Strategic Use of Volume of Financial Items in 10-K Reports

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Abstract

We investigate whether firms limit the volume of financial items in annual reports (including the financial statements and footnotes) to obfuscate poor future firm performance, and how investors react to this reduced volume. We estimate abnormal volume to capture managers' discretion over reporting in the 10-K and find that abnormally low volume pre-dicts poor future earnings. This relation is more pronounced in firms where the market has difficulty in detecting managerial intervention in the disclosure process. We also find that abnormally low volume predicts negative future returns, suggesting that managers benefit from disclosing fewer financial items by delaying the incorporation of bad news into stock prices. Further corroborating our results, we find that the volume is abnormally low when there exist strong managerial incentives to withhold bad news and manipulate investor per-ceptions upward. Overall, our evidence is consistent with the notion that managers attempt to obfuscate poor future performance and inflate current stock prices by disclosing fewer financial items in the 10-K.

Keywords

disclosure, annual report data items, profitability, market efficiency, Compustat, managerial opportunism

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Introduction

Recent literature investigates how managers structure financial reporting features to communicate their views about firm performance to investors. Previously explored annual report features include length, readability, tone, and lexical characteristics (Chen et al., 2002; Kravet & Muslu, 2013; Lehavy et al., 2011; Loughran & McDonald, 2014). Recent studies also show that managers can mislead investors by providing less readable annual reports (Li, 2008), using more deceptive language during conference calls (Larcker &

Zakolyukina, 2012), or employing an abnormally positive tone in earnings press releases (Huang et al., 2013). We extend these studies by focusing on 10-K filings and investigating whether managers reduce their reporting of *financial items* presumably to hide bad news. We refer to this practice as *volume reduction management*. We measure the volume of financial items by counting distinct numeric accounting items in 10-K filings, as captured by Compustat.

We study volume reduction management in 10-K filings because these filings are a main source of information for market participants (Lehavy et al., 2011; R. K. Rogers & Grant, 1998). Although the U.S. Securities and Exchange Commission (SEC) stipulates a basic framework and minimum standards for financial disclosures in the 10-K, considerable discretion remains in terms of what information is provided and how that information is presented (Lang & Lundholm, 1993). Prior research on 10-K disclosure volume typically finds that voluminous disclosures—in terms of file size or the number of words—make it more difficult for investors to value firm performance (Li, 2008; Loughran & McDonald, 2014; You & Zhang, 2008). This finding supports the concerns among regulators and practitioners about the harmful effect of dislcosure overload and complexity on investors.[1]

In contrast to the studies referred to above, we focus on the volume of financial items, rather than the number of words or number of numbers. Lundholm et al. (2014) develop their study on the premise that the number of numbers in textual disclosures is more precise than a textual equivalent; however, they do not find that the use of numbers is associated with informativeness.[2] It is not apparent whether and how a number will be informative in the context of 10-K reports. If a number is simply a reiteration of another number or if it has no relation to firm performance, then more numbers may obfuscate information and lead to disclosure overload. A financial item, however, clearly has purpose and will be provided when it is material. Therefore, it is plausible to assume that financial items are informative. Given that, we focus on the volume of financial items in 10-K filings to evaluate whether managers hide bad news by reducing the reporting of financial items. Specifically, we first investigate whether firms limit the volume of financial items in the 10-K, as captured by Compustat, to obfuscate poor future firm performance. We then examine whether and to what extent investors are misled by this volume reduction management.[3]

Prior research has not focused on the *financial items* in the 10-K, with the exception of Chen et al. (2015) and Cheng et al. (2016). Chen et al. (2015) find that the disaggregation level of financial items (also known as *DQ*: Disaggregation Quality) is negatively (positively) associated with analyst forecast dispersion (accuracy) and negatively associated with bid-ask spreads and cost of equity. Cheng et al. (2016) propose a new measure of disclosure volume based on an expanded set of non-missing financial items in Compustat (also known as *NFID*: Number of Financial Items Disclosed). They find a positive association between *NFID* and firm-specific information (measured by price asynchronicity).

We adopt the *NFID* measure used in Cheng et al. (2016) for several reasons. First, the *DQ* measure in Chen et al. (2015) is more of a disclosure quality measure with respect to disaggregation. Because the *NFID* measure is a volume measure, it is better suited to addressing our research question.[4] Second, *NFID* is calculated as a percentage, using the number of non-missing Compustat items scaled by the total number of applicable items at the industry–year level, which ensures the comparability across industries. Third, *NFID* directly measures the number of financial items as captured by Compustat. Because Compustat data items are machine-readable, we use *NFID* as a proxy for the volume of financial items in the 10-K.[5,6] See ''Construction of the volume of financial items'' section for details on the construction of *NFID* measures.

The volume of financial items can be jointly determined by economic fundamentals and managerial incentives. Accordingly, we decompose the volume of financial items into a non-discretionary component based on firm fundamentals, and a discretionary component that reflects discretionary choices managers make within 10-K filings. The discretionary component, labeled ''abnormal volume,'' is the main variable of interest in this study. We hypothesize that managers choose an abnormally low volume of financial items in the 10-K to hide bad news. That is, when more detailed financial items contain unfavorable information about future performance, managers may choose to withhold or aggregate those items to influence investors' expectations.

We expect economic factors to be highly related to the volume of financial items in the 10-K; therefore, we first use a benchmark model to explore how a firm's *NFID* is explained by the proposed economic factors, industry effects, and year effects. Our determinant model shows that 72.6% of the variation in *NFID* is explained by *NFID* at the industry–year level. Because the incremental increase in the adjusted R^2 is only 1.1% when adding a variety of firm characteristics that determine *NFID*, we use industry-adjusted *NFID* as a starting point to proxy for abnormal volume. We also consider the robustness of our inferences using a battery of alternatives to measure abnormal volume in the ''Robustness Tests Using Alternative Benchmarks to Measure Abnormal Volume'' section.

This study starts with a sample of 106,831 firm-year observations from 1976 through 2011.[7] We first examine the relation between abnormal volume and future accounting performance (measured as 1-year-ahead earnings and cash flows). We find that abnormally low volume is associated with poor future performance. The power of abnormal volume to predict future accounting performance is incremental to the effect of various valuation metrics and firm characteristics shown in prior studies to predict future firm performance (Drake et al., 2009; Huang et al., 2013; Li, 2010; Sloan, 1996). This result is consistent with the agency cost motive for non-disclosure (Berger & Hann, 2007). We further document that this relation is driven by the income statement–based abnormal volume.

We then examine whether stock prices rationally reflect the implications of abnormal volume for 1-year-ahead earnings. If managers restrict the flow of negative information by disclosing fewer financial items in the 10-K to avoid a temporary stock price decline, there should be a return reversal when information about poor firm performance is revealed subsequently, either by the firm's own disclosures, by analyst reports, or by the business press. We predict and find that firms with abnormally low volume in the 10-K experience negative 1-year-ahead stock returns. This result holds after controlling for accrual management, real earnings management, and other return predictors.

Next, we examine cross-sectional settings where volume reduction management is likely to be constrained by the market's ability to assess managers' intervention in the disclosure process. We find that the positive relation between abnormally low volume and poor future earnings/returns is more pronounced for firms with high information uncertainty and for those with low investor sophistication.

We further examine whether volume reduction management is likely to be used when managers have strong incentives to withhold adverse information and bias investor perceptions upward. We find that the volume of financial items is abnormally low when firms meet or just beat past earnings and when managers have higher compensation-based equity incentives. Our main finding that abnormally low volume predicts poor future performance is not sensitive to alternative abnormal volume measures.

This article contributes to the literature in several ways. First, we extend prior research that identifies red flags for the deterioration of firm performance (Doyle et al., 2003;

Hirshleifer et al., 2004; Sloan, 1996) by showing that abnormal volume of financial items in 10-K filings reveals managerial opportunism and can be used by investors to anticipate future performance declines. Second, we extend the strategic disclosure literature on how managers structure disclosure features for opportunistic purposes. Prior research finds that managers mislead investors by providing less readable 10-Ks (Li, 2008), using abnormally positive tone in earnings releases (Huang et al., 2013), and reporting fewer line items prepared under Generally Accepted Accounting Principles (GAAP) in earnings releases (D'Souza et al., 2009). We contribute to this line of literature by identifying a new mechanism—the volume of financial items in 10-K filings—and by documenting whether and when managers engage in volume reduction management. Although the tools differ, these disclosure choices deviate from transparent reporting and reflect managerial incentives to temporarily mislead investors.

Our study differs from and extends Chen et al. (2015) in several ways, ranging from the research question to the constructs that *NFID* versus *DQ* intend to capture. We discuss the differences in detail in the ''Prior Literature on Disclosure Features of the 10-K'' section and perform tests in the ''Tests Separating Obfuscation and Good Disclosure Hypotheses'' section. Collective evidence reveals that the positive association between abnormal volume and future firm performance is consistent with bad news withholding, complementing Chen et al. (2015) who focus on disclosure quality.

Literature Review and Hypothesis Development

Prior Literature on Disclosure Features of the 10-K

Managers influence various features of the 10-K to affect investor perceptions of firm performance or the information environment. Regarding managerial incentives, studies examine whether managers influence annual report features for opportunistic purposes. For example, Li (2008) finds that annual reports of firms with lower earnings are less readable, suggesting managerial intervention in annual report readability when incentives to obfuscate poor firm performance exist. Loughran and McDonald (2014) document that 10-K file size is positively associated with return volatility, earnings forecast errors, and earnings forecast dispersion. In contrast, prior research finds evidence consistent with managerial influence for informative purposes. For example, Li (2010) documents that the average tone of the forward-looking statements in the Management Discussion and Analysis (MD&A) section of 10-K/10-Q filings is informative about future earnings. Li et al. (2013) find that qualitative information in the 10-K is useful for assessing a firm's competitive environment.

The volume of financial numbers reflects the amount of quantitative detail in the 10-K disclosure. A few studies examine the number of numbers in different disclosures, including segment reporting (Berger & Hann, 2007), earnings press releases (D'Souza et al., 2009), the MD&A (Lundholm et al., 2014), and management forecasts (Hirst et al., 2007; Hutton et al., 2003). Although these studies contribute to our understanding of managers' quantitative disclosure decisions, they generally focus on a single reporting section or voluntary disclosure. 10-K filings are inherently different from the disclosures above in terms of regulations, managerial incentives, disclosure content and format, and market reactions.[8]

With the exception of Chen et al. (2015) and Cheng et al. (2016), prior research has not focused on the volume of financial items in 10-K reports.[9] This article differs from Chen et al. (2015) in several important ways. First, we ask different research questions. Although their study implies that a higher level of disaggregation of accounting data items is more

informative, we cannot infer from their study whether managers use less disaggregated disclosure to hide poor performance, which is the focus of our study. To the extent that capital market consequences (e.g., analyst forecast dispersion, analyst forecast accuracy, and cost of capital) reflect investor perceptions of the disclosure, Chen et al. (2015) provide evidence on the association between financial items and the reaction of *information users*. In contrast, we are more interested in understanding the association between financial items and the action of *information suppliers*. Second, whereas Chen et al. (2015) propose *DQ* as a disclosure quality measure, we focus on the abnormal volume of financial items to capture managers' tendency to hide bad news. An important difference between *NFID* and *DQ* is that they rely on different sets of financial items. *NFID* captures the volume of financial items, whereas *DQ* captures disclosure quality with respect to the fineness of data. Accordingly, *NFID* includes all 440 applicable Compustat items, whereas *DQ* only utilizes 147 items that fit into their disaggregation scheme. The Pearson correlation between the *NFID* measure and *DQ* measure is only .125, suggesting that the two measures are likely capturing different constructs. Third, we augment regressions in Tables 3 and 4, which test our hypotheses, by including *DQ* to control for disclosure quality and find that our inferences are robust (untabulated). Finally, we provide evidence in the ''Tests Separating Obfuscation and Good Disclosure Hypotheses'' section to distinguish our bad news withholding story from the disclosure quality story in Chen et al. (2015).

Cheng et al. (2016) document a positive association between *NFID* and price asynchronicity. Although we adopt their *NFID* measures, our focus is different: To the extent that price asynchronicity reflects the amount of firm-specific information investors price, their study provides evidence on the association between the volume of financial items and *information users*, whereas our study focuses on the action of *information suppliers*. We cannot infer managerial incentives and discretion as to how managers structure the volume of financial items in the 10-K from their study.

Abnormal Volume, Future Accounting Performance, and Future Stock Returns

The ''management obfuscation hypothesis'' argues that managers have more incentive to obfuscate information when firm performance is poor because the market may fully incorporate information that is costlier to extract more slowly (Bloomfield, 2002).[10] We test the obfuscation hypothesis by investigating whether managers strategically adjust the volume of financial items in the 10-K.

Prior studies investigating how managers' incentives affect the 10-K volume provide evidence that managers increase 10-K volume (larger file size or longer documents) to obscure firms' economic performance (Li, 2008; Loughran & McDonald, 2014). We extend this literature by showing that a low volume of ''useful information'' is also problematic. We argue that managers have incentives and the ability to engage in volume reduction management in 10-K filings. First, extensive details in the 10-K allow investors to verify information that was disclosed either by firms themselves or by financial intermediaries such as analysts. Because of this feedback role of annual reports, managers may withhold information to prevent investors from discerning firms' real (negative) economic performance (Bloomfield, 2002; Kim et al., 2019).

Second, although the SEC's mandatory disclosure requirement provides minimum standards for 10-K reports, it still allows managers great latitude in determining what information to provide and how to present that information in the 10-K (Chen et al., 2015; Lang & Lundholm, 1993). Prior research provides evidence of managers' strategic reporting

behavior regarding special items (McVay, 2006), discontinued operations (Barua et al., 2010), research and development expenses (Koh & Reeb, 2015; Merkley, 2014), activity in valuation allowance and reserve accounts (Cassell et al., 2015), and so on.

Third, from a legal perspective, withholding bad news can lower litigation risk. This is in part because it is difficult for a plaintiff to prove that managers deliberately withheld information (Ge & Lennox, 2010). Moreover, lengthy and complex 10-K filings lower managers' costs of non-disclosure because it is difficult for investors to distinguish between managers not possessing information and managers intentionally withholding information. Therefore, we state our first hypothesis in the alternative form as follows:

Hypothesis 1 (H1): Abnormal volume of financial items is positively associated with future accounting performance.

However, H1 is not without tension. Bounded rationality (Simon, 1955) and limited attention theory (Hirshleifer & Teoh, 2003) suggest that investors will omit relevant information and rely on simplified information processing techniques or heuristics when they lack sufficient time or resources to fully process available information. Prior research on information overload finds that investors overlook or underweight relevant information in complex 10-K reports, leading to inferior decisions (Chapman et al., 2019; Lehavy et al., 2011). Therefore, if managers are trying to obfuscate unfavorable economic performance, they may disclose more financial items to bury value-relevant information in more complex reports. This would result in an inverse relation between the abnormal volume of financial items and future performance. It is also possible that managers bias the disclosure by disclosing more good-news-related items and, at the same time, omitting bad-news-related items. If so, the net relation between abnormal volume and firm performance becomes unclear.

If managers engage in volume reduction management to mask poor future performance, then a natural question is whether managers succeed in delaying the incorporation of bad news into the stock price. As discussed above, it can be quite challenging for investors to see through managerial opportunism driving the discretionary volume of financial items disclosed in the 10-K. If investors fail to see through this practice, there should be contemporaneous overpricing for stocks with abnormally low volume. When information about poor firm performance is subsequently revealed to the public, stock prices of firms with abnormally low volume in 10-K filings should reverse and converge to fundamental values. We state the second hypothesis in the alternative form as follows.

Hypothesis 2 (H2): Abnormal volume of financial items is positively associated with future abnormal returns.

Cross-Sectional Predictions: Variation in Investors' Ability to Assess Volume Reduction Management

To better assess under what circumstances managers are more likely to engage in volume reduction management, we develop two hypotheses to examine cross-sectional variation in the main relations hypothesized in H1 and H2. Managers trade off benefits and costs when making disclosure decisions. Because volume reduction management is costly, firms are likely to face different levels of constraints when using this strategy. For example, J. L.

Rogers and Stocken (2005) document that managers' willingness to misrepresent their forward-looking information varies with the market's ability to detect misrepresentation. Following this argument, if the positive relation between abnormal volume and future performance is driven by managers' bad news withholding behavior, then we expect this relation to be more pronounced in firms where investors' ability to assess managers' disclosure bias is poor.

We first examine the effect of information uncertainty on managers' volume reduction management. It is inherently costlier for investors to process information about firms with high information uncertainty. Classic disclosure theory addresses the role of uncertainty (Dye, 1985; Verrecchia, 1983) and suggests that when investors are unable to distinguish nonexistence of information from managers' deliberate withholding, it is not costly for managers to withhold bad news. We identify firms with high uncertainty as those with losses, volatile earnings, volatile returns, or disperse analysts' earnings forecasts, and we predict the following:

Hypothesis 3 (H3): The relations in H1 and H2 are more pronounced for firms with high uncertainty.

We next examine the effect of investor sophistication on managers' volume reduction management. We use analyst coverage and institutional holdings to measure investor sophistication. Analysts and institutional investors are external monitors of managers' disclosure activities (Healy & Palepu, 2001). They have more expertise and resources to process complex financial information at a lower cost than average investors. Prior studies find that firms with higher analyst coverage are less likely to engage in misreporting behavior. For example, Yu (2008) finds that firms with higher analyst coverage manage their earnings less. Dyck et al. (2010) find that analysts are the most efficient external whistleblowers for corporate fraud. There is also evidence that institutional investors can elicit more corporate disclosure by demanding more information from the firm (Ajinkya et al., 2005). Therefore, we predict that managers are less likely to withhold bad news by exerting discretion over the volume of financial items in the 10-K when firms are followed by more sophisticated investors. This leads to our final prediction:

Hypothesis 4 (H4): The relations in H1 and H2 are more pronounced in firms with fewer sophisticated investors.

Sample, Variable Measurement, and Descriptive Statistics

Sample and Data

We obtain financial data from Compustat, stock returns from Center for Research in Security Prices (CRSP), analyst forecasts data from Institutional Brokers' Estimate System (I/B/E/S), institutional ownership data from Thomson Reuters 13F, and CEO compensation data from ExecuComp. Our initial sample covers the universe of industrial firms in Compustat and CRSP from 1976 through 2011. We then exclude financial institutions and utility firms because the structure of their financial statements is incompatible with those in other industries. We also exclude firms with Industry Code 48 based on Fama-French 48 industry classifications because it is difficult to interpret these firms' results in an industry

context (Srivastava, 2014). To minimize the effect of outliers, we delete observations that are in the top and bottom 1% of the distributions of earnings and returns (Tucker & Zarowin, 2006). After eliminating observations without sufficient data for control variables in main analyses, the final sample in our main tests consists of 106,831 firm-year observations. Sample sizes vary across different test specifications and are noted in the tables.

Variable Measurements

Construction of the volume of financial items. Our measure of the volume of financial items in the 10-K, *NFID*, is the count of non-missing accounting data items in a firm's annual report, as captured by Compustat. Data items in Compustat are further classified into four categories: balance sheet items, income statement items, cash flow items, and miscellaneous items. After excluding items that are unique to financial and utility firms, we identify 440 financial items that are applicable to industrial firms, including 178 balance-sheet-related items, 157 income-statement-related items, 44 cash flow items, and 61 miscellaneous items.

The next step is to determine the total number of items that are ''applicable'' to an industry in a particular year. An item is ''not applicable'' if its value is missing for all firms in a two-digit Standard Industrial Classification (SIC) industry in a year. The overall volume measure, *NFID*, is defined as the percentage of non-missing financial items in Compustat for each firm-year, calculated using the number of non-missing items divided by the total number of ''applicable'' items. A higher *NFID* indicates that more financial items could be derived from a firm's annual report. According to Compustat's classification scheme, we decompose *NFID* and generate two sub-measures: *NFID_BS* for balance-sheet-related items and *NFID_IS* for income-statement-related items. We illustrate how these measures are computed in Table B1 (Appendix B). Volume measures constructed from Compustat contain the normal component that reflects underlying economic fundamentals and the abnormal component that is subject to managerial discretion. Using the overall volume as a starting point, we construct the abnormal component, the focus of this study, in the ''Abnormal volume measure in the 10-K'' section.

Table C1 (Appendix C) provides a list of representative Compustat income statement items that have missing values in year t but appear in the prior 2 years. Although changes in disclosure of transitory items can be a natural result of changes in a firm's economic fundamentals, prior research suggests that transitory items are influenced by managerial opportunism (McVay, 2006; Myers et al., 2007). Other financial items, such as depreciation of tangible fixed assets, amortization of intangibles, and pension and retirement expense, are susceptible to managers' disclosure incentives as well.[11]

Abnormal volume measure in the 10-K. We construct our abnormal volume measure based on results from the determinant model in Equation 1. Because our primary interest is in understanding managerial discretion over the volume disclosure, it is important to empirically document non-strategic factors (i.e., firm fundamentals) that affect *NFID* measures and to control for their effects in our later empirical tests. Following Chen et al. (2015) and Cheng et al. (2016), we consider the following firm fundamental variables in the determinant model: special or unusual firm events (restructuring, mergers and acquisitions, seasoned equity offerings, and special items), volatility of business or operations (earnings volatility and return volatility), and complexity of operations (the number of business

segments, firm size, and firm age). We also examine how the industry mean of *NFID* determines firms' quantitative level of financial items in the 10-K. All variables are defined in Table A1 (Appendix A). We cluster standard errors by year and industry.

$$\begin{aligned} Volume\ of\ Financial\ Items_{i,t} = {} & \alpha + \beta_0 IND\_MEAN_{i,t} + \beta_1 Restructure_{i,t} + \\ & \beta_2 M\&A_{i,t} + \beta_3 SEO_{i,t} + \beta_4 AGE_{i,t} + \beta_5 BUSSEG_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 SI_{i,t} + \\ & \beta_8 STD\_EARN_{i,t} + \beta_9 STD\_RET_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Table 1 reports the results from estimating Equation 1. Column (1) shows that the mean of *NFID* at the industry–year level explains a substantial amount of variations in *NFID* (adjusted R^2 = .726). In Column (2), after adding firm fundamental variables, the value of the adjusted R^2 increases slightly to .737, but the incremental increase in adjusted R^2 is only 1.1% from Column (1) to Column (2). Columns (3) to (6) reveal a similar pattern in the adjusted R^2 for the determinant models of *NFID_IS* and *NFID_BS*. Overall, results in Table 1 indicate that the most powerful factor driving *NFID* and its components is the average volume at the industry–year level. Therefore, we use demeaned values of the volume measures, that is, *DM_NFID, DM_NFID_IS*, and *DM_NFID_BS*, as the main measures of abnormal volume.[12] We control for other determinants in the subsequent tests.

Summary statistics. Panel A of Table 2 presents descriptive statistics for the *NFID* measures. The average percentage of overall non-missing financial items (*NFID*) is 77.9, with a mean of 81.7% for balance sheet items (*NFID_BS*) and a mean of 71.8% for income statement items (*NFID_IS*). High percentages of non-missing items are expected because 10-K reports are heavily regulated by the SEC. Panel B reports the means of the *NFID* measures by industry based on Fama-French 12 industry classifications. The mean of *NFID* ranges from 0.760 in the health care industry to 0.813 in the consumer non-durables industry. Figure 1 shows the temporal change in *NFID* and its sub-measures. *NFID* measure decline and reach their lowest values in 1996 and then increase steadily. Compustat adds new items in response to the changes in business models and accounting regulations over time, which may contribute to the temporal variation in *NFID* measures. *NFID_IS* has a lower value than *NFID_BS* in the post-1996 period, suggesting more variation in firm choices for the disclosure of income statement items. We include both industry- and year-fixed effects in all of our regression analyses.

Research Design and Results

Abnormal Volume of Financial Items and Future Accounting Performance (H1)

H1 predicts that, all else equal, firms with lower abnormal volume of financial items will have less favorable 1-year-ahead accounting performance. To test H1, we estimate the following ordinary least squares (OLS) regression.

$$EARN_{t+1} = \alpha_0 + \beta_1 DM\_NFID_t + \beta_2 EARN_t + \sum \beta_k CONTROLS_t + \varepsilon_{t+1}. \quad (2)$$

Table 3 presents the results. In all regressions, the firm fundamental variables from the determinant model (Equation 1) are included as control variables. The results without control variables are of similar economic magnitude and statistical significance (untabulated). Standard errors are clustered by year and industry.[13]

Table 1. Determinant Model of Volume of Financial Items.

	Dependent variable					
	NFID		*NFID_IS*		*NFID_BS*	
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.002 (0.65)	−0.024*** (–3.21)	0.006*** (3.10)	−0.091*** (–7.79)	−0.001 (–0.62)	0.001 (0.12)
IND_MEAN	0.999*** (264.09)	1.018*** (168.91)	0.994*** (390.12)	1.061*** (98.84)	1.003*** (419.42)	1.006*** (240.61)
Restructure		0.019*** (11.28)		0.045*** (10.30)		−0.001 (–0.52)
M&A		−0.001 (–0.85)		0.001 (0.44)		−0.003* (–1.79)
SEO		−0.006*** (–5.48)		−0.009*** (–6.48)		−0.002 (–1.51)
AGE		0.001 (1.15)		0.005*** (3.29)		0.000 (0.16)
BUSSEG		−0.005*** (–2.63)		−0.006** (–2.56)		−0.005** (–2.03)
SIZE		0.003*** (3.66)		0.008*** (5.22)		0.001 (1.15)
SI		0.035*** (5.21)		0.105*** (7.86)		−0.005 (–0.66)
STD_EARN		−0.031*** (–5.32)		−0.044*** (–5.22)		−0.011 (–1.27)
STD_RET		−0.009** (–2.35)		0.007 (1.10)		−0.015*** (–3.20)
Adjusted R^2	.726	.737	.767	.797	.652	.653
n	106,831	106,831	106,831	106,831	106,831	106,831

Note. This table presents the determinant models of the volume of financial items. *IND_MEAN* is the industry mean of *NFID, NFID_IS* or *NFID_BS*. Variables are defined in Table A1 (Appendix A). The *t*-statistics in parentheses are based on two-way clustering by industry and year.
*, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively.

Table 2. Descriptive Statistics.

Panel A: Descriptive Statistics on Key Variables.

Variable	*n*	*M*	*SD*	25th percentile	Median	75th percentile
NFID	106,831	.779	.097	0.718	0.783	0.856
NFID_IS	106,831	.718	.138	0.607	0.735	0.838
NFID_BS	106,831	.817	.116	0.745	0.847	0.911
DM_NFID	106,831	.001	.051	−0.029	0.001	0.032
DM_NFID_IS	106,831	.002	.067	−0.039	0.001	0.039
DM_NFID_BS	106,831	.001	.068	−0.037	0.004	0.040

Panel B: Mean of *NFID* and Its Sub-Measures by Industry.

Industry code	Industry	*NFID*	*NFID_IS*	*NFID_BS*
1	Consumer non-durables	0.813	0.753	0.848
2	Consumer durables	0.802	0.744	0.837
3	Manufacturing	0.812	0.757	0.847
4	Oil, gas, and coal extraction and products	0.761	0.720	0.777
5	Chemicals and allied products	0.800	0.748	0.841
6	Business equipment	0.776	0.695	0.836
7	Telephone and television transmission	0.763	0.700	0.804
9	Wholesale, retail, and some services	0.801	0.739	0.836
10	Health care, medical equipment, and drugs	0.760	0.661	0.833
12	Others	0.782	0.721	0.816

Note. This table presents the descriptive statistics. Industry code in Panel B is based on Fama-French 12 industry classifications. Variables are defined in Table A1 (Appendix A).

We find evidence consistent with H1. In Panel A of Table 3, the positive coefficient on *DM_NFID* (0.034, *t*-statistic = 3.05) indicates that firms with the volume of financial items below the industry mean have lower future earnings. A decrease of one standard deviation (0.051) in *DM_NFID* implies a decrease of 0.17% (0.051 × 0.034) in 1-year-ahead earnings. For comparison, a 0.17% decline amounts to about 4.25% (0.17%/4%) of the median earnings (4% in our sample).

We repeat this analysis using *DM_NFID_IS* in Column (2) and *DM_NFID_BS* in Column (3). Although the positive relation between abnormal volume and future earnings holds in both columns, the coefficient on *DM_NFID_BS* is relatively small and marginally significant (0.010, *t*-statistic = 1.73). In Column (4), we include both *DM_NFID_IS* and *DM_NFID_BS*. Although the coefficient on *DM_NFID_BS* is insignificant, the coefficient on *DM_NFID_IS* remains large and significant at the 1% level (0.031, *t*-statistic = 3.06), indicating that the relation between abnormal volume and future earnings is mainly driven by abnormal volume of income statement items. These results suggest that managers hide items from the income statement rather than the balance sheet, consistent with the notion that income statement items provide the most value-relevant information and affect investor perceptions of firm value.[14]

To the extent that accrual-based earnings are more likely to be subject to manipulation than cash flows, the economic impact of volume management may be underestimated when using future earnings as a proxy for future firm performance. Therefore, we use future cash

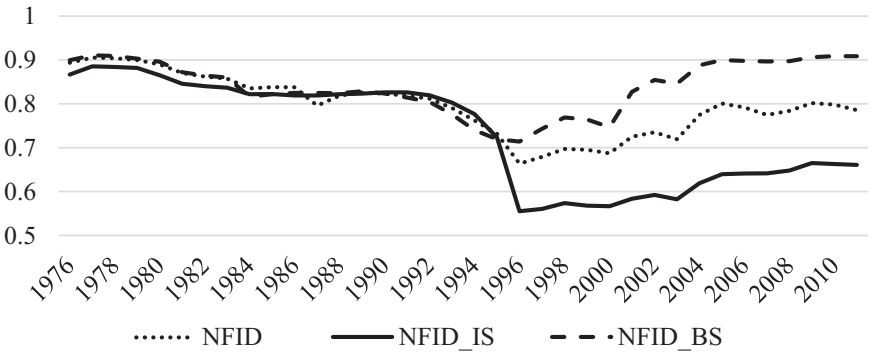

Figure 1. Temporal trend of *NFID* and its sub-measures.
Note. The figure is plotted based on the means of *NFID* and its sub-measures by year. *NFID* = Number of Financial Items Disclosed.

flows as an alternative measure and report the results in Panel B of Table 3. When using 1-year-ahead cash flow from operations (CFO_{t+1}) as the dependent variable, the coefficients on *DM_NFID, DM_NFID_IS*, and *DM_NFID_BS* are 0.036 (with *t*-statistics = 1.79), 0.035 (with *t*-statistics = 2.36), and 0.009 (with *t*-statistics = 0.76) in Columns (1), (2), and (3), respectively. A decrease of one standard deviation in *DM_NFID* translates to a decrease in asset-scaled *CFO* of 0.59% (0.036 × 0.163). A 0.59% decline amounts to 7.76% of the median *CFO* (0.076).

In sum, we find supporting evidence for H1 that firms with abnormally low volume of financial items in the 10-K tend to have poor future performance. This effect is both economically and statistically significant.

Abnormal Volume of Financial Items and Future Stock Returns (H2)

If managers reduce the volume of disclosure to withhold bad news, their ultimate goal would be to inflate stock valuation. To test H2, we estimate the following regression:

$$BHAR_{t+1} = \alpha_0 + \beta_1 DM\_NFID_t + \sum \beta_k CONTROLS_t + \varepsilon_{t+1}. \quad (3)$$

To gauge economic magnitude more easily, we transform measures of abnormal volume (i.e., *DM_NFID, DM_NFID_IS*, and *DM_NFID_BS*) into scaled decile ranks, ranging from 0 to 1. This allows the coefficient to represent the hedge return on the corresponding zero-investment portfolio (Cheng & Thomas, 2006). Our control variables include both firm fundamental factors that correlate with the volume of financial items, and well-known risk factors and anomalies, including firm size, book-to-market ratio, return momentum, and accruals (Fama & French, 1992; Gompers & Metrick, 2001; Sloan, 1996).

Results are reported in Table 4. Column (1) of Panel A shows that *RDM_NFID* predicts 1-year-ahead stock returns (0.042, *t*-statistic = 4.49). Column (4) shows that the predictive power is driven by income-statement-related abnormal volume (*RDM_NFID_IS*). This finding corroborates results in Table 3—that the relation between abnormal volume and future earnings is mainly driven by the income-statement-related items.

In Panel B, we examine whether abnormal volume predicts future returns incremental to earnings management. After controlling for accruals management (*RWACC*) and real

Table 3. Regressions of Future Financial Performance on Measures of Abnormal Volume of Financial Items.

Panel A: Future Earnings and Abnormal Volume of Financial Items.

	Dependent variable = $EARN_{t+1}$			
Variables	(1)	(2)	(3)	(4)
Intercept	−0.008 (–0.93)	−0.006 (–0.72)	−0.009 (–1.04)	−0.006 (–0.73)
DM_NFID	0.034*** (3.05)			
DM_NFID_IS		0.032*** (3.28)		0.031*** (3.06)
DM_NFID_BS			0.010* (1.73)	0.002 (0.35)
EARN	0.663*** (20.24)	0.663*** (20.33)	0.663*** (20.21)	0.663*** (20.31)
WACC	−0.088*** (–6.30)	−0.088*** (–6.35)	−0.089*** (–6.29)	−0.088*** (–6.32)
BHAR	0.040*** (13.06)	0.040*** (13.05)	0.040*** (13.06)	0.040*** (13.05)
BTM	−0.007*** (–5.74)	−0.008*** (–5.96)	−0.007*** (–5.65)	−0.008*** (–5.94)
SIZE	0.002*** (3.24)	0.002*** (2.81)	0.002*** (3.37)	0.002*** (2.79)
Other controls	Yes	Yes	Yes	Yes
Adjusted R^2	.520	.520	.520	.520
n	90,796	90,796	90,796	90,796

Panel B: Future Cash Flow and Abnormal Volume of Financial Items.

	Dependent variable = CFO_{t+1}			
Variables	(1)	(2)	(3)	(4)
Intercept	0.035*** (3.92)	0.038*** (4.62)	0.034*** (3.61)	0.038*** (4.66)
DM_NFID	0.036* (1.79)			
DM_NFID_IS		0.035** (2.36)		0.034** (2.36)
DM_NFID_BS			0.009 (0.76)	0.001 (0.12)
CFO	0.694*** (24.22)	0.695*** (24.28)	0.695*** (24.16)	0.695*** (24.19)
WACC	0.261*** (10.16)	0.262*** (10.15)	0.261*** (10.18)	0.262*** (10.15)
BHAR	0.010*** (2.94)	0.010*** (2.94)	0.010*** (2.94)	0.010*** (2.94)
BTM	0.008*** (4.36)	0.008*** (4.42)	0.008*** (4.34)	0.008*** (4.46)
SIZE	0.003*** (6.26)	0.003*** (5.57)	0.003*** (6.12)	0.003*** (5.45)
Other controls	Yes	Yes	Yes	Yes
Adjusted R^2	.598	.598	.598	.598
n	63,999	63,999	63,999	63,999

Note. This table reports the results of the relation between abnormal volume and future accounting performance. Other controls in both panels (untabulated) include *SI, Restructure, AGE, BUSSEG, M&A, SEO, STD_EARN*, and *STD_RET*. Industry- and year-fixed effects are included. The *t*-statistics in parentheses are based on two-way clustering by industry and year. Variables are defined in Table A1 (Appendix A).
*, **, and *** indicate significance levels at 10%, 5% and 1%, respectively.

earnings management (*RREM*), the predictive power of *RDM_NFID_IS* in Column (2) remains significant with a coefficient of 0.045 (*t*-statistic = 3.67). This suggests that the annualized hedge return on the industry-adjusted volume of income-statement-related items is 4.5%. We note that, based on our sample, the hedge returns on accrual-based and real earnings management are 5.3% and 4.6%, respectively. These results support the economic significance of volume reduction management because the mispricing effect of volume reduction management is comparable with that of earnings management. Collectively,

Table 4. Regressions of Future Abnormal Returns on Abnormal Volume of Financial Items.

Panel A: Future Abnormal Returns and Abnormal Volume of Financial Items.

	Dependent variable = $BHAR_{t+1}$			
Variables	(1)	(2)	(3)	(4)
Intercept	0.068** (2.06)	0.076** (2.37)	0.072** (2.13)	0.073** (2.22)
RDM_NFID	0.042*** (4.49)			
RDM_NFID_IS		0.052*** (4.54)		0.051*** (4.33)
RDM_NFID_BS			0.018*** (2.60)	0.005 (0.83)
BHAR	0.017** (2.06)	0.017** (2.07)	0.017** (2.08)	0.017** (2.07)
BTM	0.013** (2.02)	0.012* (1.85)	0.014** (2.09)	0.012* (1.87)
SIZE	−0.002 (–0.86)	−0.003 (–1.43)	−0.001 (–0.37)	−0.003 (–1.40)
Other controls	Yes	Yes	Yes	Yes
Adjusted R^2	.011	.012	.011	.012
n	94,626	94,626	94,626	94,626

Panel B: Earnings Management as Additional Controls.

	Dependent variable = $BHAR_{t+1}$			
Variables	(1)	(2)	(3)	(4)
Intercept	0.087*** (2.79)	0.093*** (2.97)	0.091*** (2.93)	0.091*** (2.95)
RDM_NFID	0.037*** (3.53)			
RDM_NFID_IS		0.045*** (3.67)		0.044*** (3.55)
RDM_NFID_BS			0.014* (1.86)	0.004 (0.52)
RWACC	−0.054*** (–6.41)	−0.053*** (–6.37)	−0.054*** (–6.37)	−0.053*** (–6.37)
RREM	−0.047*** (–4.01)	−0.046*** (–3.96)	−0.048*** (–4.11)	−0.046*** (–3.95)
BHAR	0.014* (1.66)	0.014* (1.67)	0.014* (1.68)	0.014* (1.67)
BTM	0.013* (1.71)	0.012 (1.61)	0.014* (1.82)	0.012 (1.62)
SIZE	−0.003 (–1.23)	−0.004* (–1.68)	−0.002 (–0.73)	−0.004* (–1.68)
Other controls	Yes	Yes	Yes	Yes
Adjusted R^2	.014	.014	.013	.014
n	74,220	74,220	74,220	74,220

Note. This table reports the results of the relation between abnormal volume and future abnormal returns. *RDM_NFID, RDM_NFID_IS*, and *RDM_NFID_BS* are annual decile ranks for the ease of gauging economic significance. *RWACC* and *RREM* in Panel B are annual decile ranks of *WACC* and *REM*. Other control variables in both panels include *SI, Restructure, AGE, BUSSEG, M&A, SEO, STD_EARN*, and *STD_RET*. Industry- and year-fixed effects are included. The *t*-statistics in parentheses are based on two-way clustering by industry and year. Variables are defined in Table A1 (Appendix A).

*, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively.

Table 4 suggests that managers use volume reduction management incrementally to earnings management and that they successfully delay the incorporation of bad news into stock prices.

Cross-Sectional Tests

Because the analyses so far suggest that the predictive power of abnormal volume is mainly driven by income statement items, we use abnormal volume related to the income statements (*DM_NFID_IS*) as the key measure in the following tests.

Table 5. Information Uncertainty and Managers' Strategic Use of the Volume of Financial Items.

Panel A: Information Uncertainty and the Relation Between Abnormal Volume and Future Earnings.

	Dependent variable = $EARN_{t+1}$			
	(1)	(2)	(3)	(4)
Variables	*LOSS*	*STD_EARN*	*STD_RET*	*AF_DISP*
Intercept	0.025*** (3.38)	0.030*** (4.32)	0.026*** (4.35)	0.030*** (3.18)
DM_NFID_IS	0.006 (0.64)	−0.036*** (–3.22)	−0.022* (–1.83)	−0.017* (–1.65)
DM_NFID_IS × *Uncertainty Measure*	0.126*** (4.33)	0.161*** (5.54)	0.130*** (4.19)	0.067*** (4.09)
Uncertainty Measure	−0.009*** (–4.81)	−0.026*** (–6.72)	−0.030*** (–8.24)	−0.019*** (–5.75)
Control variables	Yes	Yes	Yes	Yes
Adjusted R^2	.520	.519	.519	.558
n	90,796	90,796	90,796	44,952

Panel B: Information Uncertainty and the Relation Between Abnormal Volume and Future Returns.

	Dependent variable = $BHAR_{t+1}$			
	(1)	(2)	(3)	(4)
Variables	*LOSS*	*STD_EARN*	*STD_RET*	*AF_DISP*
Intercept	−0.015 (–0.61)	−0.005 (–0.18)	−0.034 (–1.46)	0.026 (0.70)
DM_NFID_IS	0.240*** (4.25)	0.168*** (3.01)	0.059 (1.15)	0.194*** (2.93)
DM_NFID_IS × *Uncertainty Measure*	0.254*** (3.45)	0.293*** (2.76)	0.539*** (4.80)	0.297** (2.57)
Uncertainty Measure	−0.039*** (–5.43)	−0.034*** (–2.91)	−0.022 (–1.26)	−0.033*** (–3.34)
Control variables	Yes	Yes	Yes	Yes
Adjusted R^2	.014	.013	.013	.016
n	89,395	89,395	89,395	45,264

Note. This table examines the impact of information uncertainty on the relation between abnormal volume and future performance in Panel A (future abnormal returns in Panel B). Proxies for information uncertainty include *LOSS, STD_EARN, STD_RET*, and *AF_DISP*. Control variables in Panel A and Panel B follow controls in Tables 3 and 4, respectively. Industry- and year-fixed effects are included. The *t*-statistics in parentheses are based on two-way clustering by industry and year. Variables are defined in Table A1 (Appendix A).
*, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively.

Information uncertainty (H3). To test H3, we use four proxies for information uncertainty: loss/profit indicator, earnings volatility, return volatility, and dispersion in analyst forecasts. Higher values of these measures indicate greater information uncertainty. Control variables follow those in Equations 2 and 3.

Table 5 reports the results. In Panel A, we examine the effect of information uncertainty on the relation between abnormal volume and future earnings. The coefficients on *DM_NFID_IS* × *Uncertainty Measure* are positive and statistically significant across all models. The results suggest that the predictive power of abnormal volume for future performance is concentrated in firms with high information uncertainty. In Panel B, we examine the effect of information uncertainty on the relation between abnormal volume and future abnormal returns. The coefficients on *DM_NFID_IS* × *Uncertainty Measure* are positive

Table 6. Sophistication of Investor Base and Managers' Strategic Use of the Volume of Financial Items.

	Dependent variable = $EARN_{t+1}$		Dependent variable = $BHAR_{t+1}$	
	(1)	(2)	(3)	(4)
Variables	*# Analyst Following*	*Inst. Ownership*	*# Analyst Following*	*Inst. Ownership*
Intercept	0.011 (1.49)	−0.004 (–0.50)	−0.032 (–1.05)	0.172*** (5.50)
DM_NFID_IS	0.036*** (3.06)	0.058*** (3.88)	0.364*** (5.38)	0.365*** (4.47)
DM_NFID_IS × *Sophistication Measure*	−0.036*** (–3.46)	−0.007*** (–3.13)	−0.146* (–1.68)	−0.142*** (–10.56)
Sophistication Measure	0.005*** (3.00)	−0.056*** (–3.70)	0.020*** (2.71)	−0.116 (–1.31)
Control variables	Yes	Yes	Yes	Yes
Adjusted R^2	.511	.513	.015	.025
n	74,367	81,199	74,619	81,328

Note. This table examines the impact of investor sophistication on the relation between abnormal volume and future performance. Proxies for the sophistication of investor base include number of analysts following a firm and institutional ownership. Control variables for Columns (1) and (2) and for Columns (3) and (4) follow controls in Tables 3 and 4, respectively. Industry- and year-fixed effects are included. The *t*-statistics shown in parentheses are based on two-way clustering by industry and year. Variables are defined in Table A1 (Appendix A).
*, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively.

and statistically significant in all four columns. Overall, the results in Table 5 support H3—that managers engage in volume reduction management for opportunistic purposes.

Investor sophistication (H4). Next, we test H4 by using two variables to proxy for investor sophistication: analyst following and institutional ownership. We augment Equations 2 and 3 with two terms: *Sophistication Measure* and *DM_NFID_IS* × *Sophistication Measure*. We expect the coefficient on the interaction term to be negative. Table 6 provides the results of examining the effect of investor sophistication on the relation between abnormal volume and future performance. Consistent with H4, the coefficients on *DM_NFID_IS* × *Sophistication Measure* are negative and statistically significant in both Columns (1) and (2) with *t*-statistics of −3.46 and –3.13, respectively. Columns (3) and (4) report the results of examining the effect of investor sophistication on the relation between abnormal volume and future returns. Likewise, the coefficients on the interaction term are negative and significant in both columns. Overall, results in Table 6 are consistent with H4—that firms engage less in volume reduction management when followed by more sophisticated investors.

Additional Tests and Robustness Analyses

Volume Reduction Management and Managerial Opportunism

In this section, we investigate whether the abnormal volume is associated with the presence of strong managerial incentives to conceal bad news and opportunistically bias investor perceptions. We predict that the volume of financial items will be abnormally low (a) when firms meet or just beat earnings benchmarks and (b) when CEO equity incentives are high.

Abnormal volume and meeting or just beating earnings benchmarks. Firms are likely to manipulate earnings upward to meet or beat earnings benchmarks (Bartov et al., 2002; Brown et al., 2009). Prior year's earnings are a salient benchmark relative to others in the

Table 7. Abnormal Volume of Disclosure and Managers' Opportunistic Incentives.

Panel A: Abnormal Volume and Meet or Just Beat Prior Year's Earnings.

	Dependent variable = *DM_NFID_IS*		
	MJBE = 1 when $\Delta EARN \in [0,0.4\%]$	*MJBE* = 1 when $\Delta EARN \in [0,0.5\%]$	*MJBE* = 1 when $\Delta EARN \in [0,0.6\%]$
Variables	(1)	(2)	(3)
Intercept	–0.084*** (–5.82)	–0.084*** (–5.82)	−0.084*** (–5.82)
MJBE	–0.002** (–2.17)	–0.002*** (–2.96)	−0.002** (–2.57)
Control variables	Yes	Yes	Yes
Adjusted R^2	.171	.171	.171
Observations with *MJBE* = 1	6,743	8,295	9,778
n	102,745	102,745	102,745

Panel B: Abnormal Volume and CEOs' Equity Incentives.

	Dependent variable = *DM_NFID_IS*			
	Delta	*Equity Wealth*	*Scaled Incentives*	*Scaled Equity Wealth*
Variables	(1)	(2)	(3)	(4)
Intercept	–0.118*** (–12.98)	−0.103*** (–10.10)	−0.112*** (–13.13)	–0.112*** (–13.07)
Equity Incentive	–0.002* (–1.76)	−0.003** (–2.22)	−0.005*** (–4.66)	–0.005*** (–4.32)
Control variables	Yes	Yes	Yes	Yes
Adjusted R^2	.438	.440	.441	.441
n	20,317	20,258	20,265	20,265

Note. This table examines the relation between abnormal volume and managerial opportunism. Panel A reports the results of the relation between abnormal volume and *MJBE*. Panel B reports results of the relation between abnormal volume and CEOs' equity incentives. Control variables include *BHAR, SIZE, BTM, SI, Restructure, AGE, BUSSEG, M&A, SEO, STD_EARN*, and *STD_RET*. Data used to compute equity incentive variables in Panel B are from the ExecuComp database with the coverage starting from 1994. Industry- and year-fixed effects are included. The *t*-statistics in parentheses are based on two-way clustering by industry and year. Variables are defined in Table A1 (Appendix A).

*, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively.

context of 10-K filings (Lo et al., 2017; Myers et al., 2007). We follow Myers et al. (2007) and Lo et al. (2017) and use prior year's earnings as the benchmark in our test. We estimate the following regression to examine whether firms' tendency to meet or just beat earnings benchmarks is associated with lower abnormal volume.

$$DM\_NFID\_IS_t = \alpha_0 + \beta_1 MJBE_t + \sum \beta_k CONTROLS_t + \varepsilon_t. \quad (4)$$

MJBE is set to one if the change in earnings from year $t-1$ to year t, scaled by total assets, is non-negative and not larger than 0.4%, 0.5%, or 0.6%. Controls include the firm fundamental variables as identified in the determinant model for *NFID_IS* (Equation 1).

Panel A of Table 7 presents the results from estimating Equation 4. The coefficients on *MJBE* are negative and significant in all three columns. This result supports our prediction

Table 8. Change Analysis.

	Dependent variable		
	$EARN_{t+1}$	CFO_{t+1}	$BHAR_{t+1}$
Variable	(1)	(2)	(3)
Intercept	−0.033** (–2.54)	0.012 (0.82)	0.045 (1.32)
$\Delta NFID\_IS_t$	0.037** (2.52)	0.029* (1.84)	0.026** (2.51)
$NFID\_IS_{t-1}$	0.040*** (3.45)	0.038*** (3.00)	0.066*** (4.62)
Control variables	Yes	Yes	Yes
Adjusted R^2	.521	.310	.012
n	90,364	63,611	94,141

Note. This table presents results of change analysis. $\Delta NFID\_IS_t$ and $NFID\_IS_{t-1}$ in Column (3) are ranked into deciles, which follows the main test design in Table 4. Control variables in the first two columns and Column (3) follow controls in Tables 3 and 4, respectively. Industry- and year-fixed effects are included. The *t*-statistics in parentheses are based on two-way clustering by industry and year. Variables are defined in Table A1 (Appendix A). *, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively.

that firms meeting or just beating earnings benchmarks disclose fewer income-statement-related accounting items in the 10-K, presumably in an attempt to withhold information and hide managers' intervention in reporting earnings.

Abnormal volume and managers' equity incentives. Next, we consider whether firms are more likely to engage in volume reduction management when their equity incentives are high. Higher equity incentives induce managers to inflate short-term earnings and stock prices (Bergstresser & Philippon, 2006). Managers' tendency to withhold bad news is exacerbated when they have more wealth tied to firm value (Kothari et al., 2009). Therefore, if low abnormal volume reflects managers' tendency to withhold bad news, we expect a negative association between equity incentives and abnormal volume.

$$DM\_NFID\_IS_t = \alpha_0 + \beta_1 Equity\ Incentive_t + \sum \beta_k CONTROLS_t + \varepsilon_t. \quad (5)$$

We use four proxies for CEOs' compensation-based equity incentives: *Delta* (Core & Guay, 2002), *Equity Wealth* (N. D. Daniel et al., 2020; Edmans et al., 2009), and *Scaled Equity Wealth*.[15] All variables are defined in Table A1 (Appendix A). Control variables include firm fundamentals from Equation 1. Panel B presents the results. The robust negative relation between CEOs' equity incentives and abnormal volume of financial items across the four columns is consistent with our prediction about managers' opportunistic use of the volume of financial items in the 10-K.

Robustness Tests Using Alternative Benchmarks to Measure Abnormal Volume

The abnormal disclosure of financial items could be driven by unobservable firm heterogeneity that also predicts future performance. To address this endogeneity issue, we conduct a change analysis. In Table 8, we use the year-to-year change in *NFID_IS* to measure abnormal volume. The volume of financial items in the 10-K is expected to be sticky because firms filing with the SEC are required to present year-to-year comparative financial statements. Although we expect and find weaker results in the change analysis, the

positive relation between abnormal volume and future performance still holds across Columns (1) to (3).

To test the robustness of our results, we also measure abnormal volume of financial items using (a) a rolling average of the volume over the last 5 years to identify the normal level of volume; (b) the median of the volume over the last 5 years to identify the normal volume; (c) the change in industry-adjusted volume from year $t-1$ to year t; (d) an indicator that equals one for firms with a large drop in the volume from year $t-1$ to year t, and zero otherwise[16]; and (e) the residual volume from the determinant model (Equation 1) after adding firm-fixed effects to remove time-invariant firm characteristics. We find similar results when using the alternative measures (untabulated).

Inclusion of Normal Volume of Financial Items in Main Regression Analyses

We add normal volume to the main regressions to examine whether normal volume and abnormal volume affect future earnings and future abnormal returns differently. If the way we isolate the normal from abnormal components of the volume is effective, we expect the normal component of the volume of financial items to be unassociated with future abnormal returns. Table 9 presents the results. In Column (3), the dependent variable is future abnormal returns. The coefficient on *Abnormal Volume* is significant at the 1% level, whereas *Normal Volume* is insignificant. A similar pattern is shown in Column (6) where *Abnormal Volume* strongly predicts future abnormal returns at the 1% significance level and the coefficient on *Normal Volume* is marginally significant. For the regression using future accounting performance, both abnormal volume and normal volume predict future earnings. This is not surprising because normal volume is a function of firm fundamentals, some of which determine future accounting performance.

Tests Separating Obfuscation and Good Disclosure Hypotheses

It might be argued that the positive relation between abnormal volume and firms' future performance is a simple reflection of the finding in Chen et al. (2015)—that higher disclosure quality has good outcomes. We conduct three tests to distinguish our bad news withholding story from the disclosure quality story in Chen et al. (2015). First, we form a zero-investment portfolio based on the deciles of the abnormal volume. One would expect the hedge returns to be driven by the highest (lowest) abnormal volume decile if the disclosure quality story (bad news withholding story) explains the main positive relation.[17] Panel A of Table 10 reports the results of equally weighted portfolio return based on abnormal returns using the benchmark return adjustment method of Daniel et al. (1997; DGTW). Although the economic magnitude seems small, the hedge returns are mainly from the short side, lending support to our bad news withholding story.

Second, we repeat the main analysis using a large change in *NFID_IS*. Under the bad news withholding story (disclosure quality story), the main relation is expected to be driven by firms with a negative (positive) change in volume. We calculate a firm's change in volume using its previous 5-year average as the benchmark. The results are presented in Panel B. *Large Drop* (*Large Increase*) is an indicator equal to one when *NFID_IS* drops (increases) by more than 20% in year t. We restrict the sample to firms with a negative (positive) change in *NFID_IS* in Column (1) (Column (2)). The coefficient on *Large Drop* is significantly negative, suggesting that firms with a large drop in volume have lower future earnings. In contrast, the coefficient on *Large Increase* is insignificant.

Table 9. Regression Results Summary of Including Normal Numeric Quantity.

	Abnormal Volume = DM_NFID_IS; Normal Volume = Industry Mean of NFID_IS			*Abnormal Volume = Residual Volume; Normal Volume = Expected Volume*		
	Dependent variable			Dependent variable		
	$EARN_{t+1}$	CFO_{t+1}	$BHAR_{t+1}$	$EARN_{t+1}$	CFO_{t+1}	$BHAR_{t+1}$
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−0.050* (–1.94)	0.011 (0.75)	0.028 (0.15)	−0.209*** (–3.71)	−0.089** (–2.27)	0.083** (2.43)
Abnormal Volume	0.057*** (3.80)	0.052*** (2.94)	0.053*** (4.46)	0.039*** (3.12)	0.035*** (2.81)	0.051*** (4.35)
Normal Volume	0.081*** (2.66)	0.048** (2.32)	0.107 (0.36)	0.343*** (4.01)	0.212*** (3.77)	0.032* (1.84)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	.506	.597	.012	.507	.597	.012
n	90,796	63,999	90,845	90,796	63,999	90,845

Note. This table presents regression results when expected volume of financial items is included as an additional regressor in predicting future earnings, cash flows, and abnormal returns. *Residual Volume* (*Expected Volume*) is the residual (predicted value) estimated from the determinant model of *NFID_IS* (Equation 1). Control variables for regressions with the dependent variable of further accounting performance and future returns follow controls in Tables 3 and 4, respectively. Industry- and year-fixed effects are included. The *t*-statistics shown in parentheses are based on two-way clustering by industry and year. Variables are defined in Table A1 (Appendix A).
*, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively.

Table 10. Tests Separating Obfuscation Hypothesis and Good Disclosure Hypothesis.

Panel A: Time-Series Means of $BHAR_{t+1}$ for Portfolios Formed on Abnormal Numeric Volume.

	$BHAR_{t+1}$	
Sorting variable	*DM_NFID_IS*	*Residual Volume*
Lowest decile (short)	–0.029 (–2.83)	–0.033 (–3.39)
Highest decile (long)	0.008 (1.03)	0.023 (2.15)
Hedge	0.037*** (3.40)	0.056*** (4.53)

Panel B: Large Change Test.

	Dependent variable = $EARN_{t+1}$	
	Subsample $\Delta NFID\_IS_t < 0$	Subsample $\Delta NFID\_IS_t > 0$
Variable	(1)	(2)
Intercept	–0.007 (–0.46)	–0.029* (–1.71)
Large Drop	–0.008** (–2.02)	
Large Increase		0.002 (0.56)
Normal Volume	0.032** (2.49)	0.024 (1.49)
Control variables	Yes	Yes
Adjusted R^2	.503	.520
n	43,356	32,872

Panel C: Regression Analysis Conditional on Future Earnings News.

	$DUM\Delta EARN_{t+1}$			$DUMEARN_{t+1}$		
	Dependent variable			Dependent variable		
Variable	$EARN_{t+1}$	CFO_{t+1}	$BHAR_{t+1}$	$EARN_{t+1}$	CFO_{t+1}	$BHAR_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−0.045*** (–5.05)	0.024*** (2.71)	0.025 (0.88)	−0.108*** (–11.10)	0.002 (0.15)	−0.110*** (–3.88)
DM_NFID_IS	0.094*** (4.60)	0.071*** (3.47)	0.431*** (6.92)	0.142*** (6.24)	0.107*** (3.33)	0.550*** (6.54)
DM_NFID_IS × *Positive Future News*	−0.167*** (–5.12)	–0.109*** (–5.05)	−0.386*** (–6.51)	−0.165*** (–6.69)	–0.111*** (–3.44)	−0.366*** (–3.63)
Positive Future News	0.098*** (9.70)	0.053*** (8.49)	0.235*** (17.28)	0.147*** (18.05)	0.067*** (11.90)	0.266*** (21.39)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	.630	.550	.076	.661	.564	.061
n	90,796	61,756	88,287	90,789	61,921	89,131

Note. This table presents an analysis of whether the disclosure quality story explains the positive relation between abnormal volume and future performance. Panel A reports results of the zero-investment portfolios. Portfolios are formed annually by assigning firms into deciles according to the magnitude of *DM_NFID_IS* or *Residual Volume* in year *t*. *Residual Volume* is the residual estimated from the determinant model of *NFID_IS* (Equation 1). In Panel B, *Large Drop* (*Large Increase*) is an indicator equal to one when *NFID_IS* drops (increases) by more than 20% in year *t*, using the previous 5-year average as the benchmark (*Normal Volume*). In Panel C, *Positive Future News* reflects managers' anticipation of future news, and it is an indicator that equals one if future news is positive and zero otherwise. $DUM\Delta EARN_{t+1}$ ($DUMEARN_{t+1}$) equals one if $\Delta EARN_{t+1}$ ($EARN_{t+1}$) is positive, and zero otherwise. Industry- and year-fixed effects are included. The *t*-statistics in parentheses are based on two-way clustering by industry and year. Variables are defined in Table A1 (Appendix A).
*, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively.

Third, if the positive relation suggests managers' bad news withholding, we expect the relation to be concentrated in firms with negative earnings news in year $t + 1$. We use earnings and the change in earnings in year $t + 1$ to reflect managers' anticipation of future earnings, labeled *Positive Future News*. We add *Positive Future News* and *DM_FNID_IS* $\times$ *Positive Future News* to the baseline regressions (Equations 2 and 3). Results are presented in Panel C. The positive relation between *DM_NFID_IS* and future performance is driven by firms with bad news in the subsequent year (i.e., when *Positive Future News* equals zero). Taken together, results in Table 10 support our argument that managers withhold bad news by disclosing fewer financial items in annual reports.

Conclusion

U.S. GAAP provides discretion to allow fair representation of a firm's operations and financial positions. To our knowledge, this article provides the first large-sample evidence on whether and how managers structure and manage the volume of financial items in the annual reports to hide adverse information from investors. Specifically, we investigate whether managers limit the volume of financial items in the 10-K to obfuscate poor future firm performance, and how investors react to such volume reduction management.

We find that abnormally low volume predicts poor future earnings and negative future returns. We further find that this relation is more pronounced in firms where the market has more difficulty in detecting managerial intervention in the disclosure process. In addition, the volume of financial items is abnormally low when firms meet or just beat earnings thresholds and when CEO equity incentives are high. Our evidence suggests that managers disclose fewer financial items in the 10-K to obfuscate unfavorable future firm performance and that investors fail to see through such opportunistic volume reduction management.

Our additional analyses show that the positive relation between abnormal volume of financial items and future performance is more consistent with the bad news withholding story. This differentiates our study from Chen et al. (2015), who focus on the disclosure quality story. Specifically, we find that the positive relation between abnormal volume and future performance is driven by firms with abnormal volume at the lowest decile in the current year, firms with a large drop in the volume, and firms with subsequent bad news.

Appendeix A

Table A1. Variable Definitions.

Variable	Definition
Volume of financial items	
NFID	Number of all Compustat items with non-missing values divided by the total number of items that are applicable to an industry.
NFID_BS	Number of all Compustat balance sheet items with non-missing values divided by the total number of items that are applicable to an industry.
NFID_IS	Number of all Compustat income statement items with non-missing values divided by the total number of items that are applicable to an industry.
Abnormal volume of financial items	
DM_NFID	Abnormal volume, measured as the difference between *NFID* and industry mean of *NFID* based on Fama-French 48 industry classifications.
DM_NFID_BS	Balance-sheet-related abnormal volume, measured as the difference between *NFID_BS* and industry mean of *NFID_BS*.
DM_NFID_IS	Income statement-related abnormal volume, measured as the difference between *NFID_IS* and industry mean of *NFID_IS*.
Accounting performance and abnormal returns	
$EARN_{t+1}$	Income before extraordinary items at year $t + 1$, divided by average total assets at year $t + 1$.
CFO_{t+1}	Cash flow from operations at year $t + 1$, divided by average total assets at year $t + 1$.
$BHAR_{t+1}$	One-year ahead abnormal returns, calculated over 12 months starting 4 months after the fiscal year end using the benchmark return adjustment method in Daniel et al. (1997; DGTW); Specifically, this method subtracts from each stock return the return on a portfolio of firms matched on size, market-book, and return momentum (i.e., prior 1-year return) quintiles.
Other variables	
Restructure	An indicator variable for asset restructuring, which equals one if Restructuring Cost Pretax (RCP) is nonzero.
M&A	An indicator variable for mergers and acquisitions, which is set to one if the firm engaged in mergers and acquisitions during the current fiscal year, and zero otherwise.
SEO	An indicator variable for seasoned equity offerings, which equals one if the firm has a seasoned equity offering in fiscal year *t*, and zero otherwise.
STD_RET	Standard deviation of monthly return over the 12 months for fiscal year *t*, starting 4 months after the fiscal year end of year $t - 1$.
STD_ROA	Standard deviation of return on assets (ROA) over the last 5 years with at least 3 years of data.
SI	The absolute value of special items (SPI), divided by average total assets; SPI is set to zero if special item data are missing in Compustat.
BUSSEG	Natural logarithm of (1 + number of business segments). The number of business segments is set to one if data are missing in Compustat.
AGE	Natural logarithm of (1 + number of years since a firm entered CRSP).
SIZE	Natural logarithm of market capitalization (in billions).
BTM	Book-to-market ratio at the end of fiscal year *t*.
BHAR	DGTW returns over 12 months starting 4 months after the fiscal year end.
WACC	Working capital accruals, measured as (Δcurrent asset – Δcash) – (Δcurrent liabilities – Δdebt included in current liabilities – Δincome taxes) – depreciation and amortization.
REM	Proxy for real earnings management, estimated as a sum of abnormal production cost and abnormal discretionary expenditures.
LOSS	An indicator equal to one if *EARN* is negative, and zero otherwise.
AF_DISP	Quintile rank from zero to one based on analysts' forecast dispersion, measured as the average standard deviation of analysts' earnings per share (EPS) forecasts in each month over year *t*, scaled by the absolute value of actual EPS.

(continued)

Appendeix A

Table A1. (continued)

Variable	Definition
# Analyst Following	An indicator equal to zero if a firm is followed by less than five analysts, one if a firm is followed by five to 10 analysts, and two if a firm is followed by more than 10 analysts.
Inst. Ownership	Quintile rank ranging from zero to one based on institutional holdings for firm *i* at year *t* according to 13F.
Delta	Natural logarithm of (1 + the dollar change in wealth associated with a 1% change in the firm's stock price).
Equity Wealth	Natural logarithm of dollar value of the CEO's stock and option portfolio.
Scaled Incentives	Natural logarithm of (dollar change in wealth associated with a 1% change in the firm's stock price × 100 / TDC1); TDC1 is total annual compensation in ExecuComp.
Scaled Equity Wealth	Natural logarithm of (value of the CEO's stock and option portfolio / total annual compensation).

Appendix B

Table B1. Examples of the Computation of NFID Measures.

Panel A: Apple, Inc., Annual Report, Fiscal Year 2011 (*GVKEY* = 001690, *SIC2* = 35).

Counting process	All (*NFID*)	Balance sheet (*NFID_BS*)	Income statement (*NFID_IS*)	Cash flow (*NFID_CF*)	Miscellaneous (*NFID_MISC*)
Total No. of items	468	181	159	51	77
No. of applicable items	420	157	149	37	77
No. of non-missing items	315	143	96	34	42
% of non-missing items	315/420 = 75.00%	91.08%	64.43%	91.89%	54.55%

Panel B: Wal-Mart Stores, Inc., Annual Report, Fiscal Year 2011 (*GVKEY* = 011259, *SIC2* = 53).

Counting process	All (*NFID*)	Balance sheet (*NFID_BS*)	Income statement (*NFID_IS*)	Cash flow (*NFID_CF*)	Miscellaneous (*NFID_MISC*)
Total No. of items	468	181	159	51	77
No. of applicable items	388	156	140	37	55
No. of non-missing items	320	141	97	33	49
% of non-missing items	320/388 = 82.47%	90.38%	69.29%	89.19%	89.09%

Note. Compustat financial data are classified into four categories: balance sheet, income statement, cash flow statement, and miscellaneous category. Here, we use the annual report of Apple, Inc., for the fiscal year 2011 as an example to illustrate how we compute *NFID_IS*. We first downloaded data from Compustat and then selected data items in the Income Statement Classification. We then coded data items with non-missing (missing) values as 1 (0). Next, we selected all firms that operate in the same two-digit Standard Industrial Classification (SIC) industry (two-digit *SIC* = 35) in the same fiscal year. We counted the number of reported firms for each data item in this industry. If it turns out that one data item receives zero count, this item is defined as not applicable to the corresponding two-digit *SIC* industry. As shown in Panel A, for the industry of two-digit *SIC* = 35, the total number of applicable items in the income statement category is 149. Apple, Inc., discloses 96 items as captured by Compustat. Therefore, *NFID_IS* for Apple, Inc., in 2011 is 96/149, that is, 64.43%. Panel B shows the computation of *NFID* measure and its sub-index for Wal-Mart Stores, Inc., following the same procedure.

Appendix C

Table C1. Representative Income Statement Items That Firms Stop Disclosing.

Compustat item code	Item description
SPI	Special items
DFXA	Depreciation of tangible fixed assets
XDP	Depreciation expense (Schedule VI)
TXFED	Income taxes—Federal
TXC	Income taxes—Current
TXS	Income taxes—State
TXDI	Income taxes—Deferred
AM	Amortization of intangibles
ITCI	Investment tax credit (income account)
XAD	Advertising expense
TXDFED	Deferred taxes—Federal
GLCEP	Gain/loss on sale (core earnings adjusted) pretax
GLCEA	Gain/loss on sale (core earnings adjusted) after-tax
IDIT	Interest and related income—Total
XIDO	Extraordinary items and discontinued operations
GLCEEPS	Gain/loss on sale (core earnings adjusted) basic EPS effect
XINTD	Interest expense—Long-term debt
GLCED	Gain/loss on sale (core earnings adjusted) diluted EPS
TXDS	Deferred taxes—State
TXFO	Income taxes—Foreign
RCP	Restructuring costs pretax
RCA	Restructuring costs after-tax
RCD	Restructuring costs diluted EPS effect
RCEPS	Restructuring costs basic EPS effect
ESUB	Equity in earnings—Unconsolidated subsidiaries
XOPTD	Implied option EPS diluted
XOPTEPS	Implied option EPS basic
WDP	Writedowns pretax
WDA	Writedowns after-tax
XINTOPT	Implied option expense
NOPIO	Non-operating income (expense)—Other
XPR	Pension and retirement expense

Note. This table provides examples of financial items that firms are likely to stop disclosing. We select a subsample of firms with the most negative change in the disclosure volume of income statement items, measured as the bottom quintile of change in *NFID_IS* from year $t - 1$ to year t. Using this group of firms, we examine which financial items are missing in the current year but were reported in prior 2 years. We rank the financial items that meet the criteria in order of missing frequency and report the items with high missing frequency in the table above as the representative items.

Authors' Note

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Notes

1. For example, in its July 12, 2012, *FASB in Focus* publication, the Financial Accounting Standards Board (FASB, 2012) highlights the concerns of stakeholders as follows: ''Many stakeholders have expressed concerns about the relevance and *sheer volume* of information in notes to financial statements, and that some information is either missing or difficult to find.''
2. In Table 9, Lundholm et al. (2014) find an insignificant association between the number of numbers and institutional holdings. They conjecture in Note 7 that the lack of significance may be caused by too many numbers.
3. Anecdotal evidence suggests that firms may reduce the number of financial items in the 10-K to hide unfavorable news. For example, Pegasystems, Inc., used to report disaggregated other current assets in the 10-K, including prepaid expenses, other receivables, and income tax receivable. It stopped disclosing these items in 2009, followed by a performance decline (from a profit of US$32.2 million in 2009 to a loss of US$5.9 million in 2010). Additional examples include U.S. Data Corporation and EMAK Worldwide, Inc. Both firms discontinued reporting advertising expense in 1999 and 2003, respectively, followed by a subsequent performance decline. Finally, Toreador Resources Corporation provided not only the aggregated amount of pension costs but also the detailed items in the 10-K prior to 2000. However, none of these items were available in its 2000 10-K. The firm suffered a loss in 2001 after consecutive profits.
4. The Pearson correlation between *NFID* (Number of Financial Items Disclosed) and *DQ* (Disaggregation Quality) is .125. We discuss in detail how *NFID* differs from *DQ* in the ''Prior Literature on Disclosure Features of the 10-K'' section.
5. We acknowledge that our conclusions rely on the reliability of Compustat data items as a measure of the volume of financial items in the 10-K. The standardization of data collection and processing by Compustat may remove the ''strategic'' nature of financial items in the 10-K. Therefore, measurement error likely introduces a downward bias on the *NFID* measures.
6. Compustat designs follow a systematic method to aggregate the information provided by the financial statements and footnotes, and then to categorize the information into financial items that are considered to be important. Using Compustat data has several advantages. First, it is based on machine-readable data and therefore can facilitate large-sample analysis. Second, financial analysts in Compustat collectively contribute to the structuring of financial items by determining how information is aggregated and by identifying important financial items that are left out. Hence, *NFID* measures are less affected by researchers' subjective judgment. Moreover, Compustat data are commonly used by institutional investors, so it can represent firm information used by the market. Third, the Compustat template allows users to identify whether the financial item is related to the income statement, balance sheet, or cash flow statement. This can help us to understand whether managers manage types of financial items differently.
7. Because we use 1-year-ahead earnings and returns as dependent variables, the actual financial data used extend to 2012 and return data extend to 2013. We end our sample period in 2011 because we use benchmark portfolio assignment data shared by Professor Russ Wermers when constructing DGTW characteristic-adjusted returns (K. Daniel et al., 1997). The benchmark port-folio data at Wermers's webpage are updated to 2012 (available at http://terpconnect.umd.edu/~wermers/ftpsite/Dgtw/coverpage.htm).
8. For example, the complexity of the 10-K makes it more difficult for investors to understand and process. The market tends to process information in earnings press releases more efficiently than information in 10-K filings (Levi, 2007; You & Zhang, 2008).
9. Another related paper is Blankespoor (2019), which uses the number of numbers in the footnotes of 10-K filings to reflect the amount of firm-specific information demanded by investors. Her study counts numbers using Perl. Our study differs in that we are interested in financial items and we focus on the discretionary component of the volume.
10. Prior studies examine several disclosure choices and provide evidence consistent with the obfuscation hypothesis (Lang & Lundholm, 1993; Li, 2008; Miller, 2002; Schrand & Walther, 2000).

1. We thank the referee for suggesting a robustness test using a subsample of firms where the varia-tion in *NFID* measures is not related to transitory or one-time items. We repeat the main tests (Tables 3 and 4) by using firms without special or unusual firm events, including restructuring, mergers and acquisitions, seasoned equity offerings, special items, discontinued operations, and extraordinary items in year *t*. Our main inferences hold in this subsample.
2. Compared with the residuals from the determinant model, industry-adjusted volume of financial items is intuitive and less susceptible to researchers' subjective judgments. A battery of alterna-tive abnormal volume measures is tested in the robustness checks, and our main inferences remain unchanged. See the detailed discussion in the ''Robustness Tests Using Alternative Benchmarks to Measure Abnormal Volume'' section.
3. Our main inferences are robust to clustering standard errors by firm and year.
4. Prior research finds that balance sheet disclosures provide more value-relevant information when earnings information is relatively less informative (Chen et al., 2002). The literature also docu-ments a decrease in the value relevance of earnings over the past four decades (Srivastava, 2014). These findings raise a concern as to whether our findings still hold for recent periods. To address this concern, we re-estimate the tests in Table 3 for two sub-periods (1976–1995 and 1996–2011) and find consistent results (untabulated) for both periods. In addition, due to mea-surement error from using Compustat items to estimate balance-sheet-related abnormal volume, the weak/insignificant results on balance sheet items should be interpreted with caution.
5. These measures are downloaded from Lalitha Naveen's website: http://sites.temple.edu/lnaveen/data/.
6. We define *Large Drop* = 1 if the drop in *NFID_IS* from year $t-1$ to year t is larger than 20%. Results remain unchanged if we use alternative cutoffs, such as 25% or 30%, to define a large change.
7. We thank the referee for suggesting this test. We use the portfolio deciles to draw inferences about whether it is the downside or upside driving our results. However, we do not attempt to examine whether one can exploit profits from a trading strategy based on abnormal volume.

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