (1), (2), and (3), we present the results using *IO, HHI*, and *Blockholders* to measure institutional ownership, respectively. In Column (1) Panel A of Table 3, we find a positive coefficient on *Abs_DA* × *IO*, which suggests that institutional ownership strengthens the positive association between *Abs_DA* and *Forecast Dispersion*, but find negative coefficients in Columns (2) and (3) on *Abs_DA* × *HHI* and *Abs_DA* × *Blockholders*, which suggest that the concentrated ownership and blockholder ownership mitigate the positive relationship between discretionary accruals and analysts' forecast dispersion. Therefore, we find some mixed results. However, given that the total institutional ownership includes both active and passive institutional ownership, the positive coefficient on *Abs_DA* × *IO* may reflect the effect of passive institutional owners who perform a less effective monitoring role [49]. On the other hand, a high concentration of institutional holdings induces greater monitoring [33]. Additionally, the institutional blockholders who have

heavily invested in a firm would exercise a more rigorous monitoring role. Thus, a high concentration of institutional holdings and institutional blockholders can effectively monitor whether managers manipulate discretionary accruals. Taken together, we document that only institutional investors with a great interest in a firm help to limit the opportunistic behavior of managers and enhance the information content of discretionary accruals.

Table 3. The Role of Governance in the Relationship between Dispersion and Accruals. This table presents the regression results on the role of governance in the relationship between discretionary accruals and forecast dispersion. The dependent variable is *Forecast Disperison*, and the main variable of interest is *Abs_DA. IO* is the institutional ownership, *HHI* is the measure for the ownership concentration, and *Blockholders* is the ownership by institutional blockholders. *Positive ESG* is a dummy equivalent to one if the ESG score is positive. We control for *Ln_BM*, *Ln_Size*, *NumAnalysts*, and *NSeg*. Year and industry fixed effects are also included. The coefficients on constants are omitted for simplicity. The standard errors are clustered at the firm level and t-stats are reported in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Institutional Ownership			
Dependent Variable	***Forecast Dispersion***		
Institutional Investor =	(1) *IO*	(2) *HHI*	(3) *Blockholders*
Abs_DA	1.636	7.399 ***	7.484 ***
	(0.81)	(5.10)	(4.66)
Abs_DA × Institutional Investor	6.215 *	−0.230 ***	−2.597 *
	(1.75)	(−2.72)	(−1.88)
Institutional Investor	0.027	0.047 ***	0.144
	(0.04)	(2.81)	(0.86)
Ln_BM	−0.817 ***	−0.779 ***	−0.798 ***
	(−3.65)	(−3.54)	(−3.14)
Ln_size	−1.130 ***	−1.024 ***	−1.088 ***
	(−11.36)	(−9.73)	(−9.23)
NumAnalyst	0.067 ***	0.064 **	0.058 **
	(2.67)	(2.54)	(2.07)
Nseg	−0.589 ***	−0.601 ***	−0.568 ***
	(−4.24)	(−4.33)	(−3.85)
Observations	23,383	23,412	19,549
R-squared	0.103	0.103	0.104
Panel B: ESG Score			
Dependent Variable	***Forecast Dispersion***		
ESG =	(1) *Positive ESG*	(2) *Positive Governance*	(3) *Positive Environment*	(4) *Positive Social*
Abs_DA	12.086 ***	10.911 ***	10.277 ***	11.109 ***
	(2.82)	(3.43)	(3.99)	(3.54)
Abs_DA × ESG	−2.710 **	−1.121 *	−1.207 **	−6.203
	(−2.50)	(−1.90)	(−2.22)	(−1.29)
ESG	−0.745 *	−0.736 **	−0.833	−0.554
	(−1.80)	(−2.04)	(−0.19)	(−1.34)
Ln_BM	−0.674 *	−0.490	−0.677 *	−0.505
	(−1.88)	(−1.31)	(−1.89)	(−1.44)
Ln_size	−1.226 ***	−1.286 ***	−1.178 ***	−0.971 ***
	(−8.12)	(−8.05)	(−7.70)	(−5.56)
NumAnalyst	0.057 *	0.094 ***	0.061 **	0.122 ***
	(1.89)	(2.70)	(2.01)	(3.33)
Nseg	−0.427 ***	−0.314 *	−0.420 ***	−0.262
	(−2.73)	(−1.75)	(−2.69)	(−1.29)
Observations	13,232	10,484	13,216	8639
R-squared	0.108	0.126	0.109	0.101

4.3. Effect of ESG

We conjecture that higher quality ESG disclosure would weaken the positive relationship between discretionary accruals and forecast dispersion documented in Section 4.1. To test H3, we estimate the following model

$$\text{Forecast Dispersion}_{it} = \beta 0 + \beta 1\ \text{Abs\_DA}_{it} + \beta 2\ \text{Abs\_DA}_{it} \times \text{ESG}_{it} + \beta 3\ \text{lnBM}_{it} + \beta 4\ \text{lnSize}_{it} + \beta 5\ \text{NumAnalyst}_{it} + \beta 6\ \text{NSeg}_{it} + \epsilon_{it} \quad (6)$$

where *ESG* is one of the four measures of ESG (*Positive ESG*, *Positive Governance*, *Positive Environment*, and *Positive Social*) as defined in Section 3.2.

The results are presented in Panel B of Table 3. In Columns (1), (2), (3), and (4) we present the results using *Positive ESG*, *Positive Governance*, *Positive Environment*, and *Positive Social* to measure the quality of ESG disclosure, respectively. In Column (1), we find a negative coefficient on *Abs_DA*×*Positive ESG*, which indicates that high quality ESG is important in increasing the information content of discretionary accruals. Hence, the positive ESG score strengthens the positive relation between discretionary accruals and forecast dispersion, which is consistent with studies documenting an improvement in financial reporting at CSR firms [40,41]. Among the three dimensions in ESG, the governance and environment dimension of ESG, especially, play a role, but the social dimension plays little role. Therefore, the results in Panel B of Table 3 suggest that firms with high quality ESG are more effective in limiting the opportunistic behavior of managers and enhancing the information content of discretionary accruals.

To sum up, the results in Table 3 show the role of governance in restricting the opportunistic behavior of the management. As provided in Table 2, the discretionary accruals lead to a greater forecast dispersion. However, the results in Tables 3 and 4 substantiate that external monitoring by institutional investors and ESG can mitigate the effect of discretionary accruals on analysts' forecasts by limiting the manager's opportunistic behavior, leading to an increase in the information content in discretionary accruals.

Table 4. The relationship between Forecast Error and Discretionary Accruals. This table presents the regression results on the relationship between discretionary accruals and forecast error from the two-digit SIC code industry mean of forecasts. The dependent variable is *Absoloute Forecast Error*, and main variable of interest is *Abs_DA*. *IO* is the institutional ownership, *HHI* is the measure for the ownership concentration, and *Blockholders* is the ownership by institutional blockholders. *Positive ESG* is a dummy equivalent to one if the ESG score is positive. We control for *Ln_BM*, *Ln_Size*, *NumAnalysts*, and *NSeg*. Year and industry fixed effects are also included. The coefficients on constants are omitted for simplicity. The standard errors are clustered at a firm level and t-stats are reported in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Main Sample			
Dependent Variable	***Absolute Forecast Error***		
DA =	(1) *Abs_DA*	(2) *Abs_DA_modified*	(3) *Abs_DA_matched*
DA	0.231 *** (3.34)	0.355 *** (4.96)	0.255 *** (3.62)
Ln_BM	−0.079 *** (−4.83)	−0.054 *** (−2.94)	−0.079 *** (−4.81)
Ln_size	−0.088 *** (−11.32)	−0.084 *** (−10.18)	−0.088 *** (−11.31)
NumAnalyst	−0.012 *** (−6.16)	−0.012 *** (−5.85)	−0.012 *** (−6.17)
Nseg	−0.048 *** (−4.03)	−0.043 *** (−3.56)	−0.048 *** (−4.02)
Observations	30,441	27,522	30,441
R-squared	0.156	0.157	0.157

Table 4. *Cont.*

Panel B: Institutional Ownership			
Dependent Variable	***Absolute Forecast Error***		
Institutional Investors =	(1) *IO*	(2) *HHI*	(3) *Blockholders*
Abs_DA	0.029	0.470 ***	0.478 ***
	(0.21)	(4.66)	(4.53)
Abs_DA × *Institutional Investors*	0.187	−0.022 ***	−0.275 ***
	(0.30)	(−3.61)	(−4.21)
Institutional Investors	0.017	0.003 **	0.017
	(0.33)	(2.51)	(1.36)
Ln_BM	−0.080 ***	−0.078 ***	−0.073 ***
	(−4.79)	(−4.72)	(−3.78)
Ln_size	−0.090 ***	−0.081 ***	−0.089 ***
	(−10.86)	(−8.93)	(−9.06)
NumAnalyst	−0.012 ***	−0.012 ***	−0.012 ***
	(−6.04)	(−6.10)	(−5.73)
Nseg	−0.046 ***	−0.047 ***	−0.048 ***
	(−3.88)	(−3.96)	(−3.76)
Observations	30,089	30,140	24,905
R-squared	0.157	0.157	0.161

Panel C: ESG Score				
Dependent Variable	***Absolute Forecast Error***			
ESG =	(1) *Positive ESG*	(2) *Positive Governance*	(3) *Positive Environment*	(4) *Positive Social*
Abs_DA	1.995	0.476	1.030	1.218
	(1.39)	(0.44)	(1.59)	(1.53)
Abs_DA × *ESG*	−1.858 **	−0.672	−1.210	−1.289
	(−2.14)	(−0.57)	(−1.39)	(−1.09)
ESG	0.022	−0.441 **	0.244 *	−0.028
	(0.15)	(−2.54)	(1.92)	(−0.20)
Ln_BM	−0.140 *	−0.124	−0.136 *	−0.239 ***
	(−1.76)	(−1.31)	(−1.72)	(−3.05)
Ln_size	−0.178 ***	−0.213 ***	−0.184 ***	−0.133 ***
	(−4.03)	(−3.89)	(−3.94)	(−2.60)
NumAnalyst	−0.023 ***	−0.020 *	−0.024 ***	−0.015
	(−2.78)	(−1.84)	(−2.92)	(−1.48)
Nseg	−0.039	−0.024	−0.039	0.001
	(−0.89)	(−0.45)	(−0.92)	(0.02)
Observations	15,746	12,433	15,726	10,310
R-squared	0.051	0.056	0.052	0.064

4.4. Robustness Check: Analyst Forecast Error

As a robustness check, we rerun models (4), (5), and (6) using another measure that captures the uncertainty and divergence in analysts' beliefs and the lack of consensus or agreement. *Absolute Forecast Error* represents how far the consensus of analysts' forecasts of a given firm are from the two-digit SIC code industry mean of forecasts. Thus, a larger value on *Absolute Forecast Error* indicates a greater uncertainty in analysts' beliefs about the firm's future performance. Table 4 presents the results with *Absolute Forecast Error*.

As shown in Panel A of Table 4, the coefficients on the different measures of discretionary accruals are significantly positive at the 1% level, consistent with our results in Table 2. Panel B of Table 4 shows that the coefficients on *Abs_DA* × *HHI* and *Abs_DA* × *Blockholders* are significantly negative at the 1% level, while the coefficients on *Abs_DA* × *IO* are not significant at the conventional level. Thus, using *Absolute Forecast Error* as the dependent variable, we do not find results using *IO*, which includes both passive and active institutional owners, but continue to find that a high concentration in institutional ownership and institutional blockholders mitigates the positive relationship between discretionary accruals and uncertainty in analysts' forecasts. In Panel C of Table 4, the coefficient on the interaction between *Abs_DA* and *Positive ESG* is significantly negative at the 5% level,

consistent with our findings in Panel B of Table 3. However, we do not find individual ratings on governance, environment, and social to have any moderating effect. Thus, the results in Table 4 are consistent with our primary findings, albeit weaker.

5. Conclusions

The prior literature examines the information content in discretionary accruals but finds mixed evidence [1,2]. In examining the information content in earnings, studies have mainly used a research design regressing future earnings or current stock returns on the different components of earnings [1,2]. However, given the mixed evidence related to the information content in discretionary accruals, alternative research approaches are needed. In this paper, we address this need by investigating the relationship between discretionary accruals and analysts' forecast dispersion.

We first examine whether discretionary accruals are associated with dispersion in LTG estimates. We find that discretionary accruals are associated with greater dispersion in analysts' forecasts, which indicates low information content in discretionary accruals. We then examine the role of external monitoring and ESG in the positive relation between the discretionary accruals and forecast dispersion. We find that the concentrated institutional ownership and blockholders mitigate the positive relation between the discretionary accruals and forecast dispersion. Moreover, we document that the positive ESG score moderates the positive relation between the discretionary accruals and forecast dispersion. In short, while discretionary accruals have low information content, external monitoring and strong ESG seem to improve the informativeness of a firm's disclosure.

Our contributions are two-fold. First, we complement prior studies that examined the information content in discretionary accruals using a research design that regresses future earnings or current stock returns on the different components of earnings, but document mixed results [1,2]. Thus, alternative research approaches are needed. In this paper, we address this need by investigating the relationship between discretionary accruals and analysts' forecast dispersion and document results suggesting low information content in discretionary accruals. Second, we contribute to the literature examining the information environment that is unique to each firm [10–16]. An implication from this literature is that analysts and investors may fixate on earnings and do not realize the lack of persistence with a large accrual component [1]. Our results suggest that while analysts seem to be misled by the discretionary component in earnings in forming their expectations of long-term future earnings' growth, external monitoring and ESG mitigate the adverse effect of discretionary accruals on analysts' forecast dispersion and analysts' forecast error.

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