Voluntary disclosures and market response to earnings announcements

Guy Dinesh Fernando
Department of Accounting and Law, University at Albany, Albany, New York, USA

Justin Giboney
Information Technology, School of Technology, Ira A. Fulton College of Engineering and Technology, Brigham Young University, Provo, Utah, USA, and

Richard A. Schneible
Department of Accounting and Law, University at Albany, Albany, New York, USA

Abstract

Purpose – The aim of this paper is to investigate the impact of voluntary disclosure on information asymmetry between investors and the average information content of subsequent the earnings announcement.

Design/methodology/approach – The authors use empirical methodology relying on multiple regression analyses. The authors estimate models of trading volume and stock returns around the earnings’ release date as a function of voluntary disclosures, measured using information in the 8-K statements.

Findings – Voluntary disclosures prior to the earnings release date increase trading volume related to stock returns. In addition, voluntary disclosures also reduce stock price movement around that date.

Research limitations/implications – The results indicate that voluntary disclosures increase trading volume related to stock returns around the earnings release date. Such increases indicate increased differential precision among investors, demonstrating that voluntary disclosures increase differences in opinion among investors. The reduced stock price movement around the earnings release date also show that voluntary disclosures reduce the information content of earnings. One limitation is that the measure of voluntary disclosures does not consider the variation in the information content of individual disclosures.

Practical implications – Firms who make voluntary disclosures will need to carefully consider how to structure such releases to minimize asymmetry between investors. Investors should pay greater attention to finding out, and interpreting, voluntary disclosures by firms.

Social implications – Regulators have previously expressed concern about leveling the playing field between more and less informed investors. The results showing increased differences in information as a result of voluntary disclosures provide valuable insights as regulators debate the balance of mandated and voluntary disclosure.

Originality/value – This is the first study to investigate the effect of voluntary disclosures on information asymmetry among investors using trading volume and, consequently, the first to find increased differences among investors that result from those voluntary disclosures. The paper is also the first to use a direct measure of voluntary disclosure developed by Cooper et al. to demonstrate the negative relation between voluntary disclosure and the average informativeness of earnings announcements.

Keywords Voluntary disclosure, Information asymmetry, Information content of earnings

Paper type Research paper
1. Introduction

The SEC requires that firms provide a minimum level of disclosure to the financial markets and that such disclosure be made in accordance with generally accepted accounting principles (GAAP). As they must conform to GAAP, the information in such disclosures may be limited. Providing relevant information about the firm to the public above the minimum level mandated (and limited) by GAAP is referred to as voluntary disclosure (Core, 2001). Voluntary disclosures may provide information (such as forward-looking information) that would not otherwise be available in current period earnings. Voluntary disclosures may also provide information early that would eventually be available in current period reported earnings.

In this paper, we examine the relation between voluntary disclosure and investors’ belief revision at the time of the earnings announcements. The link between voluntary disclosures and investor belief revisions reveals insights into two issues of interest to accounting researchers. First, what is the impact of voluntary disclosure on information asymmetry amongst investors and, second, how is voluntary disclosure related to the average information content of the earnings announcement?

Recent theory suggests that firm disclosure may lead to two distinct effects (Lambert et al., 2012): an average information precision effect and a cross investor information asymmetry effect. Average precision reflects the average informedness of investors and would increase with any useful disclosure. Cross investor asymmetry refers to the difference in informedness across investors and might increase or decrease with a disclosure depending on whether the information was evenly distributed. Bhattacharya et al. (2012) and Ahmed and Schneible (2007) document the existence of both effects.

Policymakers have demonstrated concern not only for the quantity and quality of disclosure made by firms but also for the form of the disclosure and its consequent impact on information asymmetry among investors (Loss, 1983; Loss and Seligman, 2001). Levitt (1998), for example, argued that Regulation Fair Disclosure, which eliminated selective disclosure, was necessary to “level the playing field”. While selective disclosures are no longer allowed, voluntary disclosures, which are public, may have similar effects due to differences in the information processing of different investors. Investors have different levels of awareness of disclosure (FASB, 2006; Frankel et al., 1999), different access to private information (Dutta and Trueman, 2002) and different degrees of ability to analyze available information (Fishman and Hagerty, 2003; Suijs, 2007; Malmendier and Shanthikumar, 2007). Given that there is a significant amount of diversity among investors, voluntary disclosures may increase differences in pre-earnings announcement information amongst investors even as they improve the average information precision of investors.

Lambert et al. (2012) stress that empirically disentangling the two types of information asymmetries that exist between managers and investors, on the one hand, and those that exist between different investors, on the other hand, is challenging as most proxies are affected by both. Measuring the effect of voluntary disclosure on information asymmetry has relied primarily on two types of proxies: bid-ask spreads and analyst forecasts. Lang and Lundholm (1996) find a decrease in analyst forecast dispersion, a proxy for information asymmetry, with greater voluntary disclosure. The information about a firm that analysts have is composed of two components: public information such as earnings announcements and private information gathered by the individual analysts. Therefore, Lang and Lundholm (1996) attribute their findings to analysts placing less weight on their private information and more on commonly interpreted public signals. Analysts, however, are presumably sophisticated investors, and thus, such a measure captures only part of the information asymmetry existing among all investors (Bamber et al., 1997). Confirming the Lang and
Lundholm (1996) result, several papers find that bid-ask spreads decrease as voluntary disclosure increases (Welker, 1995; Shroff et al., 2013). The bid-ask spread evidence suggests that voluntary disclosure decreases information asymmetry. However, bid-ask spreads may suffer from an attenuation bias and, thus, fail to capture the full extent of disagreement among investors due to asymmetric information (Garfinkel, 2009).

As analyst forecasts rely on only sophisticated users and bid-ask spreads suffer from attenuation bias, we use a new proxy: abnormal trading volume. Abnormal trading volume captures the aggregate response of the market because it sums the actions taken by investors as they individually revise their beliefs (Bamber, 1986; Abdel-Meguid et al., 2016) and is, thus, an excellent proxy for cross investor asymmetry. Indeed, prior research has demonstrated that abnormal trading volume is a superior measure of divergent investor opinions arising from differences in investor information (Garfinkel, 2009) and has also shown that disparity in information prior to the earnings announcements is one key source of investor disagreement which leads to trade at the time of the earnings announcement (Kim and Verrecchia, 1997). Despite significant prior research on the effect of voluntary disclosure on information asymmetry between firms and investors, prior research has not examined its impact on asymmetric information among investors using abnormal trading volume.

We approach the question of voluntary disclosures and information in a broader setting than prior voluntary disclosure research by using a new metric developed in Cooper et al. (2015) (hereafter VDISC) that uses the information available in the 8-K statements to derive an aggregate index of the amount of voluntary disclosure. As all voluntary disclosures subsequent to Regulation Fair Disclosure need to be disclosed in a firm’s 8-K statement, the VDISC metric provides an inclusive measure of the level of voluntary disclosures surmounting many of the problems found in prior research (Cooper et al., 2015).

We use abnormal trading volume to investigate the impact of voluntary disclosure on differential prior precision (pre earnings announcement differences in investors’ information) (Kim and Verrecchia, 1991; Bamber et al., 2011; Barron et al., 2018). Abnormal trading volume around an earnings release can arise as a result of two types of differences across investors. Kandel and Pearson (1995), Kim and Verrecchia (1997), Abdel-Meguid et al. (2016) and others argue that abnormal trading around an earnings announcement can capture both the differential interpretation of information in the earnings release and differential precision of investors’ information prior to the announcement. We follow the empirical specification of Ahmed et al. (2003), Hope et al. (2009) and Barron et al. (2018) amongst others to separate the effects of differential priors and differential interpretations. Using abnormal trading volume as a proxy for investor differential belief revision and focusing on revisions due to differential prior precision, we find that voluntary disclosure leads to increased differences in the precision of information amongst investors in the pre-announcement period.

We also examine the abnormal price change in response to the earnings announcement. We find that as a firm relies more on voluntary disclosure to communicate with investors, the price response to earnings declines. This indicates that, for these firms, earnings announcements result in less change in the average belief, thus indicating reduced average informativeness of earnings. We, therefore, confirm the results of Roychowdhury and Sletten (2012), but our results have added relevance, as we use a direct measure of voluntary disclosure.

Our findings have several contributions. We present novel evidence that voluntary disclosure increases differences in precision of investors’ information prior to the earnings announcement. Our results support the idea, suggested by analytical models (Liu, 2008), that not all investors may be aware of the disclosure, have the skills to decipher it, or otherwise have differential levels of private information. Second, we provide additional and more direct
evidence of the negative relation between voluntary disclosures and the average informativeness of earnings (Roychowdhury and Sletten, 2012). Taken together, our results suggest that voluntary disclosures increase differences in pre-earnings announcement information amongst investors even as they improve the average information precision of investors.

Our study has several important implications for firms and investors. First, by pointing out the increase in differential prior precision due to voluntary disclosure, our study highlights a downside of relying on voluntary disclosure. These findings may encourage firms to consider how best to provide such disclosures to minimize differences across investors. Indeed, from investors’ perspective, our study highlights the importance of being aware of voluntary disclosures, as well as having, or obtaining, the necessary skills to accurately evaluate and understand such disclosures to make more effective investing decisions.

The rest of the paper is organized as follows. Section 2 contains the literature review and hypothesis development. Section 3 describes the data and the research methodology. Section 4 presents the results, and finally, Section 5 discusses our findings and conclusions.

2. Literature review and hypothesis development

2.1 Voluntary disclosure

Information asymmetry that arises due to managers having more information than investors can lead to a disruption of capital markets (Healy and Palepu, 2001). Regulated disclosure is a partial solution to this problem. However, with this minimum level of disclosure, information asymmetries still exist in the market, both between managers and investors, as well as amongst different classes of investors (Healy and Palepu, 2001). Voluntary disclosure attempts to address the problem of information asymmetry between the firm (or its’ managers) and the investing public beyond what is accomplished by regulated disclosure (Healy and Palepu, 2001).

Increased voluntary disclosures lead to stock price movement around the announcement of the voluntary disclosure itself. Healy et al. (1999) show that when firms increase voluntary disclosures, they experience a stock price increase that is unrelated to accounting performance. Roychowdhury and Sletten (2012) state that voluntary good news disclosures result in stock price movements, and moreover, these movements actually reduce the stock price movements that should follow an earnings announcement. Thus, voluntary disclosures can have a significant impact on the information environment of the firm. Roychowdhury and Sletten (2012) assert that “[…]that the earnings reporting process is geared towards uncovering information that has not as yet been disclosed via alternative sources […]” (p. 1680).

Empirical research supports the contention that voluntary disclosure reduces information asymmetry between the firm and investors (Shroff et al., 2013). Originally, theory made no distinction between an information asymmetry that arose between managers and investors versus an asymmetry that arose between different investors (Leuz and Verrecchia, 2000). Instead, the key point was that however it happened, the information asymmetry created an adverse selection problem among the investors. In such a setting, less informed investors, knowing they were at an information disadvantage, would require a premium to trade in the firm’s shares leading to a higher cost of capital for firms.

More recently, however, analytical models have suggested that these are two distinct phenomena (Lambert et al., 2012): an average information precision effect and a cross investor asymmetry information effect, respectively. Information asymmetry between managers and investors decreases as investors’ average information precision increases
when any one investor or a group of investors become more informed. Cross investor asymmetry decreases when information is more evenly distributed. Bhattacharya et al. (2012) use path analysis to provide evidence consistent with these two effects by showing a direct link between earnings quality and cost of capital and an indirect link through cross investor asymmetry.

Voluntary disclosures may impact both the average information precision of investors and also the cross-investor information asymmetry. There is no reason that these two effects need to move together. Information provided to some investors (i.e. insider trading or selective disclosures) would increase the average information precision of investors while also increasing asymmetric information across investors. Ahmed and Schneible (2007) present evidence consistent with this by showing that Regulation Fair Disclosure, which limited selective disclosures by management to favored investors and analysts, leads to a decrease in differences in information quality between investors, but also reduced the average quality of information.

Even when a voluntary disclosure increases asymmetric information among investors, the firm may still have the incentive to release it because the average precision effect is more important to cost of capital (Bhattacharya et al., 2012), and when the market is efficient, information asymmetry among investors has little effect on cost of capital (Armstrong et al., 2011).

Prior research shows that managers tend to provide voluntary disclosures in specific circumstances. Beyer et al. (2010) identify three such circumstances: capital market transactions, corporate control issues and stock-based incentive compensation. In addition, Healy and Palepu (2001) also identify litigation costs, management talent signaling and the danger of revealing competitive information as concerns that impact voluntary disclosure decisions. Many of the economic consequences of voluntary disclosures have been well documented. Lang and Lundholm (1996) find a decrease in dispersion for firms with greater voluntary disclosure. Welker (1995) and Leuz and Verrecchia (2000) find that increased voluntary disclosure is associated with lower bid-ask spreads and argue that it is evidence of lower information asymmetry. Shroff et al. (2013) find that the Securities Offering Reform of 2005 increased voluntary disclosures prior to equity offerings and that these disclosures reduced information asymmetry. Cheynel (2013) shows that voluntary disclosures lead to a lower cost of capital due to lowering of systematic risk.

Bid-ask spreads and analyst forecast-based measures have been the primary measures used to investigate the effect of voluntary disclosure on information asymmetry. Analysts, however, are all presumably sophisticated investors, and thus, such a measure captures only some of the information asymmetry existing among all investors (Bamber et al., 1997). Bid-ask spreads may suffer from an attenuation bias and, thus, fail to capture the full extent of disagreement due to asymmetric information (Garfinkel, 2009). Indeed, most studies that use proxies for information risk, such as PIN (Easley et al., 1996) are likely to capture the overall precision of information available to investors (Lambert et al., 2012). Consequently, while prior research may have attributed results to asymmetric information, it is unclear whether it was asymmetric information between the firm and investors or among investors themselves.

Prior research has demonstrated that trading volume is a superior measure of divergent investor opinions arising from differences in investor information (Garfinkel, 2009). Despite significant prior research on the effect of voluntary disclosure on information asymmetry between firms and investors, prior research has not examined its differential impact among investors using trading volume. Thus, some possible effects of voluntary disclosure have so far gone unexamined.
2.2 Market response to earnings announcements: trading volume

Both abnormal trading volume and price reaction around earnings announcements are used to evaluate the impact of an informational event on the market (Ball and Brown, 1968; Bamber, 1986; Bamber and Cheon, 1995). Stock price reaction to an earnings announcement captures the average response of the market to the event. However, the average response can cancel out a considerable amount of variation within individual responses (Abdel-Meguid et al., 2016). On the other hand, trading volume captures the aggregate response of the market because it sums the actions taken by investors as they individually revise their beliefs (Bamber, 1986; Abdel-Meguid et al., 2016). Therefore, some research contends that trading volume is more responsive to an information event compared to price (Bamber et al., 2011).

Analytical models suggest and empirical research supports that abnormal trading volume captures the disagreement amongst investors around an information event (Kandel and Pearson, 1995; Bamber and Cheon, 1995; Bamber et al., 2011; Barron et al., 2018). The intuition is that there will be greater (abnormal) trading volume if some investors believe the earnings signal portrays good news, whereas others believe that it portrays bad news (essentially disagreement about the signal). Analytical research further suggests that this differential belief revision, which leads to abnormal trading volume, is a function of two components: differential information amongst investors prior to the announcement and the differential interpretation of the news content of the information event. Therefore, abnormal trading volume may be caused by either, or a combination of, differential priors or differential interpretation. If investors have differential prior information regarding a stock, and the information in the earnings signal leads investors to revise those priors, the resulting trade is related to the change in the absolute stock price. This occurs because investors with more precise private information have greater demand to trade for a given change in price. In other words, they are more likely to sell at price increases and more likely to buy at price decreases (Hope et al., 2009). This result is evident in analytical models (Kim and Verrecchia, 1997; Kandel and Pearson, 1995) and used empirically in Ahmed and Schneible (2007), Hope et al. (2009), Barron et al. (2018) and others. This means that abnormal trading volume around an information event related to change in the stock price is indicative of differential prior precision. On the other hand, if investors interpret the signal differently, some investors may sell, whereas others would buy. The average market price would be unaffected while still giving rise to significant abnormal trading volume. The above articles cited provide analytical and empirical support that differential interpretation of the news in an information event leads to abnormal trading volume that is unrelated to price.

Voluntary disclosures may give rise to divergent beliefs amongst different types of investors due to three reasons (Beyer et al., 2010). First, some investors may not be aware of the disclosure. The FASB Conceptual framework acknowledges this fact and states:

Also, many users may incorporate the available financial reporting information into their decision processes and may not be aware of other pertinent information that financial reports could include. [...] Also, some users may have easier access to sources of information outside general purpose financial reports than do others (FASB, 2006, p. 23, emphasis added[1]).

Frankel et al. (1999) provides empirical evidence of the lack of awareness of information by all investors. In an analysis of conference calls, they find that not all investors have the same access to such calls. Second, some investors may have private information against which they will analyze the voluntary disclosures to arrive at different conclusions from those who do not. In an analytical study, Dutta and Trueman (2002) show that investors with private information will react differently to voluntary disclosures compared to investors who do not
have such information. Finally, investors with different skills will interpret the same information differently and arrive at different conclusions. Sophisticated investors are able to process information about a firm’s disclosure of the quality of their product more completely than naive investors (Fishman and Hagerty, 2003), and this intuition should apply to any type of firm disclosure (Beyer et al., 2010). Suijs (2007) goes on to assert that naive and sophisticated investors will react differently to the same disclosures. Malmendier and Shanthikumar (2007) find that large traders are able to correct for the upward bias in analysts’ stock recommendations (especially when the analysts are linked to the issue underwriters), whereas small investors are not. Blau et al. (2015) investigate the reaction of naive investors versus short sellers (whom the authors assume to be sophisticated) to the “tone” of earnings conference calls and find that short sellers are able to see through the “inflated” tone, whereas naive investors fail to do so. Given these reasons, we expect voluntary disclosures to have divergent effects across shareholders and lead to an increase in differential precision prior to the announcement. To summarize, at one end of the spectrum, investors will be unaware of disclosures by firms, they will not have any private information, and they will not have the skills to interpret voluntary disclosures. At the other end, investors will be aware of all disclosures, they will have sophisticated private information collections to supplement voluntary disclosures and generate pricing models, and they will have the necessary skills to interpret such disclosures. Research into investor diversity by Knyazeva et al. (2014), Lerner et al. (2007) and Barron et al. (2018) suggest that investors will fall into the entire spectrum covered by the two extremes mentioned above. Thus, voluntary disclosures will have different impacts on investors due to awareness, private information and interpretation skills.

Based on this stream of prior literature, we argue that as investors incorporate voluntary disclosures differently, these disclosures might increase information asymmetry between investors. We test this contention empirically by examining trading volume response to earnings announcements. We state our first hypothesis as follows:

\[ H1. \text{ Voluntary disclosures will increase abnormal trading volume due to differential prior precision of information amongst investors prior to an earnings announcement.} \]

2.3 Market response to earning announcements: price response
Price change reflects a change in the average belief of investors about the value of a stock. Investors revise their beliefs, on average, more in response to an earnings announcement when the precision of the information in announcement increases and as the average precision (or quality) of pre-announcement information is lower (Kim and Verrecchia, 1997). Ceteris paribus, the lower the average quality of prior information, the more useful investors find the announced information. Similarly, the higher the quality of announced information the more useful is that information (Ahmed et al., 2003).

As discussed previously, voluntary disclosures will alleviate the information asymmetry between the firm and investors, even as it may exacerbate the information asymmetry amongst investors. From an information perspective, voluntary disclosures can serve two purposes. First, firms may turn to voluntary disclosure because the information they wish to communicate may not be clearly evident in the current period earnings. Thus, voluntary disclosures may be made by firms with earnings of lower precision. Second, voluntary disclosures may also capture some of the additional information that would otherwise have been revealed through the earnings announcement. Roychowdhury and Sletten (2012) investigate this phenomenon
empirically and find confirmatory results. However, they do not use a direct measure of voluntary disclosure; instead, they rely on an inferred measure of voluntary disclosure based on equity returns. Regardless of whether voluntary disclosures reveal information prior to the earnings announcement that would or would not have been available in the earnings announcement, they are likely to increase the average precision of investors’ beliefs prior to the announcement. As the average price movement in response to an earnings announcement is proportional to the level of additional information contained in the announcement (Kim and Verrecchia, 1997), we posit that there will be less (more) stock price movement subsequent to an earnings announcement if the level of disclosures prior to the announcement are high (low). Thus, our second hypothesis is stated as:

H2. Stock returns in response to an earnings announcement is inversely related to the level of pre-announcement voluntary disclosure.

3. Data and research methodology
3.1 Data
We obtain data for the voluntary disclosure measure directly from the 8-K forms available on the SEC website. We collect market response and control variables used in our study from the Compustat and CRSP files for the period 2001-2014. Our sample consists of 51,696 firm-years with 7,678 unique firms.

3.2 Empirical models
3.2.1 Voluntary disclosure. Prior research into voluntary disclosure has been limited by the difficulty in measuring it. Prior measures are limited by short time periods of availability, apply to only a limited number of firms or rely on limited (or specific) types of firm voluntary disclosures (Cooper et al., 2015, p. 1). Cooper et al. (2015) develop and validate a more comprehensive measure of voluntary disclosure. Their measure, named VDISC, captures the frequency with which firms voluntarily report items throughout the year. We use the same measure. VDISC is based on form 8-K that firms are mandated to file to disclose material events, within four days of occurrence. Regulation Fair Disclosure (hereafter Reg_FD) requires that if a firm discloses information to selected parties, the firm must disclose that information to the public. Such disclosure is done by means of a form 8-K publication. Therefore, form 8-K is used to disclose mandatory information (such as the resignation of a CEO or auditor) and voluntary information (such as a new product release). The form used for such filings enables us to identify whether the filing was for a voluntary disclosure or a mandatory disclosure. It should further be noted that firms can disclose multiple items in the same form 8-K. According to Lerman and Livnat (2010) and Cooper et al. (2015), form 8-K contain nine main categories of disclosure, and within the nine, there are 22 sub-categories. Of the 22 sub-categories, three are identified as voluntary disclosures.
To calculate VDISC, we download 8-K filings from the SEC EDGAR database. We use a computer program to examine each filing and find the number of items voluntarily disclosed during the year. We follow prior research and classify the following items as voluntary: “Results of Operations and Financial Conditions”, “Regulation FD Disclosure” and “Other (Important) Events” (Cooper et al., 2015; Lerman and Livnat, 2010). VDISC is computed as the yearly sum of items voluntarily disclosed by the firm. A higher number indicates more voluntary disclosure.
3.2.2 Abnormal trading volume. We evaluate the relation between voluntary disclosure and investor disagreement around the earnings announcement by examining variation in
abnormal trading volume response as a function of the level of voluntary disclosure. We use the following model:

\[
\text{ABVOL}_{(-1,+1)} = \alpha_0 + \alpha_1 \text{VDISC}_{it} + \alpha_2 \text{ABSRET}_{it} + \alpha_3 \text{VDISC} \times \text{ABSRET}_{it} + \alpha_4 \text{LNMVE}_{it} + \alpha_5 \text{MKTVOL}_{it} + \alpha_6 \text{LGPRC}_{it} + \epsilon_{it}
\]  

(1)

ABVOL = Cumulative three-day trading volume around the period t earnings announcement as a percentage of shares outstanding on the day of announcement, less the median three-day trading volume (as a percentage of shares outstanding) in the non-announcement period. The non-announcement period is from five days after the previous quarterly earnings announcement until five days prior to the current earnings announcement.

LNMVE = Natural log of the market value of equity (ending share price times shares outstanding two days before the announcement).

MKTVOL = Median turnover (trading volume as a percentage of shares outstanding) of the firms in the sample for the same time as the announcement period.

LGPRC = Natural log of price (ending price two days before the announcement).

ABSRET = Absolute value of the cumulative three-day return around the earnings announcement.

VDISC = Measure of voluntary disclosure following Cooper et al. (2015).

Trading volume due to differential precision of investors’ information, prior to the earnings announcement, is correlated with the magnitude of price change during the earnings announcement period (Kim and Verrecchia, 1991). Trading volume due to differential interpretation of the earnings announcement itself is independent of the magnitude of price change during the earnings announcement (Kim and Verrecchia, 1997). Thus, we regress abnormal trading volume on voluntary disclosure, absolute returns and voluntary disclosure interacted with absolute returns. The coefficient of interest is \(\alpha_3\) (the coefficient on VDISC \(\times\) ABSRET\(_{it}\)) which captures the relation between voluntary disclosure and differential belief revision due to differential prior precision. If this coefficient is positive and significant, it means that abnormal trading volume related to the absolute change in stock price increases with voluntary disclosure. This would then indicate that abnormal trading volume increases with voluntary disclosure. For example, Ahmed and Schneible (2007, p. 286) use a similar model to distinguish between differential prior precision and differential interpretation effects of Reg_FD. While \(\alpha_1\) captures the non-price-related impact of voluntary disclosures on trading volume, \(\alpha_3\) captures the price-related impact (Hope et al., 2009, p. 173). As per our \(H1\), we expect \(\alpha_3\) to be positive and significant. While we do not hypothesize an effect of voluntary disclosure on differential interpretation of the earnings announcement, we do examine it by evaluating the coefficient on VDISC.

We also include ABSRET that captures the price change in public information contained in the earnings announcement to control for the change in average belief in the market. LNMVE, controls for the information environment unrelated to the firm (Bamber, 1987). LGPRC and MKTVOL control for transaction costs (Utama and Cready, 1997) and the market-wide effects in trading volume, respectively.

3.2.3 Absolute abnormal returns. We evaluate the relation between voluntary disclosure and the change in the average belief at the time of the earnings announcement by examining the variation in price response as a function of the level of voluntary disclosure. We use the following model:
\[ \text{ABS} - \text{SAR}(-1,+1) = \alpha_0 + \alpha_1 \text{VDISC}_{it} + \alpha_2 \text{LNMVE} + \alpha_3 \text{LEV} + \alpha_4 \text{LOSS}_{it} \\
+ \alpha_5 \text{ABSCAR}_{it} + \alpha_6 \text{RETVAR}_{it} + \alpha_7 \text{NEGCAR}_{it} \\
+ \alpha_8 \text{EPRATIO}_{it} + \epsilon_{it} \]  

(2)

\text{ABS-SAR} = \text{Absolute value of the cumulative three-day return around the earnings announcement, less the cumulative three-day return of the CRSP size decile for the same period.}

\text{LNMVE} = \text{Natural log of the market value of equity (ending price times shares outstanding two days before the announcement).}

\text{LEV} = \text{Long term debt at the end of the quarter divided by total assets at the end of the quarter.}

\text{LOSS} = 1 \text{ if the firm reports a loss in the quarter and zero otherwise.}

\text{ABSCAR} = \text{The absolute value of the cumulative size adjusted abnormal return from 64 days before through 2 days before the earnings announcement.}

\text{NEGCAR} = 1 \text{ if the cumulative abnormal return from 64 days before to 2 days before the earnings announcement is negative and 0 otherwise.}

\text{EPRATIO} = \text{Quarterly earnings-price ratio.}

\text{VDISC} = \text{Measure of voluntary disclosure following Cooper et al. (2015).}

The coefficient of interest is \( \alpha_1 \) (the coefficient on VDISC\(_{it}\)). This coefficient captures the relation between voluntary disclosure and the change in the average belief of the market. Our control variables are drawn from prior research (Dhaliwal and Reynolds, 1994; Fernando et al., 2016; Heflin et al., 2003). RETVAR and NEGCAR control for normal price changes unrelated to information in the earnings announcements. ABSCAR, LOSS and NEGSPEC control for informational differences unrelated to voluntary disclosure. EPRATIO controls for growth and LEV controls for risk.

4. Results
4.1 Descriptive statistics
The descriptive statistics for our sample are presented in Table I. Our two dependent variables, ABS-SAR and ABVOL have means of 0.0574 and 0.025. The mean log of market value of equity in our sample is 19.96, whereas the (untabulated) mean market value of equity is $3.736m. The mean market volume over the sample period is 0.004. The average firm has leverage of 0.16, and the mean natural log of share price is 2.59. The probability of a firm-year in the sample incurring a loss is 31.28 per cent.

4.2 Multivariate analysis
Table II presents the estimate of Model 1. This tests our \( H1 \) which investigates the effect of voluntary disclosure on the differential precision of investors’ information prior to an earnings announcement by examining the trading volume response to the announcement. We use two way, firm and year, clustered standard errors (Gow et al., 2010) to control for cross-sectional and time-series dependence and heteroscedasticity in the regression results reported in this section. We compute variance inflation factors for this model, and all factors are below recommended levels, thus negating concerns of multi-collinearity.

In Model 1, abnormal trading volume is a function of both voluntary disclosure and voluntary disclosure interacted with returns. As discussed previously, our hypothesis’
Table I.
Univariate statistics for trading volume, returns and voluntary disclosure

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<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>25th (%)</th>
<th>Median</th>
<th>75th (%)</th>
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<td>5.3238</td>
<td>1.0000</td>
<td>4.0000</td>
<td>8.0000</td>
</tr>
<tr>
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<td>0.0768</td>
<td>0.0159</td>
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<tr>
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<td>0.0048</td>
</tr>
<tr>
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<td>ABSCAR</td>
<td>0.0862</td>
<td>0.1058</td>
<td>0.0540</td>
<td>0.1107</td>
<td></td>
</tr>
<tr>
<td>RETVAR</td>
<td>0.0260</td>
<td>0.0215</td>
<td>0.0042</td>
<td>0.0337</td>
<td></td>
</tr>
<tr>
<td>NEGCAR</td>
<td>0.5015</td>
<td>0.5000</td>
<td>0.0095</td>
<td>0.0180</td>
<td></td>
</tr>
<tr>
<td>EPRATIO</td>
<td>−0.0447</td>
<td>0.6305</td>
<td>−0.0093</td>
<td>0.0095</td>
<td></td>
</tr>
</tbody>
</table>

Notes: ABVOL = Cumulative three-day trading volume around the period t earnings announcement as a percentage of shares outstanding on the day of announcement, less the median cumulative three-day trading volume (as a percentage of shares outstanding) in the non-announcement period. The non-announcement period is from five days after the previous quarterly earnings announcement until five days prior to the current earnings announcement; ABS-SAR = Absolute value of the cumulative three-day return around the earnings announcement, less the cumulative three-day return of the CRSP size decile for the same period; VDISC = Measure of voluntary disclosure following Cooper et al. (2015); LNMVE = Natural log of the market value of equity (ending price times shares outstanding, two days before the announcement); MKTVOL = Median turnover (trading volume as a percentage of shares outstanding) of the firms in the sample for the same time as the announcement period; LGPRC = Natural log of price (ending price two days before the announcement); ABSRET = Absolute value of the cumulative three-day return from 64 days before through 2 days before the earnings announcement; ABSCAR = The absolute value of the cumulative abnormal return from 64 days before through 2 days before the earnings announcement; LEV = Long-term debt at the end of the quarter divided by total assets at the end of the quarter; LOSS = 1 if the firm reports a loss in the quarter and zero otherwise; NEGCAR = 1 if the cumulative abnormal return from 64 days before through 2 days before the earnings announcement is negative and 0 otherwise; EPRATIO = Earnings-price ratio

Table II.
The relation between trading abnormal volume reaction to earnings and voluntary disclosure

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coef</th>
<th>Estimate</th>
<th>t-stat</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>$a_0$</td>
<td>−0.0576</td>
<td>−12.57</td>
<td>0.0000</td>
</tr>
<tr>
<td>VDISC</td>
<td>$a_1$</td>
<td>−0.0035</td>
<td>−6.49</td>
<td>0.0000</td>
</tr>
<tr>
<td>ABSRET</td>
<td>$a_2$</td>
<td>0.1811</td>
<td>7.64</td>
<td>0.0000</td>
</tr>
<tr>
<td>VDISC × ABSRET</td>
<td>$a_3$</td>
<td>0.0609</td>
<td>7.45</td>
<td>0.0000</td>
</tr>
<tr>
<td>LNMVE</td>
<td>$a_4$</td>
<td>0.0028</td>
<td>8.44</td>
<td>0.0000</td>
</tr>
<tr>
<td>MKTVOL</td>
<td>$a_5$</td>
<td>1.0869</td>
<td>1.83</td>
<td>0.0897</td>
</tr>
<tr>
<td>LGPRC</td>
<td>$a_6$</td>
<td>0.0024</td>
<td>5.41</td>
<td>0.0001</td>
</tr>
<tr>
<td>$R^2$</td>
<td></td>
<td>0.2675</td>
<td></td>
<td>51.432</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: ABVOL(−1, +1) = $a_0 + a_1VDISC_{it} + a_2ABSRET_{it} + a_3VDISC × ABSRET_{it} + a_4LNMVE_{it} + a_5MKTVOL + a_6LGPRC_{it} + e_{it}; Table II presents the estimation of equation (1), a regression of abnormal trading volume over the earnings announcement period on voluntary disclosure and control variables. Significance tests are based on robust standard errors which are adjusted for firm and year clustering (Gow et al., 2010); See Table I for variable definitions.
prediction of abnormal trading volume due to differential precision of investors’ prior information should be reflected in abnormal trading volume related to absolute price change. Therefore, our coefficient of interest is the coefficient on the interaction of voluntary disclosure and absolute returns ($\alpha_3$). We find that this coefficient, 0.0609, is significantly positive ($p < 0.0001$). These results indicate that the greater the level of voluntary disclosure, the greater will be the differences in investors’ precision of information prior to the earnings announcement.

While we do not hypothesize an effect of voluntary disclosure on trading volume due to differential interpretation, we do note that firms that rely on voluntary disclosure have less differential interpretation of the earnings announcement. Other control variables generally have the expected signs. The coefficient on LGMVE, MKTVOL, LGPRC and ABSRET are significantly positive consistent with prior research (Bamber, 1987, Heflin et al., 2003, Ahmed and Schneible, 2007, Barron et al., 2018).

Table III presents the estimate of Model 2 on our sample described above. This model evaluates the relationship between the abnormal returns over a three-day period around earnings announcements and voluntary disclosure by the firm. We use two way clustered standard errors (Gow et al., 2010) to control for cross-sectional and time-series dependence and heteroscedasticity. We compute variance inflation factors for this model, and all factors are below recommended levels, thus negating concerns of multicollinearity.

The results show that VDISC is significantly negatively related to abnormal returns around the earnings announcement date. This result demonstrates that greater a firm’s voluntary disclosure, the lower the absolute abnormal returns around the earnings announcement period. It implies that the change in the average belief in response to new information contained in the earnings announcement will be lower to the extent that a firm relies on voluntary disclosure.

The control variables evidence signs consistent with prior literature. The coefficient on LEV and EPRATIO are significantly negative, whereas ABSCAR, RETVAR and NEGCAR are significantly positive (Heflin et al., 2003, Ahmed and Schneible, 2007, Fernando et al., 2016).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coef</th>
<th>Estimate</th>
<th>$t$-stat</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0</td>
<td>0.0256</td>
<td>4.75</td>
<td>0.0004</td>
</tr>
<tr>
<td>VDISC</td>
<td>$a_0$</td>
<td>-0.0032</td>
<td>-5.51</td>
<td>0.0001</td>
</tr>
<tr>
<td>LNMVE</td>
<td>$a_1$</td>
<td>0.0003</td>
<td>1.24</td>
<td>0.2384</td>
</tr>
<tr>
<td>LEV</td>
<td>$a_2$</td>
<td>-0.0126</td>
<td>-6.39</td>
<td>0.0000</td>
</tr>
<tr>
<td>LOSS</td>
<td>$a_3$</td>
<td>0.0000</td>
<td>-0.04</td>
<td>0.9724</td>
</tr>
<tr>
<td>ABSCAR</td>
<td>$a_4$</td>
<td>0.1037</td>
<td>20.23</td>
<td>0.0000</td>
</tr>
<tr>
<td>RETVAR</td>
<td>$a_5$</td>
<td>0.5520</td>
<td>16.89</td>
<td>0.0000</td>
</tr>
<tr>
<td>NEGCAR</td>
<td>$a_6$</td>
<td>0.0025</td>
<td>4.58</td>
<td>0.0005</td>
</tr>
<tr>
<td>EPRATIO</td>
<td>$a_7$</td>
<td>-0.0022</td>
<td>-5.59</td>
<td>0.0001</td>
</tr>
<tr>
<td>$R^2$</td>
<td></td>
<td>0.1337</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td></td>
<td>51,693</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: ABS-SAR($-1, +1)_it = a_0 + a_1 VDISC_{it} + a_2 LNMVE_{it} + a_3 LEV_{it} + a_4 LOSS_{it} + a_5 ABSCAR_{it} + a_6 RETVAR_{it} + a_7 NEGCAR_{it} + a_8 EPRATIO_{it} + e_{it}. Table III presents the estimation of equation (2), a regression of absolute abnormal returns on voluntary disclosure and control variables. Significance tests are based on robust standard errors which are adjusted for firm and year clustering (Gow et al., 2010); see Table I for variable definitions.
5. Conclusions and discussion

In this paper, we investigate the impact of voluntary disclosures on two aspects of a firm’s information environment. First, we investigate how voluntary disclosures impact the information asymmetry between different investors, and second, we look at the relation between voluntary disclosures and the average information content of earnings announcements.

Information asymmetry occurs in two ways: between the firm and investors and also between different investors. Research to date has evaluated the impact of voluntary disclosures on the information asymmetry between the firm and investors and generally show a beneficial effect. However, to the best of our knowledge, no study has yet isolated the impact of voluntary disclosures on the information asymmetry between different investors. This paper fills that gap and shows that voluntary disclosures can increase differential precision between investors while, at the same time, reducing information asymmetry between the firm and the investors. Thus, our results demonstrate the impact of voluntary disclosures on both aspects of information asymmetry.

To measure the level of voluntary disclosure, we use a metric developed by Cooper et al. (2015) which computes the number of voluntary disclosures in the 8-K statements of firms available on the SEC’s EDGAR database. We use trading volume to measure the level of disagreement amongst investors. Specifically, we interact our measure of voluntary disclosure with absolute returns and regress the interaction variable against abnormal trading volume to evaluate the level of pre-earnings announcement information differences amongst diverse investors (Ahmed et al., 2003; Ahmed and Schneible, 2007). Finally, we use abnormal returns to proxy for the average information content of the earnings announcement.

In our trading volume model, we find that the coefficient on the interaction of VDISC and returns is highly positive and significant, indicating that voluntary disclosure is associated with a greater level of differential priors among investors before the earnings release. Thus, our first contribution is to highlight an unexpected outcome of voluntary disclosure. While voluntary disclosures are generally considered beneficial and have the effect of reducing the information asymmetry between firms and investors (Shroff et al., 2013), our study highlights the fact that information asymmetry among investors can actually increase as a result of voluntary disclosures. This result is likely masked in prior studies due to their proxies for information asymmetry.

Second, we find that abnormal returns around the earnings release window are negatively associated with the level of voluntary disclosures prior to the earnings announcement. As abnormal returns around the earnings announcement proxy for the information content of the earnings announcement, our results indicate that prior voluntary disclosures reduce the information content of the earnings release. While this relationship has been posited by Roychowdhury and Sletten (2012) previously, our study complements and expands their findings, as we are the first to show these results using a more direct (as opposed to inferred) measure of voluntary disclosure in a broad setting.

One limitation of our study is that our measure of voluntary disclosure captures the number of voluntary disclosures but does not capture the information content of specific announcements. For example, one “Enron” style disclosure may contain sufficient information to move the market more than ten disclosures that may detail routine affairs within the firm. However, our measure will weight all announcements equally. Readers are cautioned to note this limitation as they interpret our results.

Our findings will be of interest to firms, financial analysts, investors, accounting researchers and regulators. Firms will need to carefully consider how and when they
release voluntary disclosures to minimize information asymmetry amongst investors. Analysts and investors should pay greater attention to finding out, and interpreting, disclosures of firms, as our results indicate that some investors may not know of, or be able to correctly interpret, such disclosures. Researchers into firm information environments should consider expanding their models to take into account the asymmetry amongst investors caused by voluntary disclosures. Furthermore, in an environment where researchers have raised concerns about the decline in the information content of the earnings announcement, our findings may provide further insights into how firms and investors are supplementing information from other sources. Both of the previous points will be of interest to regulators as they debate on the balance between voluntary and mandated disclosures.

Note

References


Corresponding author
Guy Dinesh Fernando can be contacted at: gfernando@albany.edu

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