The Impact of Earnings Guidance Cessation on Information Asymmetry

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Abstract

We study the impact of quarterly earnings guidance cessation on information asymmetry using a large sample of firms during the years 2002-2011. After guidance cessation, information asymmetry may increase because less information is provided to the market. Alternatively, information asymmetry may decrease if managers have less pressure to manage reported earnings to meet guidance numbers. Our study shows guidance cessation significantly reduces information asymmetry. We also find that the reductions in information asymmetry are associated with firms engaging in less earnings management after guidance cessation, especially for firms that had provided guidance on a persistent basis.

JEL Classification: G14, G38

Keywords: earnings guidance, information asymmetry.

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1. INTRODUCTION

Many firms, such as Coca-Cola, McDonald's, General Electric, and Pfizer, have recently stopped providing quarterly earnings guidance. A recent survey by the National Investors Relations Institute (NIRI) in 2009 reports that only around 60% (dropped from 78% in 2003) of the companies provided earnings guidance.[1] This raises the question: Does the market perceive quarterly earnings guidance cessation as an informational loss? In this paper, we investigate whether the information environment has changed for firms which have stopped providing quarterly earnings guidance.

The empirical research to date has not addressed the liquidity and information asymmetry effects of quarterly earnings guidance cessation. Although several studies (Libby et al., 2006; Cotter et al., 2006; Houston et al., 2010) have examined how analysts react to various types of earnings guidance from the firm, there is no direct investigation of whether the information environment as measured by the trade-based measures of information asymmetry has changed for firms which discontinued quarterly earnings guidance.[2]

We test two competing hypotheses on whether information asymmetry will increase or decrease after quarterly earnings guidance cessation. The first hypothesis, "*information transparency*" hypothesis, states that information asymmetry increases after earnings guidance cessation because less information is provided to the market. Corporate disclosure in general is shown to improve the information environment of the firm (Welker, 1995; Lang and Lundholm,

[1] The most recent NIRI survey, 2009 Forward-Looking Guidance Practices Survey Results, can be found at http://www.niri.org/media/News-Releases/News-Releases-Archive/NIRI-Releases-2009-Forward-Looking-Guidance-Practices-Survey-Results-2009May18.aspx.

[2] Libby et al. (2006) examine how guidance forms (point estimate versus range estimate, and narrow versus wide range) and guidance errors affect analyst forecasts. Cotter et al. (2006) investigate how analysts react to explicit earnings guidance and find that analysts quickly react to the guidance and subsequently revise their forecasts to a beatable target. Houston et al. (2010) find that guidance cessation results in a decrease in analyst coverage and increases in analyst earnings forecast errors and forecast dispersions.

1996; Verrecchia, 2001; Brown and Hillegeist, 2007). Supporters of the practice of earnings guidance often cite information transparency as a rationale for maintaining guidance. According to their view, credible and regular information disclosures reduce information asymmetry and help lower the cost of capital.[3] If earnings guidance behaves similarly to a typical corporate disclosure, then the level of information asymmetry will increase after guidance cessation.

The second hypothesis, "*numbers game*" hypothesis, states that information asymmetry decreases after earnings guidance cessation. Critics of quarterly earnings guidance practices argue that firms providing quarterly guidance tend to be shortsighted. For example, when Coca-Cola stopped providing guidance, Chief Executive Douglas Daft said in a statement on December 13, 2002 that "*We believe that establishing short-term guidance prevents a more meaningful focus on the strategic initiatives that a company is taking to build its business and succeed over the long term.*" Insofar as the practice of managing earnings is a manifestation of managerial myopia, the above criticism of earnings guidance suggests a possible link with earnings management. Furthermore, anecdotal evidence also suggests that the communication of earnings numbers has increasingly become a game between the management and stock market participants. For example, former SEC chairman Arthur Levitt pointed out in the speech titled "*The numbers game*" that earnings management was becoming a serious problem as CEOs struggled to meet or beat Wall Street expectations.[4] One way to engage in this numbers game is for firms to provide earnings guidance. Cotter et al. (2006) find evidence that analysts quickly react to the firm's earnings guidance and Athanasakou et al. (2011) conjecture that managers may influence analyst earnings forecasts through earnings guidance and manage reported earnings to achieve earnings forecasts. Therefore, earnings guidance can be used to influence the

[3] Studies such as Easley et al. (2002) show that lower information asymmetry is associated with a lower cost of equity capital.
[4] Arthur Levitt further commented, "*This process has evolved over the years into what can be characterized as a game among market participants -- a game that if not addressed soon will have adverse consequences.*"

market forecast and can further signal that the firm is also engaging in earnings management. Another channel through which earnings guidance can induce greater earnings management is that earnings guidance adds another layer of earnings target number in addition to the analyst forecast, which the company is trying to meet or beat, and thus brings additional incentives to manage earnings. And as several studies document a positive relation between information asymmetry and earnings management (Dye, 1988; Trueman and Titman, 1988; Richardson, 2000), earnings guidance can thus increase the level of information asymmetry between the management and stock market participants if earnings guidance results in greater level of earnings management.

Using various measures of liquidity and information asymmetry based on intraday transaction data, we study changes surrounding the cessation of earnings guidance and find that information asymmetry decreases significantly for firms who cease providing quarterly earnings guidance. We further explore the possible sources of the decrease in information asymmetry which is associated with guidance cessation. Built upon prior literature on the positive relation between information asymmetry and earnings management, we explore the possibility that the improvement in the information environment may be due to the fact that firms manage earnings less aggressively after they stop providing earnings guidance. To this end, our empirical results show that the reductions in information asymmetry are positively related to the magnitude of various measures of earnings management before earnings guidance cessation. We also find that the above results are more pronounced for guiders who had provided guidance on a persistent basis compared to those who had provided guidance on an occasional basis. Our results are in agreement with the belief that reductions in information asymmetry are driven, at least in part, by

earnings management practices before earnings guidance cessation. Therefore, our empirical results support the "*numbers game*" hypothesis.

A study close to ours is Call et al. (2011), who show that earnings guidance firms exhibit lower degree of earnings management compared to firms that do not issue earnings guidance. First, the research questions posed are different. Whereas Call et al. (2011) examines the level of earnings management, the focus of our paper is on the changes in information asymmetry, and earnings management is one channel that explains the link between earnings guidance and information asymmetry. Secondly, there is the difference in the sampling of earnings guidance firms. Whereas Call et al. (2011) uses mostly annual guiders in their analyses, our study is based on short-term quarterly guidance.[5] We believe that using short-term quarterly guidance presents a more meaningful analysis because the recent debate on the issue to stop providing earnings guidance focuses on quarterly guidance. As such, most studies on earnings guidance (for example, Cheng et al. 2005; Cotter et al., 2006; Houston et al., 2010; Chen et al., 2011) examine quarterly guidance. Lastly, Call et al. (2011) compares between guidance firms and non-guidance firms as a whole, as opposed to studying the effect of guidance cessation. By comparison, our study is based on a set of firms which stop providing earnings guidance as done in Houston et al. (2010) and Chen et al. (2011).[6] This approach of using the firm's past as its own control (comparing between before guidance cessation and after guidance cessation) can reduce the concern of omitted variable which may drive the observed difference between the two

[5] Although the title of Call et al. (2011) refers to short-term earnings guidance, Table 1 of their paper shows that most of their sample guidance firms are annual guidance firms.

[6] Houston et al. (2010) examines the determinants of guidance stoppage and examines the changes in long-term investment and analyst activities. Chen et al. (2011) also studies the determinants of guidance cessation (and whether they publicly announce their cessation), and the post-cessation implication on the stock return and analyst-based measures. Neither of the studies examines the impact of guidance cessation on information asymmetry and earnings management.

groups.[7] We show that using an appropriate matched firm method and different measures of earnings management, guidance stoppers exhibit lower level of earnings management compared to the matched sample of non-guiders during the pre-cessation period for some measures of discretionary accruals. This result is consistent with Call et al. (2011). However, our contribution is that once guidance providers stop providing earnings guidance, their level of earnings management drops *even further*, and more importantly, the change in earnings management activity is associated with the decrease in the level of information asymmetry.

This study is, to the best of our knowledge, the first attempt to directly examine the changes in information environment associated with firms' decisions to stop quarterly guidance. This study is important since the findings are of significance to investors and traders who want to understand the implications of quarterly earnings guidance cessation on liquidity and information asymmetry costs encountered when trading. The findings should also be useful for regulators/policy makers in their deliberations of best practice of information disclosure.

2. HYPOTHESES DEVELOPMENT AND RESEARCH DESIGN

A. Hypotheses Development

Prior research indicates that corporate disclosure is related to information asymmetry between managers and outside investors (Glosten and Milgrom, 1985; Lang and Lundholm, 1993; Welker, 1995; Lang and Lundholm, 1996; Verrecchia, 2001; Brown and Hillegeist, 2007). As one of the voluntary corporate disclosures, earnings guidance cessation can have conflicting effects on a firm's information environment.

[7] The improvement in our research design over the one used in Houston et al. (2010) and Chen et al. (2011), apart from the different research question, is that whereas these two studies compare guidance stoppers against the entire set of guidance maintainers without any matching criteria, we adopt an appropriate matched firm analysis in which we compare guidance stoppers against the control groups of both guidance maintainers and non-guiders.

On the one hand, managers' disclosure of value-relevant information to investors can reduce information asymmetry. Diamond and Verrecchia (1991) theoretically show that public disclosure of information to reduce information asymmetry can increase liquidity of the company's stock and in turn, reduce the cost of capital. In this aspect, ceasing quarterly guidance can result in an overall reduction in the amount of information which is released to analysts and investors, which in turn would lead to an increase in information asymmetry.[8] We refer to this as the "*information transparency*" hypothesis. Houston et al. (2010) find that once firms stop providing quarterly guidance, there is a decrease in the number of analysts following and in forecast accuracy, and an increase in the dispersion of forecasts. Their results suggest that the supply of information from analysts deteriorates after stopping quarterly guidance. However, analyst-based measures of information asymmetry capture only the supply-side information production and therefore are more susceptible to self-selection and endogeneity problem.[9] Whether the level of information asymmetry measured by high-frequency trade-based measures changes after the earnings guidance cessation has yet to be tested.

The decision to stop providing earnings guidance can also have implications on the firms' behavior. Critics of earnings guidance practices propose that firms providing guidance can be shortsighted because of the pressure to manage earnings expectations on a quarterly basis.[10] One specific example of the myopic behavior which can have direct relationship to earnings guidance is earnings management.[11] Athanasakou et al. (2011) point out in their analyses of UK firms that earnings guidance may serve as a tool in the game between the management and stock market

[8] As for the possibility that guidance stoppers can increase other forms of disclosures to make up for the lack of guidance information, Houston et al. (2010) find that firms that stopped giving earnings guidance show no increase in the number of disclosures.
[9] For example, Chung et al. (1995) argues that analysts are more likely to follow stocks with greater information asymmetry because those stocks bring greater profit potential for analysts.
[10] One example that supports this argument is the report from the Aspen Institute, which can be found at http://www.aspeninstitute.org/sites/default/files/content/docs/bsp/EGInFocus.pdf
[11] Other possible channels through which long-term goals are impaired include the reduction in capital expenditure or R&D spending.

participants over the communication of earnings numbers. There are two implications in this game. First, using earnings guidance, the management may guide analyst earnings forecasts to an attainable level. Secondly, the management may manage reported earnings to achieve its earnings forecast. Empirical evidence shows that managers make discretionary accounting choices to manage reported earnings around some pre-determined target (DeFond and Park, 1997). LaFond et al. (2007) find international evidence that discretionary earnings smoothing creates opacity and reduces liquidity. Therefore, earnings guidance can increase information asymmetry if managers try to influence the market expectation, or manage reported earnings to meet their guidance numbers. Thus stopping earnings guidance may enhance the information environment in the trading of the underlying firm. We refer to this as the "*numbers game*" hypothesis. This hypothesis claims that there will be a decrease in information asymmetry after guidance cessation.

In summary, whether information asymmetry increases or decreases around the event of stopping earnings guidance is an issue that is amenable to empirical analysis. We conduct a detailed analysis of the liquidity and information asymmetry effects of stopping earnings guidance, and provide evidence on whether stopping quarterly earnings guidance leads to changes in earnings management behavior of the firm.

B. Persistent versus Occasional Guiders

Bhojraj and Libby (2005) provides evidence based on experiments that when managers are faced with capital market pressure, more frequent disclosure causes managers to behave more myopically. Gigler et al. (2012) theoretically show that more frequent reporting results in greater price pressure which creates managerial short-termism. Cheng et al. (2005) examine the

relationship between R&D expense and the frequency of quarterly earnings guidance. They find that guidance frequency is negatively correlated with both R&D expense and long-term earnings growth, and conclude that frequent guiders are more likely to suffer from managerial myopia. Since managing earnings is another manifestation of managerial myopia, the findings of above studies suggest that firms can have varying degrees of earnings management based on the frequency of earnings guidance. Therefore, we classify guidance cessation firms into two groups based on the number of quarters firms provided guidance prior to cessation. Firms which had at least three quarterly forecasts in the last four quarters preceding guidance cessation are classified as persistent guiders (*PGS*).[12] Companies which provided two or fewer guidance in the year prior to guidance cessation are classified as occasional guiders (*OGS*).[13] We conjecture that the degree of earnings management and the changes in the information environment to be different between persistent guiders and occasional guiders.[14]

C. Research Design

Two main aspects of the trading environment can influence our research design. First, trading costs may vary over time and across firms for reasons unrelated to guidance cessation. For example, technological improvements, tick changes, and regulatory actions are likely to create variations in trading costs over time and cross-sectionally (Bessembinder, 2003; Chiyachantana et al., 2004). To isolate the impact of guidance cessation from both time-series and cross-sectional variations, we construct abnormal trading cost and adverse selection

[12] If there is more than one forecast in a given quarter, we count the number of forecast as one for that quarter.
[13] Our classification of persistent and occasional guiders is slightly different from Cheng et al. (2005) in that their "occasional guiders" also include firms that do not provide any guidance. Cheng et al. (2005) do not explicitly study firms which cease providing earnings guidance.
[14] Persistent guiders and occasional guiders are both firms that cease guidance at some point in our sample period. Therefore, although the more precise terms would be ex-persistent guiders and ex-occasional guiders, we term them as persistent guiders and occasional guiders for the sake of brevity.

measures by subtracting the level of information asymmetry during the pre-cessation period from the level of information asymmetry during the post-cessation period. Whereas some studies on earnings guidance adopt a cross-sectional method of comparing guidance firms and non-guidance firms (Cheng et al., 2005; Call et al., 2011), we base our study on a set of firms which stop providing earnings guidance as done in Houston et al. (2010) and Chen et al. (2011). And whereas Houston et al. (2010) and Chen et al. (2011) compare guidance stoppers against the entire set of guidance maintainers without any matching criteria, we adopt an appropriate matched firm analysis in which we compare guidance stoppers against the control groups of both guidance maintainers and non-guiders.

Because our main research question is whether information asymmetry changes surrounding the guidance cessation event, we match firms using methodologies adopted from the studies that measure information asymmetry. The universe of guidance maintainers comes from firms which are covered by CIG database and did not experience guidance cessation event. The universe of non-guiders is firms which are never covered by CIG database (Call et al., 2011). Both the initial samples of guidance maintainers and non-guiders are also subject to surviving the sample selection criteria of guidance cessation firms as described in Section 4. Following Bessembinder (2003) and Huang and Stoll (1996), for each guidance stopper, we find a matched non-guider and a matched guidance maintainer based on share price, market capitalization, daily number of trades, daily dollar volume, and intraday return volatility. These five stock attributes are closely related to liquidity measures (for examples, see Demsetz, 1968; McInish and Wood, 1992; Lin, Sanger, and Booth, 1995). For each guidance stopper, we use the following equation to identify the comparable guidance maintainer and non-guider with the lowest composite deviation score (*CDS*):

$$CDS_i = \sum_{i=1}^{5} \left[\frac{X_i^{GS} - X_i^{M}}{(X_i^{GS} + X_i^{M})/2} \right]^2$$

where X_i represents one of the aforementioned five stock characteristics; *GS* refers to guidance stoppers; *M* refers to the control group of either non-guiders (*NG*) or guidance maintainers (*GM*). In order to minimize variability between our sample of guidance stoppers and matched firms, we limit the *CDS* to less than 1.5.

We model the impact of guidance cessation on information asymmetry by the following equations.

$$\delta_i = IA_{i,post} - IA_{i,pre} \quad (1)$$

$$\delta_1 = \delta_{GS} - \delta_{NG} \quad (2)$$

$$\delta_2 = \delta_{GS} - \delta_{GM} \quad (3)$$

where δ_i is the change in information asymmetry (*IA*) between pre-cessation period and post-cessation period and *i* represents *GS*, *NG*, or *GM*. The pre(post)-cessation period is the quarter immediately before (after) the quarter during which a firm provides its last quarterly earnings guidance, as shown in Figure 1. The difference between δ_{GS} and δ_{NG}, and between δ_{GS} and δ_{GM}, yields δ_1 and δ_2, which are the differences in the changes in information asymmetry between the guidance cessation firms and the matched group of non-guiding firms and guidance maintaining firms, respectively.

3. VARIABLE MEASUREMENT

A. Measures of Liquidity and Information Asymmetry

Liquidity refers to the ease of converting an asset into cash with minimal price movement. Bid and ask spread measures the cost of a round-trip trade and is among the most commonly

used measure of liquidity. Lower bid and ask spreads are indications of higher liquidity and lower trading costs. We use two spread measures that are computed as follows:

i. Quoted spread = $A_{it} - B_{it}$

ii. Effective spread $= 2 \times | P_{it} - M_{it} |$

where A_{it}, B_{it}, P_{it}, and M_{it} are the best ask, the best bid, the transaction price, and the midpoint of bid and ask prices, respectively, for firm *i* at time *t*. The quoted spread is time weighted while the effective spread is value weighted.

The information asymmetry portion of trading costs can be measured by models which decompose spreads to estimate an adverse selection component, or by changes in bid and ask spreads.[15] The adverse selection component compensates the market makers for the risk of trading against informed traders. Van Ness et al. (2001) examine five regression-based adverse selection models and conclude that the models created by Lin et al. (1995, hereafter *LSB*) and Glosten and Harris (1988, hereafter *GH*) produce relatively better estimates of adverse selection cost. Thus, we use *LSB* and *GH* spread decomposition models to test whether there are any changes in adverse selection costs in the quarters surrounding the quarterly earnings guidance cessation.

For the *LSB* model, we use the following regression equation:

$$\Delta \log M_{t+1} = \lambda Z_t + \varepsilon_{t+1}$$

where M_{t+1} is the quoted midpoint at time $t+1$. $Z_t = \log P_t - \log M_t$ where P_t is the transaction price at time *t*. ε_t is the disturbance term. λ represents the adverse selection component and is the cross-sectional averages of estimates for each stock in our sample.

[15] Another popular model of estimating information asymmetry is based on Easley et al. (1996). In their model, the probability of information-based trading (PIN) for a given stock is estimated based on the actual order flow. In spite of many appealing features, the PIN measure does not exhibit significant cross-sectional variation over time (Easley et al., 2002). In addition, because PINs require a fairly lengthy estimation period, we believe the spread decomposition models are more appropriate in our analysis.

The *GH* model is described as the following:

$$\Delta P_t = c_0 \Delta D_t + c_1 \Delta D_t Vol_t + \lambda_0 D_t + \lambda_1 D_t Vol_t + e_t$$

where D_t is a Lee-Ready indication variable that equals 1 for buy orders and -1 for sell orders at time *t* (Lee and Ready, 1991). Vol_t is the volume traded at time *t*. e_t captures public information innovations and errors. The adverse selection component in this model is $2(\lambda_0 + \lambda_1 Vol_t)$, and inventory and order processing components are estimated as $2(c_0 + c_1 Vol_t)$. We use the average transaction volume ($\overline{Vol}$) for stock *i* to obtain the adverse selection costs as a percentage of the bid and ask spread:

$$\frac{2(\lambda_0 + \lambda_1 \overline{Vol})}{2(c_0 + c_1 \overline{Vol}) + 2(\lambda_0 + \lambda_1 \overline{Vol})} \times 100$$

To supplement our adverse selection cost models, we also measure changes in information asymmetry by using changes in price impacts. Many studies (Huang and Stoll, 1996; Eleswarapu et al., 2004) have employed percentage price impact *(PPI)* to measure information asymmetry. We define price impact using the following equation:

$$\textit{Percentage Price Impact (PPI)} = 2 \times D_{it} \times (V_{i,t+30} - M_{it}) / M_{it}$$

where M_{it} is the midpoint of bid and ask prices for firm *i* at time *t*. D_{it} is a Lee-Ready indication variable that equals 1 for buy orders and -1 for sell orders. $V_{i,t+30}$ is the post-trade quote midpoint of the stock 30 minutes after the trade. To control for the arrival of new information during *t* and *t*+30, we weight the percentage price impact by the inverse number of trades during the period.

B. Measures of Earnings Management

In order to examine the changes in earnings management surrounding the guidance cessation event, we employ three measures of discretionary accruals based on the cash flow

statement. In the first measure denoted as *DACC*, we calculate discretionary accruals using the modified cross-sectional Jones model (Jones, 1991; Dechow et al., 1995; Cohen et al., 2008). Earnings management is often measured based on the measures presented in Jones (1991). In the Jones model, total accruals are regressed on a set of independent variables to control for the effect of changes in a firm's economic conditions on nondiscretionary accruals, thus letting the error term capture the unobservable extent of discretionary accruals. Inferences drawn from the hypotheses related to earnings management hinge critically on estimating discretionary accruals accurately. After comparing several models of accruals management, Dechow et al. (1995) conclude that a "modified Jones model" provides the most power for detecting earnings management. Therefore we adopt the widely used "modified Jones model" approach as our first measure of earnings management (Kothari et al., 2005; Davidson et al., 2007; Cornett et al., 2008; Gong et al., 2008). We estimate discretionary accruals in two steps. First, we estimate normal or nondiscretionary accruals using the modified Jones model.

$$TACC_{it} = \alpha_0(1/A_{i,t-1}) + \alpha_1 \Delta Sales_{it} + \alpha_2 PPE_{it} + \varepsilon_{it} \qquad (4)$$

where $TACC_{it}$ = ($IBC_{it} - CFO_{it}$)/ $A_{i,t-1}$; *IBC* is income before extraordinary items and *CFO* is the net cash flow from operating activities (*OANCF*) less cash flow from extraordinary items and discontinued operations (*XIDOC*); $A_{i,t-1}$ represents total assets (*AT*) for firm *i* at time *t-1*; $\Delta Sales_{it}$ is the change in revenues (*SALE*) from the preceding year and PPE_{it} is the gross value of property, plant and equipment (*PPEGT*), both deflated by $A_{i,t-1}$.

Discretional accruals are estimated for each industry and year using equation (4) and the change in accounts receivable is subtracted from the change in sales based on the modified Jones model as shown below.

$$DACC_{it} = TACC_{it} - [\hat{\alpha}_0(1/A_{i,t-1}) + \alpha_1(\Delta Sales_{it} - \Delta Rec_{it}) + \hat{\alpha}_2 PPE_{it}] \qquad (5)$$

where parameters, $\hat{\alpha}_0$, $\hat{\alpha}_1$, and $\hat{\alpha}_2$ are estimated from equation (4). ΔRec_{it} denotes changes in net receivable for firm *i* in year *t* deflated by $A_{i,t-1}$. The absolute value of discretionary accruals is our first measure of abnormal accruals (*DACC*). Higher values of *DACC* indicate more earnings management.[16] To control for industry-wide changes in economic conditions that affect total accruals while allowing the coefficients to vary across time (DeFond and Jiambalvo, 1994), we estimate the model for each industry based on the first two digits of the SIC code for each year.

In order to reconcile our results with recent earnings guidance studies, we also use two alternative earnings management measures (*ABAC* and *ABDD*) that are the same as those employed by Call et al. (2011). Ball and Shivakumar (2006) recommend nonlinear accrual models that incorporate the asymmetry in gain and loss recognition to estimate discretionary accruals. They show that nonlinear accrual models offer a substantial specification improvement over linear accrual models and help reduce measurement error in estimating abnormal accruals. The second measure, *ABAC*, is the absolute value of discretionary accruals based on the Jones (1991) model after controlling for economic losses as in Ball and Shivakumar (2006). We first estimate normal or nondiscretionary accruals using the following cross-sectional regression model annually for each industry based on the first two digits of the SIC code.

$$TACC_{it} = \beta_0+\beta_1\Delta Sales_{it}+\beta_2 PPE_{it}+\beta_3 Indadj\_CFO_{it}+\beta_4 dind_{it}+\beta_5(dind_{it}\times Indadj\_CFO_{it})+\varepsilon_{it}$$

where *Indadj_CFO* is cash flows from operations (*OANCF*) minus the median cash flows from operations for all firms in the same industry (based on the first two digits of the SIC code) in the same year. *dind* is a dummy variable set to one if *Indadj_CFO* is less than zero, and set to zero otherwise. All variables except *dind* are deflated by average total assets (*AT*). The absolute value

[16] The reason equation (4) is not directly used for the discretionary accruals estimation is to capture the extent to which a change in sales is attributed to aggressive recognition of questionable sales. The subtraction of ΔRec_{it} reflects the "modification" of the Jones model.

of the regression residuals (ε_{it}) is our measure of abnormal accruals termed *ABAC*. Higher values of *ABAC* indicate more earnings management.

The third measure, *ABDD*, is the discretionary accrual from the cross-sectional Dechow and Dichev (2002) model after controlling for economic losses as in Ball and Shivakumar (2006). We first estimate normal or nondiscretionary accruals using the following cross-sectional regression model annually for each industry based on the first two digits of the SIC code.

$$TACC_{it} = \beta_0+\beta_1 CFO_{i,t-1}+\beta_2 CFO_{it}+\beta_3 CFO_{i,t+1}+\beta_4 dind_{it}+\beta_5 (dind_{it} \times Indadj\_CFO_{it})+\varepsilon_{it}$$

The absolute value of the regression residuals (ε_{it}) is our measure of abnormal accruals termed *ABDD*. Higher values of *ABDD* indicate more earnings management.

In our measurement of earnings management, we use the absolute value of discretionary accruals as suggested in recent earnings management literature (Bergstresser and Philippon, 2006; Cohen et al., 2008; Cornett et al., 2008; Call et al., 2011). Earnings management may lead to large values of discretionary accruals, either negative or positive. Since our hypotheses do not predict any specific direction of earnings management, we use the absolute value of discretionary accruals to capture earnings management. However, an alternative view can be that earnings management is more likely to be one directional (that is, managing earnings either upward or downward in order to meet the target). Therefore, we augment our analysis using signed discretionary accruals in the robustness test section.

4. DATA AND DESCRIPTIVE STATISTICS

A. Data

Table 1 describes our sample construction process. For all firms listed in the Company Issued Guidelines (hereafter CIG) database from January 2002 to August 2011, we first identify

a sample of guidance stoppers by requiring: 1) the firm is incorporated in the United States; 2) the last appearance of the firm in CIG is between 2002 and June 2010, inclusive; 3) the sample firm is in CRSP, Compustat, IBES, and TAQ databases; 4) the earnings announcement dates are not missing for the post-event period, the event period, and three quarters leading to the event quarter in Compustat or IBES and the days between any adjacent announcement dates are not more than 150 days;[17] 5) there are no splits and no changes in ticker or the listing exchange during the sample period. The final number of firms from the CIG database which meets all of our selection criteria is 1,061.

[Table 1]

Our sample construction method is similar to Houston et al. (2010). However, we differ from Houston (2010) in that their sample included only persistent guiders as they require at least three quarterly forecasts in the last four quarters. As our research questions further address the association between the frequency of guidance and earnings management, we also include occasional guiders in our sample.[18]

Figure 1 depicts the time line. The event period q_0 refers to the quarter during which a firm provides its last quarterly earnings guidance. The quarter immediately before (after) the event period is defined as pre-event period q_{-1} (post-event period q_1).

The COMPUSTAT fiscal year end data before the last earnings guidance and CRSP database are used to calculate quarterly trading volume and size of the firms. The intraday data are obtained from TAQ. It includes prices of all trades and quotes time-stamped to the nearest second during the trading day. To eliminate possible data entry errors, we use criteria similar to

[17] The event period refers to the quarter during which a firm provided its last quarterly earnings guidance.
[18] Other notable differences in the sample between Houston et al. (2010) and our study is that since Houston et al. (2010) examine the analysts' reaction to guidance cessation, their sample size is much smaller (222 guidance stoppers) compared to ours (1,061 guidance stoppers) due to the requirement of having data on analysts. Also, Houston et al. (2010) cover a shorter time period (2002Q1-2005Q1) compared to our sample period (2002-June,2010).

those in Bessembinder (1999) and Eleswarapu et al. (2004). We use only the best bid or the best ask eligible quotes originated from the primary listing exchange. We exclude all "after hours" trades, as well as the opening transaction prices. All quotes with missing values, with negative and zero spreads, or with quoted spreads greater than $5, or if the change in the quote midpoint since the prior trade exceeds 50% or $2 are also eliminated. Trades and quotes involving changes greater than 10% in absolute value are excluded. We also exclude quotes associated with trading halts and designated order imbalances.

B. Descriptive Statistics

Table 2 shows that, among the firms that stopped providing earnings guidance, there are almost twice as many occasional guiders (695 firms that gave one or two quarterly earnings guidelines in the year prior to cessation) compared to persistent guiders (366 firms that provided at least three quarterly earnings guidelines in the year prior to cessation). The firms listed on NYSE (623 firms) are more likely to stop giving guidance than those listed on Nasdaq (421 firms). The number of firms that stopped providing quarterly earnings guidance gradually declines from 195 in 2002 to 61 in 2009. Before the cessation of earnings guidance, many of these firms provide their last guidance in the fourth fiscal quarter. We see the highest number of firms (420 firms) in the fourth fiscal quarter compared to the lowest number of firms (197 firms) in the second fiscal quarter. This result is consistent with Houston et al. (2010), who show that firms tend to stop giving earnings guidance at the start of a new fiscal year.

[Table 2]

Table 3 reports descriptive statistics during the event quarter q_0 for the guidance stoppers and the matched group of non-guiders and guidance maintainers. The average share prices are

$21.94 for guidance stoppers, $21.54 for non-guiders, and $20.85 for guidance maintainers. The average market capitalization is $4.46 billion for guidance stoppers. This is smaller than the mean $5.5 billion market capitalization of 222 guidance stoppers in Houston et al. (2010). This difference in sample size (1,016 in our study versus 222 in Houston et al., 2010) and average firm size ($4.46 billion in our study versus $5.5 billion in Houston et al., 2010) probably arises because the study of Houston et al. examines the analyst-based measures, which limits the sample size and biases the sample towards larger firms. The average number of trades during the quarter amounts to 236.692 million for guidance stoppers, 227.620 million for non-guiders, and 238.745 million for guidance maintainers. Daily share volume averages about 89.8 million for guidance stoppers, 82.4 million for non-guiders, and 80.8 million for guidance maintainers. The intraday price volatility is 0.1580 for guidance stoppers, 0.1622 for non-guiders, and 0.1578 for guidance maintainers. Overall, our matching between the guidance stoppers and their counterparts (non-guiders or guidance maintainers) shows that these different groups of firms have similar stock characteristics.

[Table 3]

5. GUIDANCE CESSATION AND INFORMATION ASYMMETRY

A. Univariate Analysis of Liquidity and Information Asymmetry

Liquidity is an important determinant of the cost of capital for firms. A more liquid security requires lower returns than a less liquid security (with similar risk) does. Liquidity declines when information asymmetry worsens. Market makers widen bid and ask spread to compensate for the risk of trading against informed traders. We examine changes in liquidity and

information asymmetry before and after quarterly earnings guidance cessation for guidance stoppers and for matched group of non-guiders and guidance maintainers.

[Table 4]

Table 4 reports changes in liquidity and information asymmetry measures. First, we examine the changes in bid and ask spreads for the pre- versus the post-cessation quarters. For guidance stoppers, we observe a significant reduction in both quoted and effective bid and ask spreads during the post-cessation quarter relative to the pre-cessation quarter, which indicates trading cost declines after earnings guidance cessation. For example, the quoted spread decreases from 5.645 cents during the pre-cessation quarter to 4.941 cents during the post-cessation quarter. The reduction of 0.705 cents is statistically significant at 1% level. Similarly, the effective spread declines from 5.096 cents to 4.200 cents and the reduction of 0.897 cents is also statistically significant at 1% level for guidance stoppers. On the contrary, there are no significant changes in bid and ask spreads for either non-guiders or guidance maintainers. Because our matching procedure ensures that guidance stoppers have similar stock characteristics with either non-guiders or guidance maintainers, we compare the changes in spreads of guidance stoppers (δ_{GS}) against those of their counterparts (δ_{NG} and δ_{GM}). The difference between δ_{GS} and δ_{NG}, and between δ_{GS} and δ_{GM}, yields δ_1 and δ_2, which are the differences in the changes in information asymmetry between the guidance cessation firms and the matched non-guiding firms and guidance maintaining firms, respectively. δ_1 is -0.696 and -0.901 for changes in quoted spreads and effective spreads, respectively. These differences in the changes are statistically significant at conventional level. Similarly, δ_2 is -0.748 and -1.005 for changes in quoted spreads and effective spreads, respectively, and are also statistically significant. As the declines in bid and ask spreads correspond to increases in liquidity, results so far do not support the "*information*

transparency" hypothesis that predicts a decrease in liquidity related to the earnings guidance cessation event.

We further examine the changes in information asymmetry during the pre- and post-cessation quarters in Table 4. For guidance stoppers, there are significant reductions in all three information asymmetry measures. For example, *PPI* declines from 0.145 during pre-cessation quarter to 0.138 during post-cessation quarter. The sizes of the reductions are 0.010 and 0.026 for *LSB* and *GH* based adverse selection cost measures, respectively. On the contrary, there are no significant reductions for matching non-guiders or guidance maintainers during the post-cessation quarter relative to the pre-cessation quarter. The non-guiders have the highest level of information asymmetry among all three groups, possibly due to their lack of corporate disclosure. We then compare the changes in information asymmetry of guidance stoppers (δ_{GS}) against those of their counterparts (δ_{NG} and δ_{GM}). δ_1 (=δ_{GS} - δ_{NG}) is -0.012, -0.012, and -0.025 for changes in *PPI*, *LSB*, and *GH*, respectively. These differences in the changes are statistically significant at conventional level. Similarly, δ_2 (=δ_{GS} - δ_{GM}) is -0.010, -0.006, and -0.030 for changes in *PPI*, *LSB*, and *GH*, respectively, and also statistically significant. We find that even after controlling for the changes in information asymmetry of their matched firms, there are significant reductions in information asymmetry for guidance stoppers. Insofar as the information asymmetry change is associated with changes in firm's information environment, these results do not support the "*information transparency*" hypothesis.

In summary, conditioned on the guidance cessation event, we observe significant trading cost reduction, which translates into increased liquidity. Using price impact and spread decomposition models, we suspect that the source for enhanced liquidity comes from the reduction in information asymmetry.

B. Multivariate Analysis of Information Asymmetry

As another way of testing the effect of quarterly earnings guidance cessation on information asymmetry, we examine the change in information asymmetry in a regression framework. Studies show that information asymmetry is related to trading volume, firm size, and the number of analysts following (Easley et al., 1996; Kim and Verrecchia, 1994; Eleswarapu et al., 2004). Larger firms and stocks with greater trading volume and with more number of analysts following are associated with lower information asymmetry. Therefore, we include in our right hand side variables the log of trading volume (*Lntrdvol*), log of firm size (*Lnmktsz*), and the number of analysts following (*Analfoll*) and propose the following regression model.

$$IA_{it} = \beta_0 + \beta_1 Post_i + \beta_2 Lntrdvol_{it} + \beta_3 Lnmktsz_{it} + \beta_4 Analfoll_{it} + \varepsilon_{it} \quad (6)$$

where IA_{it} measures information costs for security *i* over quarter *t*. *Post* equals 1 for the post-event quarter and 0 for the pre-event quarter, in which the event quarter is the quarter of the last earnings guidance for guidance stoppers as shown in Figure 1. The coefficient for *Post* dummy, β_1, measures the change in information asymmetry that is related to the guidance cessation event. The hypothesis that adverse selection costs increase (decrease) after guidance cessation predicts a positive (negative) β_1.

[Table 5]

Table 5 shows the multivariate analysis results for information asymmetry around earnings guidance cessation. Panel A uses percentage price impact as the proxy for the level of information asymmetry. Panel B(C) uses *LSB* (*GH*) based measures of adverse selection cost to measure the level of information asymmetry. In Panel A, the sample of guidance stoppers shows that the coefficient for *Post* dummy, β_1, is -0.0097, statistically significant at the 10 percent level.

Using spread decomposition models, the coefficient β_1 is -0.0227 and -0.0371 for models based on *LSB* and *GH*, respectively. These coefficients are statistically significant at the 1 percent level. For the matched sample of non-guiders and guidance maintainers, the coefficient β_1 is 0.0018 and -0.0046, respectively, both statistically insignificant when *PPI* is the dependent variable. Similarly, using spread decomposition models in Panels B and C, the coefficient β_1 is statistically insignificant for both matched non-guiders and guidance maintainers. Therefore, whereas guidance stoppers experience a significant drop in the level of information asymmetry after guidance cessation, such a drop is not evident in our matched firm of non-guiders and guidance maintainers during the same period.

For the control variables of information asymmetry for guidance stoppers, the coefficient for trading volume is -0.0116, -0.0106, and -0.0208, when the dependent variable is *PPI*, *LSB*, and *GH*, respectively. These coefficients are all statistically significant at the 1 percent level. The negative coefficient for trading volume is as expected since higher trading volume is associated with lower information asymmetry. And using *GH* based model for guidance stoppers, we find that coefficients for firm size and the number of analysts following are negative and statistically significant as expected.

In conclusion, our results show a statistically significant decline in information asymmetry measures due to the quarterly earnings guidance cessation for guidance stoppers. So an interesting question arises: Why has stopping earnings guidance enhanced the information environment in the trading of the underlying firm? We next explore and test the "*numbers game*" hypothesis using various measures of earnings management.

6. GUIDANCE CESSATION AND EARNINGS MANAGEMENT

Healy and Wahlen (1999) define earnings management as the alteration of firms' reported economic performance by insiders to either "mislead some stakeholders" or to "influence contractual outcomes." The incentives to misrepresent firm performance through earnings management arise, in part, from a conflict of interest between firms' insiders and outsiders. Managers and controlling owners have incentives to manage reported earnings in order to mask true firm performance and to conceal their private control benefits from outsiders. Therefore, earnings management is practiced when insiders use their financial reporting discretion to overstate earnings and conceal unfavorable earnings realizations (e.g., losses) that would prompt outsider interference. Insiders can also use their accounting discretion to create reserves for future periods by understating earnings in years of good performance, making reported earnings less variable than the firm's actual economic performance.

The incentive to manage earnings can arise not only from the pressure to meet market expectation, but also from the pressure to meet its own forecast whilst trying to influence the market expectation. Managers can either provide investors with lower guidance numbers instead of the true expected earnings, or manage reported earnings to meet their guidance numbers. In their analyses of UK firms, Athanasakou et al. (2011) conjecture that earnings guidance may serve as a tool in the game between the management and stock market participants over the communication of earnings numbers. Also, numerous anecdotal evidence as noted in the Introduction supports the view that firms providing earnings guidance is a sign that the company is engaging in a numbers game. In this section, we test the "*numbers game*" hypothesis and investigate whether stopping earnings guidance decreases the level of earnings management.

[Table 6]

Table 6 reports changes in earnings management for guidance stoppers, non-guiders, and guidance maintainers. We use three alternative measures of earnings management, as explained in Section 3. For guidance stoppers, *DACC* decreases from 0.0829 during pre-cessation period to 0.0706 during post-cessation period. The reduction is -0.0124, statistically significant at the 1 percent level. Similarly, the reduction is -0.0085 using *ABAC*, statistically significant at the 5 percent level, and -0.0055 using *ABDD*, statistically significant at the 10 percent level. For non-guiders, *DACC* increases by 0.0043 while the other two measures decline. But the changes are statistically insignificant. We then compare the difference in changes of earnings management between guidance stoppers and non-guiders. We find that the difference-in-difference is -0.0167 using *DACC*, statistically significant at the 1 percent level, and -0.0026 using *ABDD*, statistically significant at the 10 percent level. The difference-in-difference using *ABAC* is also negative but statistically insignificant at conventional level. For guidance maintainers, *ABAC* increases slightly by 0.0001 while the other two measures decline. But as is the case with non-guiders, these changes are all statistically insignificant. We find that the difference-in-difference between guidance stoppers and guidance maintainers is -0.0056 using *DACC* and -0.0023 using *ABDD*, both statistically significant at the 10 percent level, and -0.0086 using *ABAC*, statistically significant at the 5 percent level. In summary, we find statistically significant reductions in earnings management for firms ceasing quarterly earnings guidance.

We examine and contrast among three types of firms: guidance stoppers, non-guiders, and guidance maintainers. In a study which compares the level of earnings management between guiders and non-guiders, Call et al. (2011) find that firms which provide earnings guidance show lower absolute abnormal accruals relative to firms which do not provide earnings guidance. In their study, the average *ABAC* is 0.1109 for non-guiders, much higher relative to the 0.0555 for

guiders. We find similar results that show 0.0922 for the average *ABAC* of non-guiders and 0.0681 for guidance maintainers. Using the *ABDD* measure, Call et al. (2011) find an average of 0.0917or non-guiders, more than double the average of 0.0436 for guiders. The corresponding averages are 0.0798 for non-guiders and 0.0653 for guidance maintainers in our study. Again, our results are very close to those of Call et al. (2011). The new finding in our study is that although guidance firms show lower degree of earnings management, there is a further reduction in the level of earnings management when these firms cease providing earnings guidance.

Next, we conduct multivariate analyses of the changes in earnings management for the three types of firms to further control for firm specific factors. Becker et al. (1998) empirically find evidence that firm size and leverage are associated with discretionary accruals. Firm size can affect the usage of discretionary accruals because larger firms are more closely monitored by analysts and investors and therefore less likely to engage in earnings management. Leverage can affect discretionary accruals in different ways. On one hand, high leverage is associated with closeness to the violation of debt covenants (Press and Weintrop, 1990) and debt covenant violation is associated with discretionary accruals (DeFond and Jiambalvo, 1994). Therefore, to avoid debt covenant violation, managers of highly leveraged firms have incentives to make income-increasing discretionary accruals. Additionally, high leverage can lead to greater probability of financial distress, and therefore, distressed firms can have large negative accruals stemming from contractual renegotiations that provide incentives to reduce earnings (DeAngelo et al., 1994). The possible effect of relative performance on discretionary accruals is motivated by the study of Fudenberg and Tirole (1995) and DeFond and Park (1997). Fudenberg and Tirole (1995) argue that managers have incentives to smooth earnings in consideration of both current and future relative performance because of concerns about job security. DeFond and Park (1997)

empirically show that managers of firms with poor current performance relative to the industry but with good expected performance relative to the industry next period have an incentive to make income-increasing discretionary accruals in order to reduce the threat of being dismissed. On the other hand, managers of firms with good performance relative to the industry but with poor expected performance relative to the industry next period have an incentive to make income decreasing discretionary accruals in order to reduce the threat of being dismissed next period. Previous studies such as Defond and Park (1997) and Lobo and Zhou (2001) include the aforementioned factors as control variables of discretionary accruals.

Our regression equation is:

$$DACC = \alpha_0 + \alpha_1 Post + \alpha_2 Lnmktsz + \alpha_3 Leverage + \alpha_4 CRP + \alpha_5 FRP + \varepsilon \qquad (7)$$

where *DACC* is the absolute value of discretionary accruals defined as the difference between actual accruals and accruals predicted from the modified Jones model as a percent of total assets. In separate regressions, we use *ABAC* and *ABDD* in place of *DACC* as dependent variables to ensure the robustness of our results. *Post* is a dummy variable with 1 for post-cessation period. Four additional variables are natural logarithm of firm size (*Lnmktsz*), leverage based on the ratio of total liabilities to total assets (*Leverage*), current relative performance (*CRP*) based on current annual net income deflated by beginning total assets, and future relative performance (*FRP*) based on next year net income deflated by beginning total assets.

Table 6, Panel B reports the results for the multivariate analyses. When the dependent variable is *DACC*, the coefficient for *Post* is -0.0106 for guidance stoppers, statistically significant at the 5 percent level. After guidance cessation, the level of earnings management proxied by *DACC* declines by more than 1 percent for guidance stoppers. During the same time period, there are no statistically significant changes in the level of earnings management proxied

by *DACC* for non-guiders and guidance maintainers. The results are similar when the dependent variable is *ABAC* or *ABDD*. The level of earnings management proxied by *ABAC (ABDD)* declines by about 0.85 (0.43) percent after guidance cessation for guidance stoppers. However, the corresponding reductions in *ABAC* and *ABDD* are both statistically insignificant for the matched non-guiders and guidance maintainers. For control variables, the coefficient of the firm size, *Lnmktsz*, is negative and statistically significant at the 1 percent level in all regressions. Consistent with the result of Lobo and Zhou (2001), this result shows that larger firms engage in less earnings management. This is because larger firms are monitored more closely by a large number of analysts and investors. The coefficients for *Leverage* are -0.0476, -0.0265, and -0.0217 for guidance stoppers when the dependent variables are *DACC*, *ABAC*, and *ABDD*, respectively. Although the coefficients of leverage for the non-guidance firms and guidance maintainers are mostly insignificant, the negative coefficients of leverage for guidance stoppers are consistent with previous studies of Defond and Park (1997) and Lobo and Zhou (2001). The coefficient of *CRP* is negative and statistically significant at the 1 percent level using all three earnings management measures for guidance stoppers. The coefficients of *FRP* are all positive. These results are also consistent with DeFond and Park (1997) and Lobo and Zhou (2001). They show that firms with low current relative earnings but high future relative earnings are more likely to increase discretionary accruals.

In summary, results show that using various measures to proxy for the level of earnings management, the level of earnings management declines after guidance cessation for guidance stoppers, but not for the matched sample of non-guiders and guidance maintainers. These results are supportive of the "*numbers game*" hypothesis, and hint at the possibility that the reduction in information asymmetry is caused by the changes in the firm's earnings management practice.

7. TYPES OF GUIDANCE STOPPERS

Studies show that firms missing the expected earnings are penalized by the market. For example, Bartov et al. (2002) and Skinner and Sloan (2002) show evidence that the market reacts strongly negative to firms missing the earnings target. Graham et al. (2005) provide evidence based on a survey result that managers perceive large penalties to missing earnings target.[19] In this regard, earnings guidance can be used as a way of preventing those penalties from missing earnings target. Cotter et al. (2006) show that when companies issue earnings guidance, they tend to guide analysts to earnings target that the firm can meet or beat. With respect to the frequency of guidance, Cheng et al. (2005) find that persistent guiders meet or beat analyst consensus more frequently compared to occasional guiders. These studies suggest that firms that guide regularly may perceive higher pressure to alter their reported performance through earnings management. Thus, we conjecture that the level of earnings management is higher for persistent guiders compared to that of occasional guiders. Furthermore, because there is a positive relationship between earnings management and information asymmetry (Dye, 1988; Trueman and Titman, 1988; Richardson, 2000), we conjecture that the change in information asymmetry after guidance cessation may be different between persistent guiders and occasional guiders. We then explore the "*numbers game*" hypothesis in greater depth in terms of whether the changes in information asymmetry are actually associated with the level of earnings management prior to guidance cessation.

A. Guider Types and Changes in Information Asymmetry

[19] As an anecdotal evidence, General Electric (GE) chief Jeff Immelt was criticized by his predecessor, Jack Welch, on CNBC in April of 2008 as "having a credibility issue" after GE's recent earnings miss. The full content can be found at http://www.cnbc.com/id/24158810/Jack_Welch_GE_CEO_Immelt_Has_Credibility_Issue.

We first examine guider types and the changes in information asymmetry and report the results in Table 7, Panel A. For persistent guiders, we observe a significant reduction in information asymmetry during the post-cessation quarter relative to the pre-cessation quarter. For example, δ_{PGS} is -0.015 and -0.013 for *PPI* and *LSB*, respectively, both statistically significant at the 5 percent level. The reduction in *GH* based measure is -0.029, statistically significant at the 1 percent level. For occasional guiders, we also observe a reduction in the level of information asymmetry, but some of the numbers lack statistical significance. Specifically, δ_{OGS} is negative but insignificant for *PPI*, negative and significant at the 10 percent level for *LSB*, and negative and significant at the 1 percent level for *GH* based measure. We measure the difference between δ_{PGS} and δ_{OGS}, and it is negative and statistically significant using percentage price impact but not the other two information asymmetry measures. It seems that after guidance cessation, persistent guiders experience greater reduction in information asymmetry relative to occasional guiders. This may be because persistent guiders and occasional guiders show different levels of changes in their earnings management practice surrounding guidance cessation. We examine this possibility in the next section.

[Table 7]

B. Guider Types and Changes in Earnings Management

As we find a reduction in information asymmetry following guidance cessation for persistent guiders, but less so for occasional guiders, we explore whether there is any difference in the magnitude of earnings management for these two types of firms both before and after guidance cessation.

Panel B in Table 7 reports the univariate analyses of earnings management and guider types. For persistent guiders, the levels of earnings management proxied by all three measures show significant declines after guidance cessation. For example, *DACC* decreases from 0.0954 to 0.0668 while *ABAC* decreases from 0.0777 to 0.0603. These reductions are statistically significant at the 1 percent level. However, for occasional guiders, we do not observe any significant reductions in earnings management measures. *DACC* declines only slightly from 0.0769 to 0.0724, *ABAC* from 0.0718 to 0.0677, and *ABDD* from 0.0640 to 0.0613. None of these changes are statistically significant. When we compare the changes in earnings management between the two types of guidance stoppers, we find that the reductions are significantly higher for persistent guiders than occasional guiders. For example, the difference in the reduction of *DACC* is -0.0242, statistically significant at the 1 percent level. Results imply that the decrease in the degree of earnings management surrounding guidance cessation which was shown in Table 6 is mainly driven by the persistent guiders.

We verify our findings using a multivariate analyses framework as shown previously in equation (7). Results in Table 8 show that for persistent guiders, the coefficients of dummy variable *Post* is negative and statistically significant in all three different measures of earnings management. For example, when persistent guiders stop providing earnings guidance, the *DACC* measure declines by 2.82 percent after controlling for firm size, leverage, and firm performance variables. In contrast, the coefficient of *Post* for occasional guiders is negative but statistically insignificant. The coefficients for the control variables are consistent with those reported in the literature (DeFond and Park, 1997). Leverage and current relative performance are negatively related to discretionary accruals, and future relative performance is positively related to discretionary accruals.

[Table 8]

Therefore, results indicate that the higher level of earnings management for persistent guiders can be the cause for the reduction in information asymmetry after guidance cessation. This leads to the following conjecture that the level of earnings management during the pre-cessation period will be positively correlated with the reduction in information asymmetry. We examine this possible link between information asymmetry and earnings management in the next section.

C. Information Asymmetry and Earnings Management

We investigate the "*numbers game*" hypothesis further by testing whether the change in information asymmetry due to guidance cessation is positively related to the extent of earnings management prior to guidance cessation. Previous research (for example, Dye, 1988; Trueman and Titman, 1988; Richardson, 2000) demonstrates that firms pursuing aggressive earnings management have a higher degree of information asymmetry. We conjecture that among firms that stopped providing guidance, those with higher level of earnings management before guidance cessation are likely to bring about a larger reduction in information asymmetry. To model the relationship between changes in the degree of information asymmetry and the level of earnings management, we use the following equation:

$$\delta_G = IA_{post} - IA_{pre} = \gamma_0 + \gamma_1 DACC + \gamma_2 Lntrdvol + \gamma_3 Lnmktsz + \gamma_4 Analfoll + \varepsilon \qquad (8)$$

As discussed earlier, IA_{pre} (IA_{post}) is the level of information asymmetry during the pre- (post-) cessation quarter. The difference in IA_{post} and IA_{pre} yields δ_G, which measures the changes in information asymmetry surrounding the guidance cessation event. We measure the level of earnings management using three measures of absolute discretionary accruals (*DACC, ABAC,*

and *ABDD*) for the fiscal year before guidance cessation. If the absolute discretionary accruals are larger before the earnings guidance cessation, we would expect a larger reduction in information asymmetry, implying a negative γ_1. The control variables are the same as those used in equation (6).

[Table 9]

Table 9 reports the results of the regression of information asymmetry on discretionary accruals. For both the overall sample and occasional guiders, in Panel A, B, and C of Table 9, the coefficients for discretionary accruals, γ_1, are all statistically insignificant. However, for persistent guiders, the coefficients for discretionary accruals are positive and statistically significant in all but one case which uses *ABDD* as the measure of earnings management and *GH* based measure of information asymmetry. In Panel A and B, using percentage price impact as a measure of information asymmetry, the coefficient is -0.0826 for *DACC* and -0.1355 for *ABAC*, both statistically significant at the 10 percent level for persistent guiders. In Panel C, using *ABDD* as the measure of discretionary accruals, the coefficient is -0.2115, statistically significant at the 5 percent level. We observe a similar relationship for persistent guiders when we use *LSB* and *GH* based measures of information asymmetry. Therefore, results from Table 9 show that for persistent guiders, the higher the degree of earnings management prior to guidance cessation, the greater is the information asymmetry reduction after guidance cessation. This is in support of our "*numbers game*" hypothesis which states that the decrease in information asymmetry arising from guidance cessation is due to the firm engaging in earnings management before it stops providing guidance. The fact that we only observe this relationship for persistent guiders is possibly due to the notion that persistent guiders tend to be more shortsighted and therefore, may

engage in more extensive earnings management to smooth earnings prior to guidance cessation (Cheng et al., 2005).

8. ROBUSTNESS CHECKS

Although the absolute discretionary accruals measure is widely used to proxy for earnings management activity (Bergstresser and Philippon, 2006; Cornett et al., 2008), this measure can suffer from the concern that it only captures earnings smoothing behavior, and does not reflect the direction of earnings management.[20] When investigating the earnings management in the pre- and post-Sarbanes Oxley periods, Cohen et al. (2008) also examine both positive and negative discretionary accruals in addition to absolute discretionary accruals. Therefore, in this section, we augment our analysis using signed discretionary accruals and present the results in Table 10.

We first label the direction of discretionary accruals based on the pre-cessation period. If the level of earnings management declines after guidance cessation, we would expect a decrease in positive discretionary accruals. Similarly, we expect negative discretionary accruals to become less negative. In Panel A of Table 10, we observe significant reductions in earnings management for guidance stoppers using signed discretionary accruals. For example, the positive *DACC* declines from 0.0748 during the pre-cessation period to -0.0090 during post-cessation period. The reduction amounts to 0.0838 and is statistically significant at the 1 percent level. The negative *DACC* changes from -0.0905 during the pre-cessation period to -0.0345 during post-cessation period. We observe a similar pattern when we use *ABAC* and *ABDD* as measures of earnings management. Results show that the positive discretionary accruals turn negative after

[20] We thank an anonymous reviewer for suggesting this alternative measure.

guidance cessation whereas the negative discretionary accruals become less negative after guidance cessation.[21]

We further examine the discretionary accruals with the same sign during both the pre- and post-cessation periods. This analysis is conducted based on the concern that if the signs for discretionary accruals are based only on the pre-cessation period, the post-cessation discretionary accruals with large absolute values but with opposite signs can bias the results. Results for the signed discretionary accruals with the restriction of having the same sign during both the pre- and post-cessation periods are presented in Panel B of Table 10. The positive *DACC* declines from 0.0716 during the pre-cessation period to 0.0532 during post-cessation period. The reduction is -0.0185, statistically significant at the 1 percent level. However, the negative *DACC* only changes slightly from -0.0896 during the pre-cessation period to -0.0825 during post-cessation period. This result implies that firms become less aggressive in managing earnings upward after guidance cessation. These results are consistent with what we find using absolute discretionary accruals and provide further support to the "*numbers game*" hypothesis.

Finally we examine the relationship between the change in information asymmetry and earnings management behavior by using signed discretionary accruals and present the results in Table 10, Panel C. The regression framework remains the same as in equation (8) except that we use signed discretionary accruals in place of absolute discretionary accruals. For brevity, we report only the results for using *DACC* as the earnings announcement measures. Results are qualitatively similar if we use *ABAC* and *ABDD* as measures of earnings management. In Panel C, we find that the coefficients for positive discretionary accruals are all negative and statistically significant for the entire sample of guidance stoppers and for the subsample of

[21] The mechanical reversal of earnings management is less of a concern since the post-cessation period is not directly adjacent to the pre-event period. That is, having one year (the guidance cessation year) in-between the pre- and post-cessation periods mitigates the concern of reversal in earnings management. (Dechow et al., 2012)

persistent guiders. For example, when using the *PPI* based information asymmetry measure as the dependent variable, the coefficient for positive discretionary accruals is -0.1572, statistically significant at the 1 percent level. The negative coefficient shows that the pre-cessation quarter degree of earnings management is positively correlated with the degree of reduction in information asymmetry. Cohen et al. (2008) find, using positive discretionary accruals, a positive relationship between earnings management and the percentage of compensation derived from option grants and other unexercised options and stock ownership. They argue that option compensation provides managers with incentives to manipulate earnings upwards. We show that earnings guidance, especially for firms which provided earnings guidance on a persistent basis, has a similar effect in inducing the myopic behavior of managers as evidenced through the practice of earnings management.

When using only the negative discretionary accruals as an explanatory variable, we fail to find a consistently significant relationship between changes in information asymmetry and negative *DACC* for the whole sample of guidance stoppers and for subsamples of guidance stoppers. It seems that managers are less likely to manage earnings downward in order to meet their earnings targets.

In conclusion, the results using signed discretionary accruals provide further support for the positive association between pre-cessation earnings management and reductions in the level of information asymmetry. Our evidence supports the "*numbers game*" hypothesis that guidance cessation results in reducing the incentives of managers to manage earnings and this has an effect of lowering the level of information asymmetry for these firms.

9. SUMMARY AND CONCLUSIONS

We conduct a detailed analysis of the liquidity and information asymmetry effects of stopping earnings guidance, and provide evidence on whether stopping quarterly earnings guidance leads to changes in the information environment of the firm. We study a sample of 1,061 firms that stopped providing guidance during 2002-2011. We show that liquidity increases and information asymmetry declines significantly for persistent guiders following the cessation of earnings guidance. We further explore the possible sources of improvement in liquidity and information environment associated with guidance cessation. Without the need of providing guidance to the public on a quarterly basis, firms can have less motivation to engage in earnings management to meet or beat their own targets. To this end, our empirical results show that the decline in the magnitude of earnings management is higher for persistent guiders. Further, the results provide that information asymmetry reductions are positively related to the magnitude of discretionary accruals before earnings guidance cessation for persistent guiders. Therefore, our results are in agreement with the notion that reductions in information asymmetry are driven, at least in part, by change in earnings management practices for persistent guiders. As previous studies have found that policies such as stock option compensation and new stock issue motivate managers to behave myopically, we add to this list that earnings guidance also contributes to firm's myopic behavior, as evidenced through the practice of earnings management, and that stopping the practice of earnings guidance can improve the firm's information environment.

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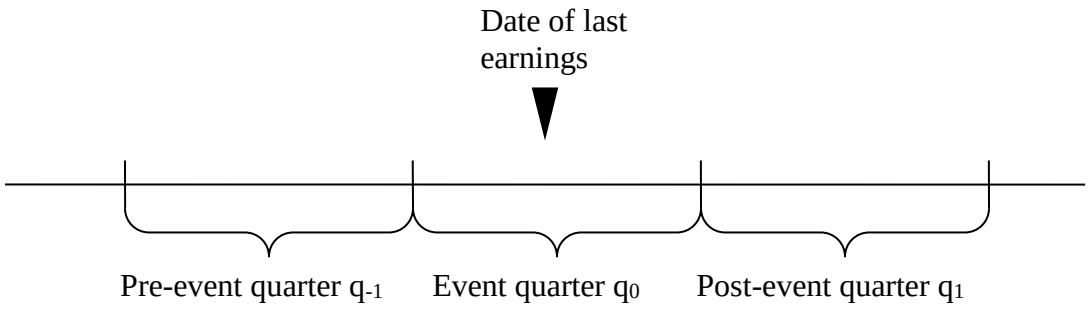

Figure 1 Time Line for the Periods of Interest.

The event period q_0 refers to the quarter during which a firm provides its last quarterly earnings guidance. The quarter immediately before (after) the event period is defined as pre-event (post-event) period. As indicated by the triangle, the event period q_0 contains the last earnings guidance date.

Table 1 Sample Construction

For all firms in Company Issued Guidelines (hereafter CIG) database from 2002 to August 2011, we first identify a sample of guidance stoppers by requiring: 1) the firm is incorporated in the United States; 2) the last appearance of the firm in CIG is between 2002 and June 2010 inclusive; 3) the sample firm is in CRSP, Compustat, IBES, and TAQ databases; 4) the earnings announcement dates are not missing for the post-event period, the event period, and three quarters immediately before the event period in Compustat and the days between any adjacent announcement dates are not more than 150 days; 5) there are no splits and no changes in ticker or the listing exchange during the sample period. The final number of firms from the CIG database which met all of our selection criteria is 1,061.

Database	Procedures	Number of Firms
CIG	There are at least two management quarterly forecasts in the CIG database for a firm incorporated in the United States and the last appearance of the firm in CIG is between 2002 and June, 2010.	1,820
CRSP, Compustat, IBES	Exclude firms which are not in CRSP, Compustat, or IBES database.	194
Compustat, IBES	Exclude firms which have missing earnings announcement dates.	266
CRSP	Exclude firms with splits during the event period or changes in either listing exchange or ticker.	102
TAQ	Exclude firms which are not in TAQ database	197
	Total	1,061

Table 2 Breakdown of Sample Firms by Various Measures

For all firms listed in the Company Issued Guidelines (hereafter CIG) database from 2002 to August 2011, we first identify a sample of guidance stoppers by requiring: 1) the firm is incorporated in the United States; 2) the last appearance of the firm in CIG is between 2002 and June 2010 inclusive; 3) the sample firm is in CRSP, Compustat, IBES, and TAQ databases; 4) the earnings announcement dates are not missing for the post-event period, the event period, and three quarters immediately before the event period in Compustat and the days between any adjacent announcement dates are not more than 150 days; 5) there are no splits and no changes in ticker or the listing exchange during the sample period. The frequency of quarterly guidance refers to number of guidance firms provided in the past year leading to the stopping of earnings guidance.

Panel A: Guidance Frequency (Persistent versus Occasional Guiders)

Frequency of providing guidance	Number of Firms	
Exactly four quarterly guidance	181	
Exactly three quarterly guidance	185	
Persistent Guidance Providers		366
Exactly two quarterly guidance	285	
Exactly one quarterly guidance	410	
Occasional Guidance Providers		695
Total Number of Firms		1,061

Panel B: Distribution of Stoppers by Year, Quarter, and Exchange

Calendar year	Number of firms	Fiscal quarter (last guidance provided)	Number of firms	Listing exchange	Number of firms
2002	195	Q1	228	NYSE	623
2003	192	Q2	197	AMEX	17
2004	167	Q3	216	NASDAQ	421
2005	131	Q4	420		
2006	122				
2007	86				
2008	72				
2009	61				
2010*	35				
Total Firms	1,061		1,061		1,061

*: The sample period stops at June, 2010.

Table 3 Descriptive Statistics for Guidance Stoppers, Non-Guiders, and Guidance Maintainers

This table reports the descriptive statistics for our sample of guidance stoppers and their matched sample of non-guiders and guidance maintainers. Average price is the average daily price for the quarter computed from CRSP. Market cap is market capitalization reported for the fiscal year before earnings guidance cessation. Number of trades is the average number of trades for the quarter from TAQ. Daily share volume is the average daily number of shares traded for the quarter from CRSP. Price volatility is intraday trade to trade price volatility.

Matching procedures

The comparison of changes in information asymmetry for guidance stoppers, guidance maintainers, and non-guiders entails the creation of matched samples. The universe of guidance maintainers comes from firms which are covered by CIG database and did not experience guidance cessation event. The universe of non-guiders is firms which are never covered by CIG database (Call et al., 2011). Both the initial samples of guidance maintainers and non-guiders are also subject to surviving the sample selection criteria of guidance cessation firms as described in Section 4. Following Bessembinder (2003) and Huang and Stoll (1996), for each guidance stopper, we find a matched non-guider and a matched guidance maintainer based on share price, market capitalization, daily number of trades, daily dollar volume, and intraday return volatility. These five stock attributes are closely related to liquidity measures (for examples, see Demsetz, 1968; McInish and Wood, 1992; Lin, Sanger, and Booth, 1995). For each guidance stopper, we use the following equation to identify the comparable guidance maintainer and non-guider with the lowest composite deviation score (*CDS*):

$$CDS_i = \sum_{i=1}^{5}\left[\frac{X_i^{GS} - X_i^{M}}{(X_i^{GS} + X_i^{M})/2}\right]^2$$

where X_i represents one of the aforementioned five stock characteristics; *GS* refers to guidance stoppers; M refers to the control group of either non-guiders (*NG*) or guidance maintainers (*GM*). In order to minimize variability between our sample of guidance stoppers and matched firms, we limit the *CDS* to less than 1.5.

$$CDS_i = \sum_{i=1}^{5}\left[\frac{X_i^{GS} - X_i^{M}}{(X_i^{GS} + X_i^{M})/2}\right]^2$$

Variables	Guidance Stoppers	Non-Guiders	Guidance Maintainers
Average price	21.94	21.54	20.85
Market cap ($thousand)	4,456,838	4,178,524	4,380,698
Number of trades (thousand)	236,692	227,620	238,745
Daily share volume (thousand)	89,759	82,415	80,787
Price volatility	0.1580	0.1622	0.1578

Table 4 Change in Information Asymmetry for Guidance Stoppers, Non-Guiders, and Guidance Maintainers

This table reports changes information asymmetry measures surrounding guidance cessation quarters. The event period q_0 refers to the quarter during which a firm provides its last quarterly earnings guidance. We define Pre (Post) as the pre-event (post-event) quarter. δ_i is the change in liquidity or information asymmetry between pre-cessation quarter and post-cessation quarter and *i* represents GS(guidance stoppers), NG(non-guiders), or GM(guidance maintainers). Quoted spread is time weighted differences of best ask and best bid prices. Effective spread is value weighted difference of trade price and last quote midpoint. Percentage price impact *(PPI)* is calculated as follows:

$$PPI = 2 \times D_{it} \times (V_{i,t+30} - M_{it}) / M_{it}$$

where D_{it} is a Lee-Ready indication variable that equals 1 for buy orders and -1 for sell orders for firm *i* at time *t*. V_{t+30} is the post trade value of the security after 30 minutes. M_{it} is the midpoint of bid and ask prices. To control for the arrival of new information during *t* and *t*+30, we weight the percentage price impact by the inverse number of trades during the period. We use quoted midpoint as proxies for $V_{i,t+30}$. We estimate adverse selection costs using spread decomposition models of Glosten and Harris (1988, *GH*) and Lin, Sanger, and Booth (1995, *LSB*). *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

	Liquidity		Information Asymmetry		
Variable	Quoted Spread	Effective Spread	PPI	LSB	GH
Panel A: Guidance Stoppers					
Pre	5.645	5.096	0.145	0.179	0.161
Post	4.941	4.200	0.138	0.168	0.135
δ_{GS}	-0.705***	-0.897***	-0.007*	-0.010***	-0.026***
Panel B: Non-Guiders					
Pre	5.627	5.133	0.180	0.182	0.184
Post	5.618	5.137	0.184	0.183	0.183
δ_{NG}	-0.009	0.004	0.005	0.001	-0.001
$\delta_1=\delta_{GS}-\delta_{NG}$	-0.696*	-0.901***	-0.012*	-0.012**	-0.025***
Panel C: Guidance Maintainers					
Pre	5.133	4.703	0.152	0.168	0.140
Post	5.177	4.811	0.155	0.163	0.144
δ_{GM}	0.044	0.108	0.003	-0.005	0.004
$\delta_2=\delta_{GS}-\delta_{GM}$	-0.748**	-1.005***	-0.010*	-0.006*	-0.030***

Table 5 Regression of Information Asymmetry on Guidance Cessation

The regression model is

$$IA_{it} = \beta_0 + \beta_1 Post_i + \beta_2 Lntrdvol_{it} + \beta_3 Lnmktsz_{it} + \beta_4 Analfoll_{it} + \varepsilon_{it}$$

where IA_{it} measures information asymmetry costs for security *i* over quarter *t*. *Post* equals 1 for post-event quarter and 0 for pre-event quarter. Control variables are natural logarithm of trading volume (*Lntrdvol*), natural logarithm of firm size (*Lnmktsz*), and the number of analysts following (*Analfoll*). We use three information asymmetry measures, *PPI*, *LSB*, and *GH*. Percentage price impact (*PPI*) is calculated as follows:

$$PPI = 2 \times D_{it} \times (V_{i,t+30} - M_{it}) / M_{it}$$

where D_{it} is a Lee-Ready indication variable that equals 1 for buy orders and -1 for sell orders for firm *i* at time *t*. V_{t+30} is the post trade value of the security after 30 minutes. M_{it} is the midpoint of bid and ask prices. To control for the arrival of new information during *t* and *t*+30, we weight the percentage price impact by the inverse number of trades during the period. We use quoted midpoint as proxies for $V_{i,t+30}$. We estimate adverse selection costs using spread decomposition models of Glosten and Harris (1988, *GH*) and Lin, Sanger, and Booth (1995, *LSB*). *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Variable	Guidance Stoppers	Non-Guiders	Guidance Maintainers
Panel A: Percentage Price Impact (PPI)			
Intercept	0.9631 ***	0.6928 ***	0.7734 ***
Post	-0.0097 *	0.0018	-0.0046
Lntrdvol	-0.0116 ***	-0.0075	-0.0036
Lnmktsz	-0.0455 ***	-0.0329 ***	-0.0437 ***
Analfoll	0.0010	-0.0008	-0.0006
Adj. R^2	0.3713	0.1935	0.3243
Panel B: Adverse Selection Costs (LSB)			
Intercept	0.3028 ***	0.1741 ***	0.1453 ***
Post	-0.0227 ***	0.0097	-0.0042
Lntrdvol	-0.0106 ***	-0.0096 ***	-0.0048
Lnmktsz	-0.0046 *	-0.0113 ***	-0.0086 ***
Analfoll	0.0001	-0.0001	-0.0031 ***
Adj. R^2	0.0249	-0.0199 ***	0.0275
Panel C: Adverse Selection Costs (GH)			
Intercept	0.5689 ***	0.1586 *	0.1901 ***
Post	-0.0371 ***	-0.0019	-0.0010
Lntrdvol	-0.0208 ***	-0.0033	-0.0033
Lnmktsz	-0.0053 *	0.0057	0.0016
Analfoll	-0.0022 **	-0.0032	-0.0031 ***
Adj. R^2	0.0584	0.0039	0.0210

Table 6 Changes in Earnings Management for Guidance Stoppers, Non-Guiders, and Guidance Maintainers

This table reports univariate and multivariable analyses on the measures of earnings management. We use three measures of absolute discretionary accruals (*ADA*) calculated based on cash flow statements. The construction of these measures of *DACC*, *ABAC*, and *ABDD* are explained in Section 3.B. We define Pre (Post) as the pre-event (post-event) fiscal year in which the event period refers to the fiscal year during which a firm provides its last quarterly earnings guidance. In Panel B, the regression model is

$$ADA = \alpha_0 + \alpha_1 Post + \alpha_2 Lnmktsz + \alpha_3 Leverage + \alpha_4 CRP + \alpha_5 FRP + \varepsilon$$

Post equals 1 for post-event period and 0 for pre-event period. Four additional variables are natural logarithm of firm size (*Lnmktsz*), leverage based on the ratio of total liabilities to total assets (*Leverage*), current relative performance (*CRP*) based on current annual net income deflated by beginning total assets, and future relative performance (*FRP*) based on next year net income deflated by beginning total assets. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Panel A: Univariate Analysis

	Discretionary Accruals		
Variable	DACC	ABAC	ABDD
Panel A: Guidance Stoppers			
Pre	0.0829	0.0737	0.0655
Post	0.0706	0.0653	0.0601
Post - Pre (GS)	-0.0124***	-0.0085**	-0.0055*
Panel B: Non-Guiders			
Pre	0.0818	0.0922	0.0798
Post	0.0861	0.0844	0.0769
Post - Pre (NG)	0.0043	-0.0078	-0.0029
GS – NG	-0.0167***	-0.0007	-0.0026*
Panel C: Guidance Maintainers			
Pre	0.088	0.0681	0.0653
Post	0.0812	0.0682	0.0621
Post - Pre (GM)	-0.0068	0.0001	-0.0032
GS – GM	-0.0056*	-0.0086**	-0.0023*

Panel B: Multivariate Analysis

Variable	Guidance Stoppers	Non-Guiders	Guidance Maintainers
Dependent variable: DACC			
Intercept	0.1411***	0.2289***	0.1910***
Post	-0.0106**	-0.0004	-0.0095
Lnmktsz	-0.0050***	-0.0115***	-0.0076***
Leverage	-0.0476***	0.0101	0.0064
CRP	-0.0747***	0.0161	-0.0742**
FRP	0.0205**	-0.0735***	0.0206
Adj. R^2	0.0526	0.0871	0.0306
Dependent variable: ABAC			
Intercept	0.1264***	0.2095***	0.1661***
Post	-0.0085**	-0.0021	-0.0082
Lnmktsz	-0.0057***	-0.0109***	-0.0074***
Leverage	-0.0265**	0.0435***	0.0135
CRP	-0.1012***	-0.0657**	-0.1187***
FRP	0.0097	-0.0516	-0.0160
Adj. R^2	0.0658	0.1058	0.1359
Dependent variable: ABDD			
Intercept	0.1163***	0.1601***	0.1512***
Post	-0.0043*	0.0004	-0.0036
Lnmktsz	-0.0055***	-0.0062***	-0.0068***
Leverage	-0.0217**	-0.0147	0.0159
CRP	-0.0935***	0.0022	-0.0818***
FRP	0.0174**	-0.1368***	-0.0646***
Adj. R^2	0.0778	0.1534	0.1620

Table 7 Type of Guidance Stoppers

This table reports information asymmetry and earnings management measures based on types of guidance stoppers. The event period q_0 refers to the quarter during which a firm provides its last quarterly earnings guidance. We define *Pre* (*Post*) as the pre-event (post-event) quarter. We classify guidance cessation firms into two groups based on the number of quarters firms provide quarterly guidance prior to cessation. *PGS* refers to guidance stoppers that provided at least three quarterly earnings guidelines in a year. *OGS* refers to guidance stoppers that gave one or two quarterly managerial earnings guidelines in the year prior to guidance cessation. δ_i is the change in information asymmetry between pre-cessation periods and post-cessation periods and *i* represents *PGS* or *OGS*. Percentage price impact (*PPI*) is calculated as follows:

$$PPI = 2 \times D_{it} \times (V_{i,t+30} - M_{it}) / M_{it}$$

where D_{it} is a Lee-Ready indication variable that equals 1 for buy orders and -1 for sell orders for firm *i* at time *t*. V_{t+30} is the post trade value of the security after 30 minutes. M_{it} is the midpoint of bid and ask prices. To control for the arrival of new information during *t* and *t*+30, we weight the percentage price impact by the inverse number of trades during the period. We use quoted midpoint as proxies for $V_{i,t+30}$. We estimate adverse selection costs using spread decomposition models of Glosten and Harris (1988, *GH*) and Lin, Sanger, and Booth (1995, *LSB*). In Panel B, we use three measures of absolute discretionary accruals calculated based on cash flow statements. The construction of these measures of *DACC*, *ABAC*, and *ABDD* are explained in Section 3.B. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Panel A: Information Asymmetry

Variable	PGS			OGS			δ_{PGS}-δ_{OGS}
	Pre	Post	Post-Pre (=δ_{PGS})	Pre	Post	Post-Pre (=δ_{OGS})	
PPI	0.141	0.126	-0.015**	0.147	0.144	-0.003	-0.012*
LSB	0.177	0.164	-0.013**	0.179	0.171	-0.009*	-0.004
GH	0.157	0.128	-0.029***	0.164	0.139	-0.025***	-0.004

Panel B: Earnings Management

Variable	PGS			OGS			*PGS-OGS*
	Pre	Post	Post – Pre (*PGS*)	Pre	Post	Post - Pre (*OGS*)	
DACC	0.0954	0.0668	-0.0286***	0.0769	0.0724	-0.0045	-0.0242***
ABAC	0.0777	0.0603	-0.0175***	0.0718	0.0677	-0.0040	-0.0134**
ABDD	0.0686	0.0576	-0.0110**	0.0640	0.0613	-0.0027	-0.0083*

Table 8 Regression Analysis of Earnings Management surrounding Guidance Cessation by the Type of Guidance Stopper

The regression model is

$$ADA = \alpha_0 + \alpha_1 Post + \alpha_2 Lnmktsz + \alpha_3 Leverage + \alpha_4 CRP + \alpha_5 FRP + \varepsilon$$

where absolute discretionary accruals (*ADA*) is calculated based on cash flow statements. We use three alternative *ADA* measures, namely, *DACC*, *ABAC*, and *ABDD*. The construction of *DACC*, *ABAC*, and *ABDD* are explained in Section 3.B. We define Pre (Post) as the pre-event (post-event) fiscal year in which the event period refers to the fiscal year during which a firm provides its last quarterly earnings guidance. *Post* equals 1 for post-event period and 0 for pre-event period. Four control variables are natural logarithm of firm size (*Lnmktsz*), leverage based on the ratio of total liabilities to total assets (*Leverage*), current relative performance (*CRP*) based on current annual net income deflated by beginning total assets, and future relative performance (*FRP*) based on next year net income deflated by beginning total assets. We classify guidance cessation firms into two groups based on the number of quarters firms provide quarterly guidance prior to cessation. *PGS* refers to guidance stoppers that provided at least three quarterly earnings guidelines in the year prior to guidance cessation. *OGS* refers to guidance stoppers that gave one or two quarterly earnings guidance in the year prior to guidance cessation. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Variable	PGS		OGS	
Panel A: DACC				
Intercept	0.1285	***	0.1384	***
Post	-0.0282	***	-0.0018	
Lnmktsz	0.0000		-0.0054	***
Leverage	-0.0405	*	-0.0515	***
CRP	-0.3883	***	-0.0093	
FRP	0.0355	*	-0.0028	
Adj. R^2	0.2725		0.0404	
Panel B: ABAC				
Intercept	0.1115	***	0.1256	***
Post	-0.0167	**	-0.0044	
Lnmktsz	0.0003		-0.0067	***
Leverage	-0.0474	**	-0.0209	
CRP	-0.3536	***	-0.0489	**
FRP	0.0146		-0.0081	
Adj. R^2	0.2962		0.0388	
Panel C: ABDD				
Intercept	0.1115	***	0.1122	***
Post	-0.0134	*	0.0002	
Lnmktsz	0.0001		-0.0065	***
Leverage	-0.0547	***	-0.0108	
CRP	-0.3296	***	-0.0421	***
FRP	0.0281	*	-0.0022	
Adj. R^2	0.2948		0.0488	

Table 9 Regression Analysis of Information Asymmetry on Discretionary Accruals

The regression model is

$$IA_{post} - IA_{pre} = \gamma_0 + \gamma_1 ADA + \gamma_2 Lnmktsz + \gamma_3 Lntrdvol + \gamma_4 Analfoll + \varepsilon$$

where the dependent variables measure the change in information asymmetry (*IA*) for firms before (*Pre*) and after (*Post*) stopping guidance. We use three alternative information asymmetry measures, namely, *PPI*, *LSB*, and *GH*. Percentage price impact (*PPI*) is calculated as follows:

$$PPI = 2 \times D_{it} \times (V_{i,t+30} - M_{it}) / M_{it}$$

where D_{it} is a Lee-Ready indication variable that equals 1 for buy orders and -1 for sell orders for firm *i* at time *t*. V_{t+30} is the post trade value of the security after 30 minutes. M_{it} is the midpoint of bid and ask prices. To control for the arrival of new information during *t* and *t*+30, we weight the percentage price impact by the inverse number of trades during the period. We use quoted midpoint as proxies for $V_{i,t+30}$. We estimate adverse selection costs using spread decomposition models of Glosten and Harris (1988, *GH*) and Lin, Sanger, and Booth (1995, *LSB*).

As independent variables, we use three measures of absolute discretionary accruals (*ADA*) based on cash flow statements during the year prior to guidance cessation. The construction of these variables, *DACC*, *ABAC*, and *ABDD*, are explained in Section 3.B. Three control variables of the regression are natural logarithm of trading volume (*Lntrdvol*), natural logarithm of firm size (*Lnmktsz*), and the number of analysts following (*Analfoll*). *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Table 9 continued.

Variable	All Guidance Stoppers			PGS			OGS		
	PPI	LSB	GH	PPI	LSB	GH	PPI	LSB	GH
				Panel A: DACC					
Intercept	0.0600	-0.0113	-0.0102	-0.1476	-0.0700	-0.1522	0.1291	0.0276	0.0746
DACC	-0.0246	-0.0029	0.0204	-0.0826*	-0.0036*	-0.0302*	0.0041	-0.0034	0.0357
Lnmktsz	0.0089*	-0.0091**	-0.0181***	-0.0046	-0.0026	-0.0058	0.0131**	-0.0125**	-0.0242***
Lntrdvol	-0.0072	0.0028	0.0044	0.0106	0.0041	0.0079	-0.0130**	0.0015	0.0014
Analfoll	-0.0002	0.0001	0.0030**	0.0004	-0.0017	-0.0001	-0.0005	0.0013	0.0051***
Adj. R^2	0.0015	0.0057	0.0169	-0.0042	-0.0118	-0.0128	0.0083	0.0081	0.0327
				Panel B: ABAC					
Intercept	0.0621	-0.0087	-0.0086	-0.1579	-0.0912	-0.1613	0.1292	0.0281	0.0749
ABAC	-0.0151	0.0188	0.0417	-0.1355*	-0.0480**	-0.0175*	0.0206	0.0526	0.0642
Lnmktsz	0.0092*	-0.0086*	-0.0177***	-0.0066	-0.0051	-0.0066	0.0133**	-0.0117**	-0.0239***
Lntrdvol	-0.0075	0.0023	0.0040	0.0122	0.0066	0.0089	-0.0132**	0.0009	0.0012
Analfoll	-0.0002	0.0001	0.0031**	0.0005	-0.0017	-0.0001	-0.0005	0.0013	0.0052***
Adj. R^2	0.0013	0.0062	0.0183	0.0046	-0.0086	-0.0138	0.0088	0.0117	0.0359
				Panel C: ABDD					
Intercept	0.0583	-0.0175	-0.0081	-0.1775	-0.0854	-0.1734	0.1342*	0.0249	0.0822
ABDD	-0.0439	-0.0531	0.0421	-0.2115**	-0.0385*	-0.0147	0.1105	-0.0590	0.1663
Lnmktsz	0.0088*	-0.0100**	-0.0179***	-0.0090	-0.0044	-0.0081	0.0139**	-0.0129**	-0.0234***
Lntrdvol	-0.0070	0.0037	0.0041	0.0147	0.0059	0.0104	-0.0140**	0.0020	0.0002
Analfoll	-0.0003	0.0001	0.0031**	0.0001	-0.0018	-0.0002	-0.0004	0.0012	0.0053***
Adj. R^2	0.0020	0.0074	0.0174	0.0202	-0.0102	-0.0139	0.0125	0.0094	0.0390

Table 10 Robustness Check using Signed Discretionary Accruals

Signed discretionary accruals (*SDA*) are calculated based on cash flow statements for the fiscal year prior to (*Pre*) and the fiscal year after (*Post*) guidance cessation. We use three *SDA* measures, namely, *DACC*, *ABAC*, and *ABDD*. The construction of these variables is explained in Section 3.B. In Panel C, the regression model is

$$IA_{\text{post}} - IA_{pre} = \gamma_0 + \gamma_1 SDA + \gamma_2 Lnmktsz + \gamma_3 Lntrdvol + \gamma_4 Analfoll + \varepsilon$$

where the dependent variables measure the change in information asymmetry for firms before and after stopping guidance. We use three alternative information asymmetry measures, namely, *PPI*, *LSB*, and *GH*. Percentage price impact (PPI) is calculated as follows:

$$PPI = 2 \times D_{it} \times (V_{i,t+30} - M_{it}) / M_{it}$$

where D_{it} is a Lee-Ready indication variable that equals 1 for buy orders and -1 for sell orders for firm *i* at time *t*. V_{t+30} is the post trade value of the security after 30 minutes. M_{it} is the midpoint of bid and ask prices. To control for the arrival of new information during *t* and *t+30*, we weight the percentage price impact by the inverse number of trades during the period. We use quoted midpoint as proxies for $V_{i,t+30}$. We estimate adverse selection costs using spread decomposition models of Glosten and Harris (1988, *GH*) and Lin, Sanger, and Booth (1995, *LSB*). Three control variables are natural logarithm of trading volume (*Lntrdvol*), natural logarithm of firm size (*Lnmktsz*), and the number of analysts following (*Analfoll*). *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Panel A: Signed discretionary accruals based on before-cessation accruals

Variable	Positive Accruals (Before accruals > 0)			Negative Accruals (Before accruals < 0)		
	Pre	Post	Post - Pre	Pre	Post	Post - Pre
DACC	0.0748	-0.0090	-0.0838***	-0.0905	-0.0345	0.0560***
ABAC	0.0637	-0.0046	-0.0684***	-0.0866	-0.0229	0.0637***
ABDD	0.0646	-0.0113	-0.0759***	-0.0663	-0.0287	0.0376***

Panel B: Signed discretionary accruals based on before- and after- cessation accruals

Variable	Positive Accruals (Both before and after accruals > 0)			Negative Accruals (Both before and after accruals < 0)		
	Pre	Post	Post - Pre	Pre	Post	Post - Pre
DACC	0.0716	0.0532	-0.0185***	-0.0896	-0.0825	0.0072
ABAC	0.0652	0.0519	-0.0132***	-0.1044	-0.0801	0.0243*
ABDD	0.0676	0.0478	-0.0198***	-0.0624	-0.0698	-0.0074

Panel C: Multivariate analyses using signed earnings management measures

	Positive DACC						Negative DACC					
Variables	ALL		PGS		OGS		ALL		PGS		OGS	
					Panel A: Percentage Price Impact (PPI)							
Intercept	0.1756	*	-0.0656		0.2441	**	-0.0402		-0.2468		0.0284	
Signed DACC	-0.1142	*	-0.1572	***	-0.0812		0.0724		0.1372	*	0.0326	
Lnmktsz	0.0067		-0.0070		0.0114		0.0102		-0.0006		0.0143	*
Lntrdvol	-0.0138	*	0.0052		-0.0192	**	-0.0017		0.0156		-0.0077	
Analfoll	0.0009		0.0019		0.0002		-0.0008		-0.0008		-0.0011	
Adj. R^2	0.0171		0.0204		0.0329		0.0226		0.0556		0.0209	
					Panel B: Adverse Selection Costs (LSB)							
Intercept	-0.0228		0.1328		-0.0809		-0.0010		-0.2043		0.1168	
Signed DACC	-0.0250	*	-0.0334	*	-0.0181		0.0037		-0.0001		0.0248	
Lnmktsz	-0.0148	**	-0.0137		-0.0148		-0.0043		0.0077		-0.0115	
Lntrdvol	0.0044		-0.0046		0.0077		0.0013		0.0092		-0.0032	
Analfoll	0.0028	*	0.0026		0.0029		-0.0020		-0.0050	*	0.0000	
Adj. R^2	0.0269		0.0524		0.0286		0.0210		0.0380		0.0390	
					Panel C: Adverse Selection Costs (GH)							
Intercept	0.0339		-0.1366		0.0793		-0.0248		-0.1662		0.0710	
Signed DACC	-0.0190	*	-0.0374	**	-0.0117		-0.0640		-0.0502		-0.1201	
Lnmktsz	-0.0198	***	-0.0177		-0.0192	**	-0.0163	**	0.0063		-0.0270	***
Lntrdvol	0.0022		0.0104		-0.0003		0.0049		0.0058		0.0025	
Analfoll	0.0050	***	0.0034		0.0054	**	0.0015		-0.0038		0.0046	*
Adj. R^2	0.0398		0.0249		0.0425		0.0261		0.0288		0.0571	