

## **Earnings Guidance and Managerial Myopia**

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## **EARNINGS GUIDANCE AND MANAGERIAL MYOPIA**

### **ABSTRACT**

We examine whether firms that frequently issue quarterly earnings guidance behave myopically, where myopic behavior is defined as sacrificing long-term growth for the purpose of meeting short-term goals (Porter [1992]). We find that dedicated guiders invest significantly less in research and development (R&D) than occasional guiders. This result is robust to controlling for other determinants of R&D investment as well as to the endogeneity between firms' guidance frequency and R&D intensity. We also find that, in comparison to occasional guiders, dedicated guiders meet or beat analyst consensus earnings forecasts more frequently and they both manage expectations downward and cut R&D expenditures to achieve this goal. However, we find that dedicated guiders' long-term earnings growth rates are significantly lower than those of occasional guiders. Overall, our results are consistent with dedicated guiders engaging in myopic R&D investment behavior and meeting short-term earnings targets with possible adverse effects for long-term earnings growth.

# EARNINGS GUIDANCE AND MANAGERIAL MYOPIA

Anne Mulcahy, Chairman and CEO of Xerox, calls pressure from Wall Street for short-term performance "a huge problem" that may be hurting public companies in the long run. "It's one of the most dysfunctional things going on in the marketplace today," she said during a Wharton leadership lecture presentation. "I applaud companies that have pulled back from setting earnings expectations and are trying to reshape the rules of the road."<sup>1</sup>

## 1. Introduction

Recently, a number of firms have discontinued the practice of providing quarterly earnings guidance to the capital markets. For example, Coca-Cola, a company known for meeting earnings expectations with enviable consistency, announced in 2002 that it would stop issuing quarterly earnings guidance, but instead provide more information about its progress towards meeting long-term objectives. Following Coca-Cola, a host of other companies including Alcoa, AT&T, Clear Channel Communications, Mattel, PepsiCo, and Sun Microsystems have announced their intention to discontinue providing quarterly earnings guidance. A recent survey by the National Investor Relations Institute (NIRI) finds that the percentage of companies providing quarterly earnings guidance has declined from 75% in 2003 to 52% in 2006.<sup>2</sup>

The benefits of voluntary disclosure to the capital markets—including improved liquidity, reduced information asymmetry, lower cost of capital, and lower stock volatility—are widely documented (see Healy and Palepu [2001]). However, firms discontinuing quarterly earnings guidance are concerned about the potential *costs* of such disclosures. They argue that frequent earnings guidance encourages investors and analysts to emphasize meeting short-term

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<sup>1</sup> See <http://knowledge.wharton.upenn.edu/index.cfm?fa=viewArticle&id=1318&specialId=41>.

<sup>2</sup> See <http://www.niri.org>.

earnings targets which fosters myopic managerial behavior that is detrimental to firms' long-term growth and value creation. For example, managers at Coca-Cola believe that discontinuing quarterly earnings guidance will help the company focus on long-term objectives, such as expanding its business into new markets, without having to worry about meeting short-term earnings targets (McKay and Brown [2002]). For similar reasons, CFOs interviewed by Graham et al. [2005] also deplore the culture of providing quarterly earnings guidance and subsequently having to meet these targets.

Such viewpoints are also shared by prominent regulators and academics who believe that CEOs must say “no” to the earnings guidance “game” (e.g., see Levitt [2000], Fuller and Jensen [2002]). Underscoring the urgent importance of this issue an independent commission established by the U.S. Chamber of Commerce in March 2007 proposed the discontinuance of quarterly earnings guidance as one of its major recommendations.<sup>3</sup> Specifically the commission recommended that “all public companies should eliminate the practice of providing quarterly earnings guidance and that companies should instead provide shareholders and Wall Street with meaningful additional information on their long-term business strategies” (page 77) after concluding that “[t]he success of American companies in the increasingly competitive global marketplace depends largely on how well corporate managers execute their long-term business strategies. Reducing the pressures to meet precise quarterly earnings targets announced by these very managers is an important first step in shifting the focus of the U.S. capital markets away from quarterly results and toward the long-term performance of U.S. companies” (page 79).

While there is some anecdotal evidence and many allegations that quarterly earnings guidance fosters a myopic managerial culture there is no systematic empirical evidence to-date

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<sup>3</sup> “Report and Recommendations” by Commission on the Regulation of U.S. Capital Markets in the 21<sup>st</sup> Century, March 2007, US Chamber of Commerce.

linking earnings guidance with managerial myopia.<sup>4</sup> Therefore, in this paper we examine whether firms that frequently issue quarterly earnings guidance behave myopically, where myopic behavior is defined as sacrificing long-term growth for the purpose of meeting short-term goals through underinvestment in long-term value creating activities (Porter [1992]).

We classify firms as “dedicated guiders” or “occasional guiders” based on their quarterly earnings guidance frequency during 2001-2003 and examine whether dedicated guiders engage in more myopic behavior than occasional guiders. Our proxy for myopic behavior is underinvestment in research and development (R&D). We find that, *ceteris paribus*, dedicated guiders invest significantly less in R&D than occasional guiders, which suggests that earnings guidance is indeed associated with myopic behavior with respect to R&D spending. We recognize that providing earnings guidance in itself is a managerial choice that can arise endogenously based on the managers’ propensity to emphasize short-term performance. Accordingly, we jointly model firms’ decisions to invest in R&D and provide earnings guidance through a two-stage simultaneous equations’ estimation procedure. We continue to find that earnings guidance frequency reduces R&D spending after controlling for endogeneity in the relation between frequent earnings guidance and R&D expenditure.

We next examine the effects of such myopic behavior on the trade-off between short-term and long-term earnings performance. We find that dedicated guiders are significantly more likely to meet or beat consensus analysts’ forecasts of current quarter earnings than occasional guiders both because they manage expectations downward and because they cut R&D expenditures to avoid missing forecasts. This suggests that dedicated guiders are more actively involved in playing the “earnings game” and place greater emphasis on achieving short-term

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<sup>4</sup> The only research examining the relation between disclosure frequency and managerial myopia is Bhojraj and Libby [2005]. However, Bhojraj and Libby examine the effect of *mandatory* disclosure frequency (i.e., quarterly versus annual) on managerial myopia in an experimental setting.

earnings targets. Further, we find that *ceteris paribus*, dedicated guiders have significantly lower earnings growth over the subsequent 2003-2005 period, which is consistent with negative consequences of myopic behavior on long-term growth and value creation.

Our paper contributes to the literature on several dimensions. First, we add to the voluntary disclosure literature by investigating possible reasons why companies have recently discontinued providing quarterly earnings guidance to the capital markets. Chen et al. [2005] and Houston et al. [2006] investigate causes and consequences of the decisions by firms to discontinue quarterly earnings guidance. They find that poor short-term performance is an important motivation for discontinuing earnings guidance. Recognizing potential self-selection bias associated with this group of firms, we choose a different approach by examining the relation between earnings guidance practice and myopic decision making for a wide cross section of firms. We find systematic empirical evidence consistent with anecdotal reports and claims by managers of companies discontinuing quarterly earnings guidance that such quarterly earnings guidance forces short-term orientation and impedes investments in long-term value creation. Our paper thus provides systematic empirical evidence that offers a rationale for this recent economic phenomenon. In this manner, our paper makes a timely contribution to an important and current policy issue facing corporate America.

More importantly, our evidence suggests a potential cost of voluntary disclosure: managerial myopia. While a large literature has documented myriad benefits of voluntary disclosure to the capital market, such as reduced information asymmetry and improved liquidity, there is little empirical research examining costs of voluntary disclosure. Our paper is one of the first to document empirical evidence regarding potential costs associated with frequent quarterly earnings guidance. Our results have implications for managers who make voluntary disclosure

policies as well as for investors who interpret firms' disclosure information. We note, however, that our results highlight costs associated with one particular type of voluntary disclosure: quarterly earnings guidance. We are not implying that managerial myopia is a necessary consequence of all forms of voluntary disclosure. On the contrary, even firms that have discontinued explicit short-term earnings guidance have substituted such guidance with disclosures regarding long-term plans and progress towards long-term goals (e.g., Coca-Cola).

Our paper also adds to the literature on managerial myopia. In a recent survey by Graham, et al. [2005], managers describe the trade-off between the short-term need to “deliver earnings” and the long-term objective of making value-maximizing investment decisions. Consistent with their claim, there is a growing body of empirical evidence showing that managers are willing to sacrifice long-term value creation to achieve short-term earnings targets. Prior research documents that firms reduce R&D expenditure in response to concerns regarding reported income (Baber et al. [1991]) and to cater to the short-term needs of transient institutional investors (Bushee [1998]). More recently, Bhojraj et al. [2005] document that using accruals or discretionary expenditures (such as R&D expenditure) to meet or beat analyst forecasts results in short-term positive impact on firm performance, but long-term underperformance relative to firms that do not manage earnings to meet forecasts. Along this line of research, our paper adds a new dimension to the literature on managerial myopia—the association between quarterly earnings guidance and managerial myopia. To the extent that quarterly earnings guidance causes managerial myopia, firms have the option to “liberate” themselves from the earnings guidance game and focus on long-term value creation, as many have chosen to do in the recent past.

## **2. Motivation and Hypotheses**

### 2.1 MOTIVATION AND THEORETICAL DISCUSSION

#### 2.1.1 *Managerial Myopia*

U.S. managers have often been criticized for excessive obsession with short-term performance and resulting myopic investment behavior (e.g., Jacobs [1991], Porter [1992]). Such short-term focus has been attributed to the willingness of U.S. managers to yield to capital market pressures by actively participating in the “earnings game” (e.g., Fuller and Jensen [2002]). For example, Rappaport [2005] observes that investors and managers have a “mutually reinforcing obsession with short-term performance,” with earnings being the metric of short-term performance.

Two conditions are required for myopic managerial behavior (Bushee [1998], Stein [1988, 1989]). First, managers must place sufficient weight on the current market value of their firm. When managers overweight current market value vis-à-vis future market value, they are unwilling to wait until the temporary mispricing (if any) based on short-term performance is corrected and hence unwilling to adopt a long-term perspective. Managers can be motivated to overweight current stock price because of poorly designed equity incentives (Hall and Murphy [2003], Rappaport [2005]), takeover threats (Stein [1988]), need to raise capital (Bhojraj and Libby [2005], Teoh et al. [1998]) or employment concerns (Fundenberg and Tirole [1995], Graham et al. [2005]). Second, the capital markets should misprice current earnings without regard to its underlying economics or managers should believe that they do. Markets can incorrectly price current earnings if investors have a short-term focus (Ellis [2004]) or misinterpret the persistence of earnings components (e.g., Sloan [1996]). Also, managerial myopia can result even when the capital markets are efficient as long as managers believe the

markets can be fooled (Stein [1989]), which they do (e.g., Graham et al. [2005]). Alternatively, myopic managerial behavior can also arise when managerial compensation function directly emphasizes short-term earnings performance, such as meeting earnings targets.

Prior research documents evidence of managerial myopia, primarily with respect to R&D spending. Some studies show underinvestment in R&D in situations where managers' horizons are excessively short-term—for example, Dechow and Sloan [1991] study firms prior to CEO retirement and Baber et al. [1991] examine loss making firms. Bushee [1998] directly studies the effects of capital market pressures on myopia, by documenting that myopic R&D spending is more pronounced in firms that are held by more transient institutional investors. Roychowdhury [2006] also reports evidence of earnings management through real activities to meet short-term earnings targets. Finally, Bhojraj et al. [2005] examine the capital market effects of managerial myopia: they show that firms that meet earnings targets through real earnings management are able to boost stock price in the short run but suffer adverse price reversals a few years later.

### *2.1.2 The Role of Earnings Guidance*

In this paper we examine the role earnings guidance plays in perpetrating the mutually self-enforcing obsession of both managers and the capital markets with short-term earnings performance. As Michael Jensen contends, earnings guidance leads to a short-term mentality for both companies and investors, thereby shifting the focus from the firm's fundamentals to bottom-line earnings (Prince [2005]). Once expectations are managed through earnings guidance, companies are under intense pressure to meet their earnings forecasts for two reasons. First, earnings guidance induces investors to place too much emphasis on meeting or beating earnings targets, resulting in extreme price drops when firms fail to meet targets (Skinner and Sloan [2002]). Second, managers may face loss of reputation and credibility if they are unable to

deliver on their forecasts (Graham et al. [2005]). The pressure to meet short-term earnings targets in turn precipitates actions that destroy long-term shareholder value creation, such as reduction in R&D spending or cancellation of marketing campaigns, when otherwise the firm is in danger of not being able to meet its forecast. Fuller and Jensen [2002] argue that this “earnings game” even disrupts budgeting and planning processes in organizations. The deleterious effects of short-term performance obsession arising from the “earnings game” are often cited as one reason why many companies have recently discontinued the practice of providing quarterly earnings guidance (Prince [2005]).

While there have been much speculation and discussion based on anecdotal evidence, to date there is surprisingly no systematic evidence that suggests frequent earnings guidance causes managerial myopia. Bhojraj and Libby [2005] conduct an experiment where they examine whether short-term capital market pressures can force managers to make myopic investment decisions. They also show that the frequency of *mandatory* reporting of financial performance (i.e., annual, bi-annual or quarterly) can affect the manner in which managers react to capital market pressures. However, Bhojraj and Libby do not examine the role of *voluntary* earnings guidance in managerial myopia.

### 2.1.3 *The Endogenous Nature of Earnings Guidance*

It must be recognized that providing earnings guidance is itself a managerial decision choice that arises endogenously. Figure 1 schematically illustrates this web of endogenous relations involving earnings guidance. The decision to issue quarterly earnings guidance can be viewed as an optimal managerial response that trades off its respective costs and benefits. It is evident that the choice to issue earnings guidance arises from managers’ preoccupation with short-term (earnings) performance. The benefits of focusing on short-term earnings performance

could arise from various factors such as poor compensation policies and equity incentives (Hall and Murphy [2003], Matsugana and Park [2001]), need to raise capital (Bhojraj and Libby [2005]), job-tenure concerns (Fundenberg and Tirole [1995]) and short managerial horizon (Dechow and Sloan [1991]). In addition, poor financial performance can increase litigation risk, which in turn can induce voluntary disclosure (Skinner [1994]). By issuing frequent earnings guidance, however, managers sensitize the stock market to focus on quarterly earnings' performance and get entrenched in the "earnings game" of setting, managing and meeting market's earnings expectations to which the market responds, which in turn leads to the "mutually reinforcing obsession with short-term performance" on the part of both the investors and managers. (This endogenous loop is depicted with bold arrows in Figure 1). An extreme focus on short-term earnings performance also creates unhealthy pressures on managers to meet short-term earnings targets, which may lead to myopic underinvestment in long-term value creating activities, such as R&D.<sup>5</sup>

Many of the factors that induce managers to issue frequent earnings guidance can also directly (and independently) cause managerial myopia. For example, some of the factors that cause managers to emphasize short-term performance (such as poor compensation policies or job concerns) may directly pressure managers to meet short-term earnings targets and hence indulge in myopic behavior, independent of the decision to issue earnings guidance. In addition, poor financial performance can also directly cause underinvestment through financial constraints. Finally, poor financial performance may increase litigation risk, which may also induce managers to emphasize short-term performance and hence behave myopically.

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<sup>5</sup> Markets obsession with short-term performance may also arise through the presence of transient institutional investors, which in turn may lead to managerial focus on short-term performance and resulting managerial myopia (Bushee, 1998).

If earnings guidance is an entirely endogenous choice and if the exogenous determinants of earnings guidance are hypothesized to independently cause managerial myopia, then there is a concern whether the fundamental relation that we seek to examine (i.e., that frequent earnings guidance can cause managerial myopia) exists at all. In other words, theoretically is there a component of dedicated earnings guidance that is orthogonal to its various determinants that causes myopic investment? We argue that such a component exists and that it arises because of the mutually reinforcing nature of the relation between managers and markets involved in the “earnings game”. Specifically, although the initial choice of providing earnings guidance may be triggered by exogenous factors (such as a poorly designed compensation schemes), regular earnings guidance entrenches the manager and the markets into the mutually reinforcing “earnings game” from which it is costly for managers (corporations) to get out of.

## 2.2 HYPOTHESES

Myopia refers to sub-optimal underinvestment in long-term projects for the purpose of meeting short-term goals (e.g., Porter [1992]). This definition has three aspects: (1) there should be underinvestment in long-term value creation projects, such as R&D; (2) the underinvestment should occur with the objective of meeting short-term goals, such as meeting/beating analyst earnings forecasts; and (3) such underinvestment must be sub-optimal in the sense of impairing long-term growth and value creation. The first aspect reflects myopic behavior, and the second and third aspects (i.e., short-term and long-term performance) reflect the motivation and consequence of myopic behavior. Our hypotheses and associated empirical tests address each of the three aspects in order. We motivate our hypotheses below.

For examining whether earnings guidance results in underinvestment in long-term projects, we examine differences in R&D spending levels between dedicated guiders and occasional guiders. R&D expenditures are particularly appropriate for examining myopic behavior because they have important but opposite implications for short-term and long-term performance. First, since R&D expense is immediately expensed under U.S. GAAP, underinvesting in R&D will boost short-term earnings. Second, adequate investment in R&D is crucial for the viability and success of firms in many industries. However, gains from R&D are realized only in the long-term—in contrast to, say, advertising expense that can boost sales in the short-term. Prior research (e.g., Dechow and Sloan [1991], Bushee [1998]) uses R&D expenditures to evaluate myopic behavior. Also survey evidence (Graham et al. [2005]) suggests that managers use R&D expenditures to play the “earnings game”. Accordingly, our first hypothesis (in alternative form) is:

*H<sub>1A</sub>: Ceteris paribus, dedicated guiders invest less in R&D than occasional guiders.*

Recent research provides evidence that there is pressure on firms to avoid missing analyst earnings forecasts and that such pressure has intensified in recent years (e.g., Matsumoto [2002], Kasznik and McNichols [2002], Skinner and Sloan [2002]). In particular, Brown and Caylor [2005] find that in recent years (since mid-1990s), managers seek to avoid negative quarterly earnings surprises more than to avoid either quarterly losses or quarterly earnings decreases. Therefore, if dedicated guiders are more prone to play the myopic “earnings game”, we should observe that such firms are more likely to meet/beat analyst forecasts. Accordingly, our second hypothesis (in alternative form) is:

*H<sub>2A</sub>: Ceteris paribus, dedicated guiders meet or beat analysts’ quarterly earnings forecasts more frequently than occasional guiders.*

Finally, the underinvestment in R&D is myopic only if it is suboptimal, i.e., that the underinvestment leads to some form of value destruction over the long run. Therefore, if the lower R&D spending by dedicated guiders is myopic, i.e., sub-optimal, it must be reflected in lower long-term growth and value creation. Accordingly, in our third hypothesis (in alternative form), we examine growth in earnings subsequent to our sample period:

$H_{3A}$ : *Ceteris paribus, dedicated guiders have lower long-term growth in earnings than occasional guiders.*

It is important to note that all our hypotheses are valid only under the ceteris paribus assumption. As we note earlier, earnings guidance arises endogenously. Accordingly, it is important to control for this endogeneity in our empirical analyses. We return to this issue in more detail in Section 4.

### **3. Sample and Descriptive Statistics**

Regulation Fair Disclosure (FD), which became effective October 2000, changed the nature of corporate earnings guidance by prohibiting managers from privately communicating with select market participants (e.g., Heflin et al. [2003]). Accordingly our sample starts from 2001 to ensure that our results are not contaminated by private earnings guidance issued during the pre-FD period, which cannot be identified through public sources such as the CIG (Company Issued Guidelines) database from First Call, our source of earnings guidance data. Our guidance frequency measurement period ends at 2003 because we need the subsequent period to perform the long-term performance test. Our initial sample includes all firm-quarters in the “Actuals” database of First Call with fiscal quarters ending between 2001 and 2003. We next require that the following information be available in various First Call databases: (1) actual earnings per share and earnings announcement date for the firm-quarter; (2) number of analysts and mean

analyst forecasts, both measured at the last summary statistics calculation prior to the corresponding earnings announcements; and (3) the stock-split adjustment factor. We delete firm-quarters with earnings announcement dates either before or 45 days after the fiscal quarter end. We also delete firm-quarters if the last summary statistics calculation occurs after the earnings announcement. We make these deletions to eliminate data errors or other irregularities. This selection procedure yields an initial sample of 94,522 firm-quarters.

We next obtain SIC information from Compustat and classify our sample firms into 12 industries according to Fama and French [1997]. Because of their peculiarities, we exclude utilities (SIC code between 4900 and 4949) and financial services (SIC code between 6000 and 6999). Finally, to ensure that the quarterly earnings guidance practices we observe reflect the firms' disclosure policies over a reasonable period of time, we require that our sample firms have data for all twelve quarters during the 2001-2003 period. This process leads to a sample representing 1,965 distinct firms in 10 industries. The number of firms varies from 51 in the chemicals industry to 557 in the business equipment industry, as shown in Table 1.

We obtain quarterly earnings guidance information for our sample from the CIG database in First Call.<sup>6</sup> We define quarterly earnings guidance frequency as the number of quarters (out of the 12 quarters during 2001-2003) for which the firm makes at least one earnings forecast. We do not consider guidance issued more than 90 days before the corresponding fiscal quarter-end to ensure that the guidance represents short-term earnings forecasts for the current quarter. We also eliminate observations with guidance issued more than 45 days after the fiscal quarter-end to avoid any potential data errors.

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<sup>6</sup> To check the comprehensiveness and accuracy of First Call's coverage of earnings guidance, we randomly select 5 dedicated firms and 5 occasional firms in our sample and compare the CIG data in First Call with the PR Newswire data in Lexis-Nexis. We find that in general, the CIG data covers more earnings guidance than the PR Newswire, and that for the guidance that we are able to find in both data sources, they generally report the same guidance dates and earnings estimates.

Table 1 provides descriptive statistics of quarterly earnings guidance frequency for our sample. Overall, our sample firms' quarterly earnings disclosure frequency (out of 12) has a mean of 4.02 and a median of 3. The first quartile is 1 while the third quartile is 7. Out of the 1,965 sample firms, 480 firms (24%) do not provide any quarterly earnings guidance during our sample period and 72 firms (4%) issue earnings guidance every quarter. This distribution suggests wide variation in the propensity of firms to provide quarterly earnings guidance.

We also examine variation in quarterly earnings guidance frequency across industries. There is considerable variation in guidance frequency across different industries. Firms in the wholesale and retails industries have the highest guidance frequency with mean of 5.93 (median of 7) quarters—out of 12 quarters—having at least one earnings forecast. In addition, firms in the industries of chemicals, consumer non-durables and business equipment provide relatively frequent quarterly earnings guidance as well. On the other hand, firms in the energy sector have the lowest guidance frequency with mean of 1.98 (median of 0) quarters, followed by telecommunications and healthcare industries. The within-industry standard deviations range from 3.00 to 4.12, suggesting that there is also within-industry variation in guidance frequency.

Our empirical analyses require classifying our sample firms into different groups based on their propensity to issue quarterly earnings guidance. As our descriptive evidence suggests significant variations across different industries, we perform our classifications by industry. When a firm's quarterly earnings guidance frequency is in the top (bottom) third of its respective industry's frequency distribution, we classify the firm as a *dedicated guider* (*occasional guider*).<sup>7</sup> In subsequent empirical analyses, we exclude firms whose guidance frequency is in the middle third of the corresponding industry's distribution as their propensity to issue quarterly earnings

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<sup>7</sup> Occasional guiders also include non-guiders, i.e., those firms that never issue any quarterly earnings guidance during our sample period.

guidance is ambiguous. Thus, our final sample reduces to 1,406 distinct firms, including 669 dedicated guiders and 737 occasional guiders.

## 4. Guidance Frequency and R&D Expenditure

### 4.1 UNIVARIATE RESULTS

We measure R&D expenditure intensity by *RDX*, which is R&D expenditure for the year deflated by the total assets at the beginning of the year.<sup>8</sup> We use annual data to conduct our analyses because firms typically report R&D expenditures only on an annual basis. Table 2 Panel A presents univariate results for R&D expenditure comparisons between dedicated and occasional guiders. The mean investment in R&D by dedicated guiders is 4.7% of total assets compared to 8.4% by occasional guiders and the difference is significant at  $p < 0.01$ . This result suggests the R&D intensity of dedicated guiders is just more than half that of their occasional counterparts. Although the median *RDX* for dedicated guiders is also statistically lower than that of occasional guiders, the difference is much smaller.

Because R&D intensity varies significantly by industry, we also report in Panel A means and medians of industry-adjusted *RDX* (*ADJRDX*). Consistent with unadjusted numbers, dedicated guiders (mean -0.018, median -0.010) invest significantly less in R&D than occasional guiders (mean 0.016, median -0.004) after we control for average spending in each industry. Note the mean difference (0.034) is the ballpark of the difference without industry adjustment but the median difference (0.014) is now economically significant.

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<sup>8</sup> We replicate our tests using R&D expenditure deflated by lagged sales and find qualitatively similar results.

## 4.2 MODELLING R&D INTENSITY AND GUIDANCE FREQUENCY

The discussion in Section 2 suggests that both R&D intensity and earnings guidance propensity are jointly influenced by a number of factors. Accordingly, we simultaneously model R&D intensity and guidance frequency through the following system of equations (firm-year subscripts omitted):

$$\begin{aligned}
 RDX = & \beta_0 + \sum \alpha_i IND_i + \beta_1 DEDICATED + \beta_2 LAGRDX + \beta_3 LAGDEDI + \beta_4 BM + \beta_5 LOGMV + \beta_6 EP \\
 & + \beta_7 AGE + \beta_8 ADJROA + \beta_9 NADJROA + \beta_{10} LOSS + \beta_{11} CAPX + \beta_{12} ADJFCF + \beta_{13} DILUTION \\
 & + \beta_{14} EQOFFER + \beta_{15} \%TINST + \beta_{16} NUMANA + \beta_{17} VALRE + \varepsilon
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 Prob(DEDICATED=1) = & f(\beta_0 + \sum \alpha_i IND_i + \beta_1 RDX + \beta_2 LAGDEDI + \beta_3 MAFE0 + \beta_4 MSTDO \\
 & + \beta_5 LOGMV + \beta_6 NUMANA + \beta_7 PIN + \beta_8 EP + \beta_9 EXPDAM + \beta_{10} LOSS + \beta_{11} DILUTION \\
 & + \beta_{12} EQOFFER + \beta_{13} \%TINST + \beta_{14} VALRE + \varepsilon)
 \end{aligned} \tag{2}$$

where

RDX	= R&D expenses (Compustat data#46) for the year scaled by total assets (Compustat data#6) at the beginning of the fiscal year,
IND	= industry dummy variables,
DEDICATED	= one (zero) if the firm's quarterly earnings guidance frequency is in the top (bottom) third of their respective industry's distribution of guidance frequency based on the observation from year 2001 to 2003,
PREDDEDI	= the predicted value of dedication, which is the fitted value (i.e., a continuous measure) from the first-stage logistic regression of DEDICATED on all exogenous variables from Model (1) and Model (2) together,
PREDRDX	= the predicted value of R&D expenses, which is the fitted value from the first-stage ordinary least square regression of RDX on all exogenous variables from Model (1) and Model (2) together,
LAGRDX	= R&D expenses (Compustat data#46) at the end of year 2000 scaled by total assets (Compustat data#6) at the beginning of year 2000,
LAGDEDI	= the rank of the sample firms' quarterly earnings guidance frequency (into three groups) within their respective industry's distribution based on data from 1998 to 2000,
BM	= ratio of book value of equity (Compustat data#60) to market value of equity (Compustat data#25 x data#199) at the end of the year 2000,
LOGMV	= log of market value at the end of the year 2000,
EP	= earnings per share (Compustat data#58) divided by price per share (Compustat data#199) at the end of the year,
AGE	= log of firm age,
ADJROA	= R&D-adjusted return on assets measured as net income before extraordinary items (Compustat data#18) plus 0.65 times R&D expenses (Compustat

	data#46) divided by total assets (Compustat data#6) at the beginning of the year,
NADJROA	= ADJROA if ADJROA is negative and 0 otherwise,
LOSS	= 1 if net income before extraordinary items (Compustat data#18) is negative and 0 otherwise,
CAPX	= capital expenditure (Compustat data#30) for fiscal year scaled by total assets (Compustat data#6) at the beginning of the fiscal year,
ADJFCF	= R&D adjusted free cash flow measured using income (Compustat data#18) minus the change of current assets (Compustat data#4) plus the change of current liabilities (Compustat data#5) plus the change of cash and short-term investments (Compustat data#1) minus the change of short-term debt (Compustat data#34) plus depreciation (Compustat data#14) minus capital expenditure (Compustat data#30) plus 0.65 times R&D expenses (Compustat data#46) scaled by total assets (Compustat data#6) at the beginning of the fiscal year,
DILUTION	= the difference between basic earnings per share (Compustat data#58) and diluted earnings per share (Compustat data#57) deflated by the diluted earnings per share (Compustat data#57) at the end of the year,
EQOFFER	= total net value of new equity issuance (Compustat data#108) during 2001 to 2003 scaled by total assets at the end of the year 2000,
%TINST	= percentage of transient institutional holding at the end of the year from CDA/Spectrum Institutional (13f) Holdings database according to Bushee (1998),
NUMANA	= number of analysts following at the end of the calendar year from First Call Summary database,
VALRE	= value relevance proxy, measured as negative one times the squared residual from the following regression: $RET = \beta_0 + \beta_1 NIBE + \beta_2 LOSS + \beta_3 NIBE * LOSS + \beta_4 \Delta NIBE + \varepsilon$ <p>The regression is estimated by three, two, or one-digit SIC code conditional on having at least 10 firms in each group. RET = market adjusted return over the fiscal year; NIBE = net income before extraordinary items (Compustat annual data#18) scaled by the beginning market value of equity (Compustat annual data#25*Compustat annual data#199); LOSS = 1 if NIBE is negative, zero otherwise; <math>\Delta NIBE</math> = the change in net income before extra-ordinary items scaled by beginning market value of equity. Since we multiply by -1 larger values of VALREL indicates greater value relevance,</p>
MAFEO	= average absolute analyst forecast error measured as the absolute value of the difference between actual earnings per share and the mean forecast at the beginning of the quarter scaled by price at the quarter end over the current year,
MSTD0	= average standard deviation of analyst forecasts measured as the standard deviation of the beginning of the quarter forecasts scaled by price at the quarter end over the current year,
PIN	= a measure of probability of information-related trading estimated using the Easley, Hvidkjaer and O'hara (2002) trading model for the current year,

EXPDAM = expected loss damage following Skinner (1997) to measure potential litigation costs calculated as  $-MVE * MKTADJRET * (1 - (1 - VOL)^N)$ ; MVE=market value at the beginning of the year; MKTADJRET=market adjusted return over the year; VOL=average percentage of the firm's shares traded over the year; N=day period between the end of the year and the beginning of the year.

#### 4.2.1 Modeling R&D Intensity

Our R&D model (Model 1) is largely based on that in Bushee [1998] and Berger [1993] and augmented by additional variables that control for various incentives for myopic managerial behavior. The dependent variable, *RDX*, is annual R&D expenditure deflated by beginning total assets. Our variable of interest is *DEDICATED*, which is an indicator variable capturing whether a firm is a dedicated or an occasional guider. If dedicated guiders behave myopically, we expect the coefficient on *DEDICATED* in Model (1) to be significantly negative. In other words, we expect dedicated guiders to invest significantly less in R&D, *ceteris paribus*.

We include industry dummies *IND<sub>i</sub>* because of the considerable variation in R&D intensity across different industries. Also, similar to Berger [1993], we include lagged R&D (*LAGRDX*) as an additional independent variable. The inclusion of lagged R&D controls for cross-sectional variation in R&D intensity and makes our model similar to a “changes” specification without constraining the coefficient. We also include lagged guidance frequency (*LAGDEDI*) to control for a firm's general propensity to provide earnings guidance. Specifically, *LAGDEDI* is constructed similarly as *DEDICATED* except that it is measured over the prior three-year period, i.e., over 1998-2000.

We categorize the remaining independent variables in Model (1) into four categories: growth, financial constraints, managerial short-term incentives and market short-term incentives. First, we include variables to reflect firms' growth opportunities both because firms with growth opportunities are more likely to invest in R&D and because the costs of under-investing in R&D

are expected to be higher for such firms (Myers [1984], Berger [1993]). Specifically, we expect *RDX* to be negatively related to book-to-market ratio (*BM*), firm size (*LOGMV*), earnings-to-price ratio (*EP*) and firm age (*AGE*).

Second, we include variables that capture financial constraints on R&D spending. R&D is essentially discretionary investment and therefore we expect that financial constraints will adversely affect the level of R&D expenditure.<sup>9</sup> At the outset, we expect the level of R&D expenditure to depend on the firm's financial performance as firms with poor financial performance are likely to be more financially constrained. Accordingly, we include return on assets adjusted for after-tax R&D expense as an additional control variable (*ADJROA*). We also allow for different coefficients on negative and positive return on assets by including *NADJROA*, which is *ADJROA* if it is negative and zero otherwise. We also include a loss indicator that takes value 1 if the firms reports negative earnings (*LOSS*), as an additional measure of financial performance. Additionally, we expect R&D expenditure to be negatively related to capital expenditure (*CAPX*) because firms with higher capital expenditure are likely to have less funds available for R&D (Bushee [1998]). We also include a measure of free cash flow adjusted for R&D effects (*ADJFCF*) because it proxies for a company's financial constraints (or lack thereof).

The third set of control variables attempt to capture managerial incentives for focusing on short-term performance. Prior studies suggest that managers endowed with large amounts of stock options place greater emphasis on short-term performance (e.g., Cheng and Warfield [2005]). To measure the extent of in-the-money employee stock option ownership, we construct a measure that is defined as the difference between basic and diluted earnings per share deflated

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<sup>9</sup> For example, there is burgeoning literature in corporate finance that argues that financial constraints can adversely affect firms' propensity for capital investment (e.g., Fazzari, Hubbard and Petersen, 1988; Kaplan and Zingales, 1997).

by diluted earnings per share (*DILUTION*). Because employee stock options are often the most significant dilutive security, our measure captures the extent of in-the-money employee stock option ownership. We also include a measure of another managerial short-term incentive that arises from equity offering (*EQOFFER*) because firms have incentives to focus on short-term performance in order to decrease cost of capital.

Finally, we include proxies for various market factors that may encourage or constrain managerial myopia. Bushee [1998] shows that transient institutional investors emphasize short-term performance and encourage myopic reductions in R&D spending. Accordingly, we expect the level of R&D investment to be negatively related to the percentage ownership by transient institutional investors (*%TINST*). We also predict that financial analysts play a monitoring role, which might mitigate managerial myopia (Jensen and Meckling [1976]). Hence we include the number of analysts following the firm (*NUMANA*) in the model. Finally, we include a measure for the value relevance of earnings (*VALRE*). We predict that, because capital markets place greater weight on more value-relevant earnings, managers of such firms might myopically emphasize short-term earnings performance.

#### *4.2.2 Modeling Disclosure Frequency*

In Model (2), we model guidance frequency based on the fairly extensive literature on voluntary disclosure incentives (e.g., Lang and Lundholm [1993], Skinner [1994], Healy and Palepu [2001]). Our dependent variable is *DEDICATED* which is a dummy variable that takes on the value 1 for dedicated guiders and 0 otherwise. We include *RDX* as an independent variable when modeling guidance frequency because *R&D* investments and frequency of earnings guidance may be reciprocally caused. We include our lagged guidance frequency measure

(*LAGDEDI*) to control for firms' historical propensity to provide frequent guidance. Finally, we include industry indicator variables (*IND*) to control for industry-specific effects.

We categorize our remaining control variables into the following groups: expectations adjustment, demand for information, litigation risk, managerial short-term incentives and market short-term incentives. First, we follow Ajinkya and Giff's [1984] argument that managers provide earnings guidance in order to align the market expectations with their own. We include the mean quarterly absolute analysts' earnings forecast error (*MAFEO*) and standard deviation of analysts' earnings forecasts (*MSTD0*) as proxies for the demand for expectations adjustment. Second, we include several variables that capture demand for information. We include the log of market value of equity (*LOGMV*) and number of analysts covering the firm (*NUMANA*) because we expect managers of larger firms and firms with higher analyst coverage to face greater demand/pressure to provide information to the market. At the same time, we also expect that investors of firms with higher information asymmetry will demand more guidance from managers. We measure information asymmetry by probability of informed trading (*PIN*) and the earning-price ratio (*EP*).

Third, following Skinner [1997], we include a proxy for litigation risk that attempts to measure potential damages from litigation as the dollar amount of investors' losses measured over the prior year (*EXPDAM*).<sup>10</sup> While litigation risk is expected to affect corporate guidance policy, we do not make a directional prediction for the effect of *EXPDAM* because as Healy and Palepu [2001] suggest, litigation risk can have two offsetting effects on managers' disclosure decisions. First, legal actions against managers for inadequate or untimely disclosures can encourage firms to increase voluntary disclosure to avoid surprising the market with bad news

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<sup>10</sup> The measure in Skinner [1997] requires a class action period as his sample firms all are subject to actual class action lawsuits. Since our sample is a more general sample without actual litigation, we use a one-year period prior to the year as the measurement period of the expected damage variable.

(Skinner 1994). Second, litigation can potentially reduce managers' incentives to provide disclosure, particularly of forward-looking information such as earnings guidance that can be subsequently verified. We also include the loss indicator (*LOSS*) to control for potential litigation risk, although we again do not predict the direction of its effect.<sup>11</sup>

Our fourth and fifth sets of control variables, managerial short-term incentives and market short-term incentives, are similar to those included in the R&D model. The rationale for including these variables is that short-term incentives (internal or market related) will cause the manager to focus more on short-term earnings, thereby inducing them to engage in expectations management and therefore provide frequent quarterly earnings guidance. Therefore we include *DILUTION* and *EQOFFER* (managerial short-term incentives) and *%TINST* and *VALRE* (market short-term incentives) in the model.

## 4.3 MULTIVARIATE REGRESSION RESULTS

### 4.3.1 Single-Stage Multiple Regression

We first estimate Model (1) using single-stage OLS regression and report the results in Panel B of Table 2. We remove all observations with absolute studentized t-values greater than 2 to control for outlier effects. As hypothesized, the coefficient on *DEDICATED* is significantly negative at -0.004 (p=0.02), suggesting that dedicated guiders, after controls, on average under-spend their occasional counterparts on R&D by 0.4% of total assets.<sup>12</sup> This result is consistent with dedicated guiders under-investing in R&D, although the magnitude of the difference is order-of-magnitude lower than that in the univariate analysis.

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<sup>11</sup> *LOSS* also proxies for performance. Prior studies find a *positive* association between performance and disclosure (Lev & Penman [1990], Lang and Lundholm [1993]).

<sup>12</sup> The reported p-values are based on simple t-statistics from OLS regressions. We also estimate Newey-West corrections to all our regressions and find similar results on all our key variables.

Regarding the control variables, as predicted, firm-years with higher lagged R&D investment (*LAGRDX*), lower book-to-market ratio (*BM*), younger age (*AGE*), higher adjusted return on assets (*ADJROA*), lower capital expenditure (*CAPX*), lower dilution factor (*DILUTION*), less transitory institutional holding (*%TINST*), lower value relevance of earnings (*VALRE*) tend to invest more on R&D. Inconsistent with expectations, firm-years with higher earnings price ratio (*EP*), negative earnings (*LOSS*), more net equity issuance (*EQOFFER*) tend to invest more in R&D. The coefficient on *NADJROA* is significantly negative. All other control variables are insignificant.

#### 4.3.2 Two-Stage Regression Controlling for Endogeneity

The OLS regression is misspecified if R&D expenditure and guidance frequency are endogenously determined. Therefore, based on Models (1) and (2), we conduct the “omitted variables” version of the Hausman [1978] test of endogeneity between *RDX* and *DEDICATED* (see Beatty et al. [1995]). Unreported results suggest that *RDX* and *DEDICATED* are indeed endogenously determined. Accordingly we simultaneously estimate *RDX* and *DEDICATED* using the system specified in Models (1) and (2).<sup>13</sup>

To estimate the simultaneous equations, we employ a two-stage procedure recommended by Nelson and Olsen [1978] (see DeFond et al. [2002] for an application in an accounting context). Specifically, in the first stage, we model *RDX* and *DEDICATED* separately using all exogenous variables in Models (1) and (2). We use OLS estimation for Model (1) and logit estimation for Model (2) and generate predicted values for *RDX* and *DEDICATED*. In the second

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<sup>13</sup> The reported results are based on the full sample with data availability. We also control for outliers in all our two-stage analyses in the following manner. In the *RDX* model (OLS regression) we exclude observations with absolute studentized t-values greater than 2 and in the *DEDICATED* model (logit regression) we exclude all observations with Pearson-stat greater than 2. The inferences are unchanged.

stage, we replace the independent variables *RDX* and *DEDICATED* with their respective predicted values in Models (2) and (1) respectively (i.e., *PREDRDX* and *PREDDEDI*).<sup>14</sup>

Larcker and Rusticus [2005] highlight two potential problems with the two-stage regression procedure. The first problem is that of *weak instruments*; that is, the instrumental variables (IV) are weakly correlated with the endogenous variable. Such a problem can arise when the exogenous variables selected by the researcher in the first stage are unable to adequately explain the variation the endogenous variable. Weak instruments can cause the coefficient on the endogenous variable to still be biased in the direction of the single-stage OLS regression. We perform the following tests to examine the strength of our IVs for *DEDICATED*. First, we examine the goodness-of-fit statistics for the logit estimation of Model (2) (i.e., where *DEDICATED* is the dependent variable). Both the Likelihood Ratio Test and the Wald Test reject the null hypothesis of lack-of-fit at  $p < 0.01$ . Second, we estimate the correlation between the endogenous variable (i.e., *DEDICATED*) and the predicted value of *DEDICATED* from the first stage logit regression. The Pearson correlation is 0.63 and significant at  $p < 0.01$ . Together, these results suggest that it is unlikely that we have a weak instrument problem in our two-stage regression.

A second potential problem with the two-stage method, according to Larcker and Rusticus [2005], is that of *semi-endogenous instruments*, i.e., the chosen instruments are not entirely exogenous. If the instruments themselves are endogenous, it leads to bias in the two-stage coefficients. In case of over-identified models such as ours (i.e., where the number of instruments exceeds the number of endogenous regressors), it is possible to regress the estimated

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<sup>14</sup> Amemiya [1978] shows that although the coefficients from the Nelson-Olsen second-stage equation are asymptotically unbiased, they are not the most efficient estimators and the covariance matrix of the estimators are biased. He proposes a method for deriving more efficient estimators and a correction to the covariance matrix that is unbiased. Similar to DeFond et al. [2002], we do not implement this correction because the extent of this bias is expected to be small and is unlikely to affect our inferences.

error term in the second-stage equation on the instruments to determine whether the chosen instruments are valid, i.e., exogenous (see Hausman [1978]). In particular, the R-squared from this regression can be used to perform a Chi-squared test; a significant Chi-squared statistic indicates that the instruments are potentially endogenous. Accordingly, we regress the residuals from the second stage R&D model on our exogenous variables (instruments). The coefficients on all but one of our instruments are not significantly different from zero.<sup>15</sup> Also the Chi-squared test is insignificant at conventional levels ( $p > 0.99$ ).<sup>16</sup> Thus, our tests indicate that our instruments are reasonably exogenous.

Overall, our tests detect the presence of endogeneity between *RDX* and *DEDICATED*, but suggest that our set of instruments are neither semi-endogenous nor weak in explaining the endogenous variables. Accordingly, we implement the two-stage regression procedure. Results are reported in Panel C of Table 2. Consistent with our hypothesis, the coefficient on *PREDEDEDI* (i.e., the predicted value for *DEDICATED* from the first-stage estimation) remains significantly negative at -0.048 ( $p < 0.01$ ). This suggests that after controlling for potential endogeneity, dedicated guiders on average spend 4.8% of total assets less on R&D than occasionally guiders; the magnitude of the effect increases by an order-of-magnitude relative to the simple OLS regression reported in Panel B of Table 2, and becomes substantially similar to that in univariate analysis. This result suggests that the simple OLS coefficient was biased downward because of endogeneity.

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<sup>15</sup> The only instrument that is significant in this regression is PIN. Accordingly, in sensitivity analysis, we re-estimate the two-stage regression after excluding PIN from the system of equations. Our results are qualitatively similar.

<sup>16</sup> Specifically,  $nR^2 \sim \chi^2(M - N)$  where  $n$  = sample size,  $R^2$  = the R-squared from the above regression and  $M$  and  $N$  are number of instruments and endogenous variables respectively. In our case,  $n = 2655$ ;  $R^2 = 0.17\%$ ;  $M = 29$  and  $N = 2$ . This gives us a Chi-squared value of 4.51 with 27 degrees of freedom, which is equivalent to a p-value of 0.99.

In addition, we do not find a significant effect of *RDX* on *DEDICATED*, suggesting that R&D expenditure levels do not influence guidance frequency directly. Regarding the control variables, we find that the results for model (1) are largely consistent with those in simple OLS regression with the following exceptions. The coefficients on lagged value of dedication (*LAGDEDI*) and analyst coverage (*NUMANA*) now become significantly positive. Equity dilution factor (*DILUTION*) and transitory institutional holding are insignificant.<sup>17</sup> Finally, we note that the adjusted (pseudo) R-squared for the two equations are 68.76% and 49.73% respectively, which suggests that we have modeled the joint decisions for R&D expenditures and guidance frequency reasonably well.

In summary, our results are consistent with our hypothesis ( $H_{1A}$ ) that *ceteris paribus* firms that provide frequent quarterly earnings guidance are likely to invest less in R&D than those who provide guidance occasionally. Our results are robust to controlling for other factors that affect R&D spending and to controlling for the endogeneity between R&D expenditure and guidance frequency.

## **5. Guidance Frequency and Short-Term Performance**

### **5.1 UNIVARIATE ANALYSIS**

To test  $H_{2A}$ , we first compare the relative frequency with which dedicated and occasional guiders meet or beat analysts' quarterly earnings forecasts. We study the ability to meet or beat analyst expectations at two points in time: at the beginning of the quarter and prior to the earnings announcement. Accordingly, we define two indicator variables that switch on when a

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<sup>17</sup> We note that the insignificant coefficient on *%TINST* is not necessarily inconsistent with Bushee [1998] who finds firms with higher transient institutional investors are more likely to cut R&D. Bushee examines the probability of cutting R&D while we in effect examine both the magnitude and the direction of changes in R&D by modeling the level of R&D investment controlling for its lagged level. In addition, we have other control variables that are not present in Bushee's model and we estimate a simultaneous equation system, which may also affect the results. The *%TINST* variable has a significantly negative coefficient in our simple OLS regression reported in Panel B of Table 2, consistent with Bushee [1998].

firm meets/beats expectations based on the first consensus forecast after the beginning of the quarter (*MBE0*) and the last consensus forecast before the actual earnings announcements respectively (*MBE*). Panel A of Table 3 shows that only 53% of dedicated guiders would meet or beat analyst consensus forecasts measured at the beginning of the quarter (*MBE0*=1 for 53% of the dedicated guiders), in comparison to 51% of occasional guiders. The difference, although statistically significant, is small in magnitude. In contrast, by the time of earnings announcements, dedicated guiders meet or beat market expectations 85% of the time (*MBE*=1 for 85% of dedicated guiders), compared to only 71% for the occasional guiders. This difference is statistically significant at better than 0.01 level and the magnitude is considerably larger. Thus, the evidence supports our hypothesis that dedicated guiders are more likely to meet or beat quarterly analyst forecast at the time of earnings announcements.

To shed further light on the role of earnings guidance in meeting short-term earnings targets (through managing the market's earnings expectations downward<sup>18</sup>), in Panel B of Table 3 we report the interaction between *MBE0* and *MBE* for dedicated guiders and occasional guiders separately. While the distribution of *MBE* is similar between the two groups of firms conditional on *MBE0*=1, a much higher percentage of *MBE0*=0 firms eventually meet or beat analyst consensus at the time of earnings announcement (i.e., *MBE*=1) for dedicated firms (70%) than for occasional firms (47%). A Chi-squared test suggests that this difference is statistically significant ( $p < 0.01$ ). Thus, while the results in Panel A suggest that dedicated guiders have greater emphasis on meeting or beating short-term analyst forecasts, the evidence in Panel B

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<sup>18</sup> Expectations management does not preclude the possibility of the firm using other approaches, such as earnings management or real operations management (i.e., cutting R&D expenditures or foregoing positive-NPV projects) to meet or beat market expectations. For example, Kasznik [1999] finds that managers who issue earnings forecasts also manage reported earnings toward their forecasts; Matsumoto [2002] finds that managers use both earnings management and expectations management to avoid negative earnings surprises. In Section 5.3 we provide a direct test suggesting that dedicated firms use R&D expenditure to meet/beat expectations.

suggests this is mainly driven by dedicated firms that would have missed analyst forecasts based on consensus forecasts early in the quarter. Overall our results suggest that dedicated guiders participate more actively in the earnings meeting/beating “game”, in particular through managing earnings expectations.

## 5.2 REGRESSION ANALYSIS

We next estimate a logistic regression that controls for different factors affecting the probability of meeting or beating quarterly analyst consensus earnings forecasts. We follow Matsumoto [2002] who models this probability based on firms’ incentives to avoid negative earnings surprises. Specifically, we estimate the following logistic regression model (firm-quarter subscripts omitted):

$$\begin{aligned}
 Prob(MBE=1) = & F(\beta_0 + \sum \alpha_i IND_i + \beta_1 DEDICATED + \beta_2 ML\%INST + \beta_3 MLRDX \\
 & + \beta_4 MLLABR + \beta_5 QLOSS + \beta_6 GROWEST + \beta_7 POSUE + \beta_8 QLOGMV + \beta_9 AFE0 + \varepsilon)
 \end{aligned}
 \tag{3}$$

*MBE* and *DEDICATED* are as defined earlier. *DEDICATED* is our variable of interest. To the extent that firms frequently issuing earnings guidance have more emphasis on short-term objectives such as meeting or beating market expectations, we expect the coefficient on *DEDICATED* to be significantly positive. Matsumoto [2002] shows that firms with higher institutional ownership (*ML%INST*), higher R&D expenditures (*MLRDX*), and higher labor intensity (*MLLABR*) are more likely to meet or beat analyst consensus. Accordingly, we control for these variables. As in Matsumoto [2002], *ML%INST* is the average percentage of institutional ownership over the previous four quarters where institutional ownership information is obtained from CDA/Spectrum Institutional Holdings (13f) database; *MLRDX* is the average R&D

expenditure deflated by total assets over the previous four quarters<sup>19</sup> and *MLLABR* is the average labor intensity over the previous four quarters, where labor intensity is measured as one minus property, plant, and equipment deflated by total assets.

Following Matsumoto [2002], we also expect *MBE* to be negatively correlated with *QLOSS*, an indicator variable that takes value 1 if the firm reports loss for every quarter in the previous four quarters and 0 otherwise; positively correlated with *GROWEST*, the I/B/E/S median analyst estimate for long-term earnings growth measured at the end of the previous year;<sup>20</sup> positively correlated with *POSUE*, an indicator variable that equals to 1 if the earnings of the quarter is greater than that of the same quarter in the previous year, and 0 otherwise. Finally, we expect larger firms (measured as *QLOGMV*, log of market value at the end of the quarter) and firms with lower uncertainty in forecasting environment (measured as *AFE0*, the deflated absolute value of analyst forecast error at the beginning of the quarter) to be more likely to meet or beat analyst consensus. We also include industry dummy variables (*IND<sub>i</sub>*) to control for industry-specific factors that affect the industry's overall likelihood of meeting or beating analyst consensus. Because of the inclusion of the industry dummies, we omit the following industry-specific variables from Matsumoto's model: indicators for durable goods industry and high litigation risk industry, and industry-specific measure for value relevance of earnings.

The results of the logistic regression estimation are presented in Panel C of Table 3. As expected, the coefficient on *DEDICATED* is significantly positive at 1.139 with p-value less than 0.01, suggesting that even after controlling for determinants of the probability, dedicated guiders

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<sup>19</sup> Similar to Matsumoto [2002], when firms do not report quarterly, but report annual R&D information, we use one-fourth of the annual R&D for each of the four quarters during the corresponding fiscal year. In addition, we set R&D to zero if the variable is missing in both quarterly and annual Compustat databases.

<sup>20</sup> We use median, as opposed to mean, analyst long-term growth estimate because I/B/E/S recommends its use due to the variance in methodologies for the calculation of long-term growth estimate among analysts. However, our results are qualitatively unchanged when we use mean analyst long-term growth estimate instead.

meet or beat analyst consensus significantly more frequently than occasional guiders. All of the control variables have significant coefficients consistent with our expectations as described above.

We argue that the greater propensity to “walk-down” market expectations and meet short-term earnings targets is simply another observable aspect of the myopic focus of dedicated guiders on achieving short-term goals. However, prior studies on expectations management have documented that firms use earnings guidance to achieve beatable market expectations (e.g., Matsumoto [2002], Cotter et al. [2004]). Therefore it is unsurprising that dedicated guiders are able to meet/beat expectations more often; it is a direct consequence of guiding the markets more frequently. In order to distinguish our results from this alternative explanation, we re-estimate Model (3) using quarters when firms do not provide any earnings guidance. Untabulated results suggest dedicated guiders are more likely to meet/beat analysts’ forecasts even in quarters during which they do not issue earnings guidance. These results show that the ability of dedicated guiders to meet/beat earnings expectations is a *cross-sectional* phenomenon that likely reflects the underlying myopic propensity of such firms rather than a mechanical consequence of walking down expectations.

### 5.3. MEETING/BEATING ANALYST FORECASTS AND R&D EXPENDITURE

We next provide a direct and simple test of our myopia hypothesis by integrating our prior analyses with respect to R&D spending and meeting/beating earnings expectations. Specifically, we examine whether dedicated guiders are more likely to meet/beat earnings expectations because they reduce R&D spending. To implement this, we separately compare the “inherent propensity” of dedicated or occasional guiders to meet or beat earnings expectations

assuming the firm had maintained its previous R&D levels with the actual incidence of meeting/beating expectations. Specifically, we construct a variable *ADJMBE* that indicates whether a firm would have met or beaten consensus analysts' earnings forecasts (measured prior to earnings announcements) had it maintained the same level of R&D expenditure as in the same quarter of the previous year.<sup>21</sup> We then interact *ADJMBE* with the realized *MBE*, and report the resulting contingency table.

Table 4 reports results of this analysis. Panel A reports the contingency table. First we examine the columns where *ADJMBE*=1, i.e., where firms would have beaten earnings expectations had they maintained R&D spending at previous levels. We observe that dedicated guiders have a somewhat higher propensity to meet/beat expectation (i.e., *MBE* =1) than occasional guiders (95% versus 88%), although the difference does not appear to be large. Turning to columns where *ADJMBE*=0 (i.e., where firms would have missed earnings expectations had they maintained R&D spending at previous levels) we see that a 64% of dedicated guiders end up meeting or beating market expectations compared to 44% of occasional firms. These results suggest that while both types of firms appear to reduce R&D to avoid missing earnings expectations, dedicated guiders are far more aggressive in doing so.

Panel B presents the results in a format that better articulates the differences between dedicated and occasional guiders. The first three columns examine the relative proportions of the two types of firms meeting/beating expectations given *prior* R&D spending levels. Dedicated guiders are 2.60 times as likely to meet/beat expectations than miss expectations based on prior R&D levels versus 1.71 times for occasional guiders. That is, if maintaining prior R&D levels, dedicated guiders are 1.52 (2.60/1.71) times more likely than occasional guiders to meet/beat

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<sup>21</sup> We note that the results are qualitatively similar if we construct *ADJMBE* based on R&D levels in the previous quarter.

than miss earnings expectations. This difference could arise because of inherent differences in performance or better expectations management on the part of dedicated guiders. The last three columns examine the relative proportions of the two types of firms meeting/beating expectations given *current* R&D spending levels. Dedicated guiders are 6.24 times as likely to meet/beat expectations than miss expectations using current R&D levels versus 2.51 times for occasional guiders. That is, based on current R&D levels, dedicated guiders are 2.49 (2.60/1.71) times more likely than occasional guiders to meet/beat than miss earnings expectations. Clearly, the probability of meeting/beating expectation increases significantly for both dedicated and occasional guiders when we use current R&D levels, indicating that both types of firms engage in earnings management using R&D spending. However, the extent of cutting R&D for the purpose of meeting/beating market expectations among dedicated firms is significantly more aggressive.

In sum, we show that dedicated guiders more aggressively reduce R&D spending levels to meet/beat earnings expectation than occasional guiders. This evidence suggests that dedicated firms are more likely to sacrifice long-term benefits (i.e., R&D investments) for the sake of meeting short-term goals (i.e., meeting/beating earnings expectations). This evidence is consistent with the myopia hypothesis.

## **6. Guidance Frequency and Long-Term Performance**

Our final hypothesis H<sub>3A</sub> examines the implications of quarterly guidance frequency on firms' long-term operating performance. Our measure of long-term operating performance is change in return on assets (*CROA*) from 2003 to 2005. Since R&D expenditures decrease the reported net income, in measuring *CROA*, we adjust for the effects of R&D expenditures by

adding back the after-tax R&D expenditure to net income before extraordinary items and then deflate it by lagged total assets. We first report univariate analysis in Panel A of Table 5. The mean *CROA* is 4.5% for dedicated guiders, in comparison to 4.1% for occasional guiders. While this is inconsistent with our expectations, the difference is not statistically significant ( $p = 0.58$ ). Both groups of firms have median *CROA* of 3.1%; again the difference is not discernibly different from zero ( $p = 0.84$ ).

It is important to note that univariate analysis does not take into account other factors that may potentially affect a firm's long-term earnings growth. This is especially problematic when these factors are correlated with guidance frequency. To properly explore the relationship between guidance frequency and the long-term changes in return on assets, we need to adequately address this correlated-omitted variable problem. Accordingly, we estimate the following OLS regression that controls for other potential determinants of changes in ROA (firm subscripts omitted):

$$CROA = \beta_0 + \sum \alpha_i IND_i + \beta_1 DEDICATED + \beta_2 BM_{2003} + \beta_3 LOGMV_{2003} + \beta_4 GROWEST_{2003} + \beta_5 ROA_{2003} + \beta_6 NMBE + \varepsilon \quad (4)$$

*CROA* and *DEDICATED* are as defined previously. We again include industry dummies ( $IND_i$ ) to control for industry-specific factors that affect the long-term earnings growth. Book-to-market ratio ( $BM_{2003}$ ), firm size ( $LOGMV_{2003}$ ), and median analyst forecast for long-term growth ( $GROWEST_{2003}$ ) are measured at the end of fiscal year 2003 (indicated with subscripts 2003) in order to control for economic conditions and market expectations for future growth at the beginning of the period for which we measure the earnings growth. We expect firms with lower  $BM_{2003}$ , smaller  $LOGMV_{2003}$ , or higher  $GROWEST_{2003}$  to have higher *CROA* over the subsequent periods. We also include the level of ROA for 2003 ( $ROA_{2003}$ ) to control for the fact that firms with higher ROA already have less growth opportunities and hence are expected to have lower

growth in operating performance. Finally, *NMBE* is the number of quarters, out of the twelve quarters in 2001-2003, during which the firm meets or exceeds market expectations of earnings. We include this variable because Bartov et al. [2002] show that firms that meet or beat analyst forecasts have better operating performance in the future.

Table 5 Panel B reports the results of the OLS regression for Model (4). As predicted, *DEDICATED* has a negative coefficient of -0.011, which is significant at the 0.02 level. This magnitude also appears economically significant. The effect of firm size is insignificant. All other variables have significant coefficients with signs consistent with our predictions. Specifically, book-to-market ratio and return-on-assets in 2003 are significantly negatively correlated with the change in ROA while analyst long-term growth forecasts and firms' propensity in meeting or beating market expectations are significantly positively correlated with the change in ROA.

To summarize, consistent with the myopia hypothesis, our results suggest that future ROA growth is significantly lower for dedicated guiders than for occasional guiders, after controlling for other determinants of changes in ROA. Thus, the empirical evidence in Sections 4-6 collectively supports our hypothesis that frequent quarterly earnings guidance is associated with managerial myopic behavior, i.e., sacrificing long-term performance for the purpose of meeting short-term objectives.

## **7. Conclusion**

Recent discontinuance of quarterly earnings guidance by many firms has ignited a debate about the costs and benefits of providing such guidance (e.g., McKay and Brown 2002). At issue are the implications of earnings guidance for myopic managerial behavior. For example,

managers of companies discontinuing earnings guidance have remarked that earnings guidance precipitates myopic decisions by forcing managers to emphasize meeting short-term earnings targets rather than long-term value creation.

We provide empirical evidence that firms that frequently issue quarterly earnings guidance exhibit relatively more myopic behavior than those that provide less frequent guidance. Specifically, we document that dedicated guiders invest less in R&D, meet or beat analyst consensus forecasts more frequently and have significantly lower long-term ROA growth than occasional guiders. In particular, our result that dedicated guiders invest less in R&D is robust to controlling for endogeneity between R&D investments and guidance frequency. Overall, our evidence lends support to the argument that frequent quarterly earnings guidance fosters myopic managerial behavior.

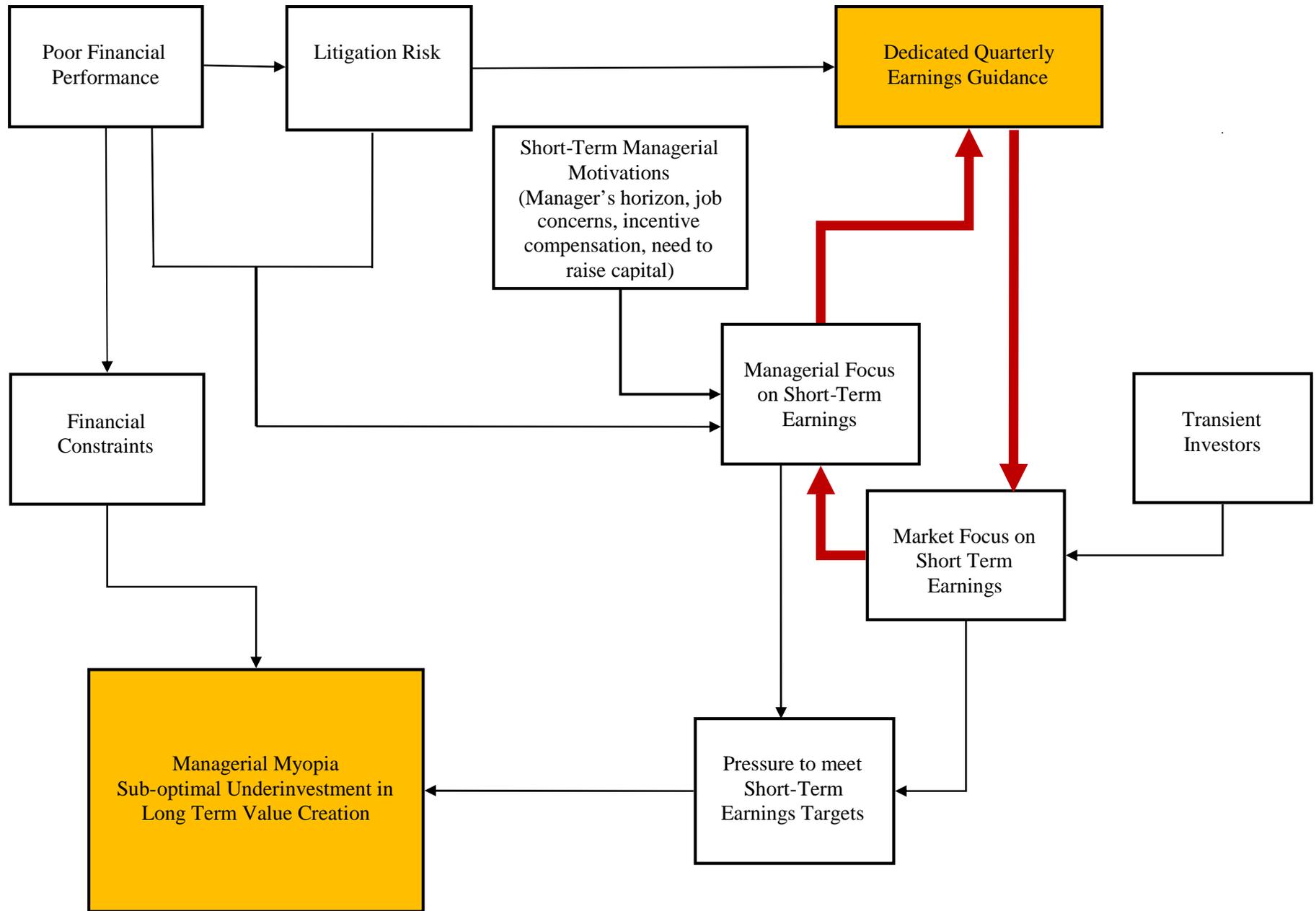
## REFERENCES

- AJINKYA, B., AND M. GIFT. "Corporate Managers' Earnings Forecasts and Symmetrical Adjustments of Market Expectations." *Journal of Accounting Research* 22 (1984): 425-444.
- AMEMIYA, T. "The Estimation of a Simultaneous Equation Generalized Probit Model." *Econometrica* 46 (1978): 1193-1205.
- BABER, W. R., P. M. FAIRFIELD, AND J. A. HAGGARD. "The Effect of Concern about Reported Income on Discretionary Spending Decisions - The Case of Research-and-Development." *The Accounting Review* 66 (1991): 818-829.
- BARTOV, E., D. GIVOLY, AND C. HAYN. "The Rewards to Meeting or Beating Earnings Expectations." *Journal of Accounting & Economics* 33 (2002): 173-204.
- BEATTY, A., S. CHAMBERLAIN, AND J. MAGLIOLO. "Managing Financial Reports of Commercial Banks: The Influence of Taxes, Regulatory Capital and Earnings." *Journal of Accounting Research* 33 (1995): 157-178.
- BERGER, P. "Explicit and Implicit Tax Effects of the R&D Tax Credit." *Journal of Accounting Research* 31 (1993): 131-171.
- BHOJRAJ, S., AND R. LIBBY. "Capital Market Pressure, Disclosure Frequency-Induced Earnings/Cash Flow Conflicts, and Managerial Myopia." *The Accounting Review* 80 (2005): 1-20.
- BHOJRAJ, S., P. HRIBAR, AND M. PICOONI. "Making Sense of Cents: An Examination of Firms that Marginally Miss or Beat Analyst Forecasts." Working Paper, Cornell University, 2005.
- BROWN, L., AND M. CAYLOR. "A Temporal Analysis of Thresholds: Propensities and Valuation Consequences." *The Accounting Review* 80 (2005): 423-440.
- BUSHEE, B. "The Influence of Institutional Investors on Myopic R&D Investment Behavior." *The Accounting Review* 73 (1998): 305-333.
- CHEN, S., D. MATSUMOTO, AND S. RAJGOPAL. "Is Silence Golden? An Empirical Analysis of Firms that Stop Giving Quarterly Earnings Guidance in the Post Regulation-FD Period." Working paper, University of Washington, 2005.
- CHENG, Q., AND T. D. WARFIELD. "Equity Incentives and Earnings Management." *The Accounting Review* 80 (2005) 441-476.
- COTTER, J., A. I. TUNA, AND P.D. WYSOKI. "Expectations Management And Beatable Targets: How Do Analysts React to Explicit Earnings Guidance?" Working paper, University of South Queensland, 2004.
- DECHOW, P. M., AND R. G. SLOAN. "Executive Incentives and the Horizon Problem: An Empirical Investigation." *Journal of Accounting and Economics*, 14 (1991): 51-89.
- DEFOND, M. L., K. RAGHUNANDAN, AND K.R. SUBRAMANYAM. "Do Non-Audit Service Fees Impair Auditor Independence? Evidence from Going Concern Audit Opinions." *Journal of Accounting Research* 40 (2002): 1247-1274.

- ELLIS, D. *Capital: The Story of Long-Term Investment Excellence*. Hoboken, N.J.: John Wiley & Sons, 2004.
- FAMA, E. F., AND K. R. FRENCH. "Industry Costs of Equity." *Journal of Financial Economics* 43 (1997): 153-193.
- FAZZARI, S., G. HUBBARD AND B. PETERSEN. "Financing Constraints and Corporate Investment," *Brookings Papers on Economic Activity* (1988): 141-95.
- FUDENBERG, D., AND J. TIROLE. "A Theory of Income and Dividend Smoothing Based on Incumbency Rents", *The Journal of Political Economy* 103 (1995): 75-93.
- FULLER J., AND M. JENSEN. "Just Say No to Wall Street." *Journal of Applied Corporate Finance* 14 (2002): 41-46.
- GOMPERS, P. A., AND A. METRICK. "Institutional Investors and Equity Prices." *Quarterly Journal of Economics* CXIV (2001): 229-260.
- GRAHAM, J. R., C. R. HARVEY, AND S. RAJGOPAL. "The Economic Implications of Corporate Financial Reporting." *Journal of Accounting and Economics* 40 (2005): 3-73.
- HALL. B., AND K. MURPHY. "The Trouble With Stock Options." *Journal of Economic Perspectives* 17 (3): 49-70.
- HEALY, P., AND K. PALEPU. "Information Asymmetry, Corporate Disclosure, and the Capital Markets: A Review of the Empirical Disclosure Literature." *Journal of Accounting & Economics* 31 (2001): 405-440.
- HEFLIN, F., K. R. SUBRAMANYAM, AND Y. ZHANG. "Regulation FD and the Financial Information Environment: Early Evidence." *The Accounting Review* 78 (2003): 1-37.
- HOUSTON, J. F., B. LEV, AND J. TUCKER. "To Guide or Not to Guide? Causes and Consequences of Stopping and Subsequently Resuming Earnings Guidance." Working paper, University of Florida, 2006.
- JACOBS, M. *Short-Term America: The Causes and Cures of Our Business Myopia*. Harvard Business Press: Boston, MA, 1991.
- JENSEN, M., AND W. MECKLING. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 4 (1976): 305-360.
- KAPLAN, S. N. AND L. ZINGALES. Do investment-cash flow sensitivities provide useful measures of financing constraints? *Quarterly Journal of Economics* (1997) 113:169-215.
- KASZNIK, R. "On the Association between Voluntary Disclosure and Earnings Management." *Journal of Accounting Research*, 37 (1999): 57-81.
- KASZNIK, R., AND M. MCNICHOLS. "Does Meeting Earnings Expectations Matter? Evidence from Analyst Forecast Revisions and Share Prices." *Journal of Accounting Research* 40 (2002): 727-759.
- LAFOND, R., AND R. L. WATTS. "The Information Role of Conservative Financial Statements." Working paper, MIT, 2006.
- LANG, M., AND R. LUNDHOLM. "Cross-Sectional Determinants of Analyst Ratings of Corporate Disclosures." *Journal of Accounting Research* 31 (1993): 246-71.

- LARCKER, D. F., and T. O. RUSTICUS. "On the Use of Instrumental Variables in Accounting Research." Working paper, Wharton School, University of Pennsylvania (2005).
- LEVITT. "Renewing the Covenant with Investors." May 10, 2000. New York. <http://www.sec.gov/news/speech/spch370.htm>
- LEV, B., AND S. PENMAN. "Voluntary Forecast Disclosures, Nondisclosure, and Stock Prices." *Journal of Accounting Research* 28 (1990): 49-76.
- MATSUNAGA, S.R., AND C. W. PARK. "The Effect of Missing a Quarterly Earnings Benchmark on the CEO's Annual Bonus." *The Accounting Review* 76 (2001): 313-332.
- MATSUMOTO, D. "Management's Incentives to Avoid Negative Earnings Surprises." *The Accounting Review* 77 (2002): 483-514.
- MYERS, S. "The Capital Structure Puzzle." *Journal of Finance* 39 (1984): 575-592.
- MCKAY, B., AND K. BROWN. "Leading the News: Coke to Abandon Profit Forecasts, Provide Data on Long-Term Goals." *Wall Street Journal* December 16, 2002.
- NELSON, F., AND L. OLSEN. "Specification and Estimation of Simultaneous Equations Model with Limited Dependent Variables." *International Economic Review* 19 (1978): 695-710.
- PORTER, M. E. "Capital Choices: The Causes and Cures of Business Myopia." Research Report to the U.S. Government's Council on Competitiveness, Washington D.C., 1992.
- PRINCE, C.J. "Just Say No?" *Entrepreneur* (August 2005): 54-55.
- RAPPAPORT, A. "The Economics of Short-Term Performance Obsession." *Financial Analysts Journal* 61 (2005): 65-79.
- ROYCHOWDHURY, S. "Earnings Management through Real Activities Manipulation" *Journal of Accounting and Economics* 42 (2006): 335-370.
- SKINNER, D. J. "Why Firms Voluntarily Disclose Bad News." *Journal of Accounting Research* 32 (1994): 38-60.
- SKINNER, D. J. "Earnings Disclosures and Stockholder Lawsuits." *Journal of Accounting and Economics* 23 (1997): 249-282.
- SKINNER, D. J., AND R. SLOAN. "Earnings Surprises, Growth Expectations, and Stock Returns or Don't Let an Earnings Torpedo Sink Your Portfolio." *Review of Accounting Studies* 7 (2002): 289-312.
- SLOAN, R.G. "Do Stock Prices Fully Reflect Information in Cash Flows and Accruals About Future Earnings?" *The Accounting Review* (1996): 289-315.
- STEIN, J. C. "Takeover Threats and Managerial Myopia." *Journal of Political Economy* 96 (1988): 61-79.
- STEIN, J. C. "Efficient Capital Markets, Inefficient Firms: A Model of Myopic Corporate Behavior." *The Quarterly Journal of Economics* 104 (1989): 655-669.
- TEOH, S. H. I. WELCH, AND T. J. WONG. "Earnings Management and the Underperformance of Seasoned Equity Offerings." *Journal of Financial Economics* 50 (1998): 63-99.

**Figure 1: The Endogenous Nature of Earnings Guidance**



**Table 1: Description of Quarterly Earnings Guidance Frequency**

<b>Industry</b>	<b># firms</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Q1</b>	<b>Q3</b>	<b># firms FREQ=0</b>	<b># firms FREQ=12</b>
Overall	1965	4.02	3	3.76	1	7	480	72
Business Equipment	557	4.64	4	3.56	2	7	75	21
Chemicals	51	5.00	5	3.97	1	8	6	5
Consumer Durables	63	4.59	4	3.71	1	8	10	4
Consumer Non-Durables	107	4.70	4	3.96	1	8	20	6
Energy	98	1.98	0	3.14	0	3	53	2
Healthcare	249	2.12	1	3.00	0	3	117	3
Manufacturing	257	3.95	3	3.54	1	7	54	6
Telecommunications	67	2.06	0	3.20	0	3	34	2
Wholesale and Retails	216	5.93	7	4.12	2	9	32	18
Other	300	3.72	2	3.67	0	7	79	5

Table 1 reports descriptive statistics of quarterly earnings guidance frequency from 2001 to 2003 for a sample of 1,965 firms. Quarterly earnings guidance frequency is defined as the number of quarters for which a firm issues at least one earnings guidance for the quarter. The industry classification is according to the 12 categories in Fama and French (1997), with the utilities industry and the financial service industry excluded.

**Table 2: Tests for Research and Development Expenditures**

**Panel A: Univariate Analyses**

	Means		Medians	
	dedicated	occasional	dedicated	occasional
RDX	0.047	0.084	0.012	0.013
	p-value	0.00	p-value	0.00
ADJRDX	-0.018	0.016	-0.010	-0.004
	p-value	0.00	p-value	0.00

**Panel B: OLS Regression Analyses**

<b>Dep. Var. = RDX; # Obs. = 2778</b>			
<b>Independent Variables</b>	<b>Predicted Sign</b>	<b>Coefficient</b>	<b>p-value</b>
IND	*	*	*
Intercept		0.022	0.00
DEDICATED	-	-0.004	0.02
LAGRDX	+	0.093	0.00
LAGDEDI	?	0.001	0.22
BM	-	-0.006	0.00
LOGMV	-	0.000	0.90
EP	-	0.008	0.00
AGE	-	-0.003	0.04
ADJROA	+	0.207	0.00
NADJROA	?	-0.089	0.00
LOSS	-	0.036	0.00
CAPX	-	-0.043	0.00
ADJFCF	+	0.002	0.85
DILUTION	-	-0.051	0.03
EQOFFER	-	0.050	0.00
%TINST	-	-0.025	0.00
NUMANA	+	0.000	0.91
VALRE	-	-0.002	0.00
Adj-Rsq		68.47%	

**Panel C: Two-Stage System of Equations Analyses**

DEP	Two-Equation System; #Obs.=2655					
	RDX MODEL			DEDICATED MODEL		
INDEP	Sign	Coeff.	p-value	Sign	Coeff.	p-value
IND	*	*	*	*	*	*
Intercept		0.053	0.00		1.728	0.00
PREDDEDI	-	-0.048	0.00			
PREDRDX				?	-2.504	0.30
LAGRDX	+	0.090	0.00			
LAGDEDI	?	0.013	0.00	+	1.498	0.00
BM	-	-0.009	0.00			
LOGMV	-	-0.001	0.25	+	-0.334	0.00
EP	-	0.012	0.00	-	0.341	0.09
AGE	-	-0.004	0.00			
ADJROA	+	0.197	0.00			
NADJROA	?	-0.107	0.00			
LOSS	-	0.031	0.00	?	-0.537	0.00
CAPX	-	-0.039	0.01			
ADJFCF	+	0.021	0.11			
DILUTION	-	-0.030	0.22	+	2.285	0.11
EQOFFER	-	0.044	0.00	+	-0.241	0.30
%TINST	-	-0.001	0.91	+	4.021	0.00
NUMANA	+	0.001	0.00	+	0.211	0.00
VALRE	-	-0.003	0.03	+	0.409	0.00
MAFE0				+	-5.722	0.14
MSTD0				+	-1.007	0.00
PIN				+	-0.549	0.38
EXPDAM				?	0.000	0.16
Adj-Rsq		68.76%			49.73%	

Table 2 Panel A reports univariate comparisons for R&D expenditures (*RDX*) and industry-adjusted (*ADJRDX*) expenditures between dedicated guiders and occasional guiders. Dedicated guiders (occasional guiders) refer to firms that are in the top (bottom) third of their respective industry's distribution of guidance frequency. Numbers in parentheses are two-sided p-values. For means, the p-values are based on t-tests; for medians, the p-values are based on Wilcoxon

tests. Panel B reports the coefficients and two-sided p-values of the ordinary least square regressions of R&D expenditures (i.e., Model (1)). Panel C reports the coefficients and two-sided p-values of the second-stage estimation of the two-stage systems of equations of R&D expenditures and guidance frequency determinants (i.e., Models (1) and (2) together).

The variables are defined as follows:

RDX	= R&D expenses (Compustat data#46) for the year scaled by total assets (Compustat data#6) at the beginning of the fiscal year,
IND	= industry dummy variables,
DEDICATED	= one (zero) if the firm's quarterly earnings guidance frequency is in the top (bottom) third of their respective industry's distribution of guidance frequency based on the observation from year 2001 to 2003,
PREDEDEDI	= the predicted value of dedication, which is the fitted value (i.e., a continuous measure) from the first-stage logistic regression of DEDICATED on all exogenous variables from Model (1) and Model (2) together,
PREDRDX	= the predicted value of R&D expenses, which is the fitted value from the first-stage ordinary least square regression of RDX on all exogenous variables from Model (1) and Model (2) together,
LAGRDX	= R&D expenses (Compustat data#46) at the end of year 2000 scaled by total assets (Compustat data#6) at the beginning of year 2000,
LAGDEDEDI	= the rank of the sample firms' quarterly earnings guidance frequency (into three groups) within their respective industry's distribution based on data from 1998 to 2000,
BM	= ratio of book value of equity (Compustat data#60) to market value of equity (Compustat data#25 x data#199) at the end of the year 2000,
LOGMV	= log of market value at the end of the year 2000,
EP	= earnings per share (Compustat data#58) divided by price per share (Compustat data#199) at the end of the year,
AGE	= log of firm age,
ADJROA	= R&D-adjusted return on assets measured as net income before extraordinary items (Compustat data#18) plus 0.65 times R&D expenses (Compustat data#46) divided by total assets (Compustat data#6) at the beginning of the year,
NADJROA	= ADJROA if ADJROA is negative and 0 otherwise,
LOSS	= 1 if net income before extraordinary items (Compustat data#18) is negative and 0 otherwise,
CAPX	= capital expenditure (Compustat data#30) for fiscal year scaled by total assets (Compustat data#6) at the beginning of the fiscal year,
ADJFCF	= R&D adjusted free cash flow measured using income (Compustat data#18) minus the change of current assets (Compustat data#4) plus the change of current liabilities (Compustat data#5) plus the change of cash and short-term investments (Compustat data#1) minus the change of short-term debt (Compustat data#34) plus depreciation (Compustat data#14) minus capital expenditure (Compustat data#30) plus 0.65 times R&D expenses (Compustat data#46) scaled by total assets (Compustat data#6) at the beginning of the fiscal year,
DILUTION	= the difference between basic earnings per share (Compustat data#58) and

	diluted earnings per share (Compustat data#57) deflated by the diluted earnings per share (Compustat data#57) at the end of the year,
EQOFFER	= total net value of new equity issuance (Compustat data#108) during 2001 to 2003 scaled by total assets at the end of the year 2000,
%TINST	= percentage of transient institutional holding at the end of the year from CDA/Spectrum Institutional (13f) Holdings database according to Bushee (1998),
NUMANA	= number of analysts following at the end of the calendar year from First Call Summary database,
VALRE	= value relevance proxy, measured as negative one times the squared residual from the following regression: $RET = \beta_0 + \beta_1 NIBE + \beta_2 LOSS + \beta_3 NIBE * LOSS + \beta_4 \Delta NIBE + \varepsilon$
	The regression is estimated by three, two, or one-digit SIC code conditional on having at least 10 firms in each group. RET = market adjusted return over the fiscal year; NIBE = net income before extraordinary items (Compustat annual data#18) scaled by the beginning market value of equity (Compustat annual data#25*Compustat annual data#199); LOSS =1 if NIBE is negative, zero otherwise; $\Delta NIBE$ = the change in net income before extra-ordinary items scaled by beginning market value of equity. Since we multiply by -1 larger values of VALREL indicates greater value relevance,
MAFEO	= average absolute analyst forecast error measured as the absolute value of the difference between actual earnings per share and the mean forecast at the beginning of the quarter scaled by price at the quarter end over the current year,
MSTD0	= average standard deviation of analyst forecasts measured as the standard deviation of the beginning of the quarter forecasts scaled by price at the quarter end over the current year,
PIN	= a measure of probability of information-related trading estimated using the Easley, Hvidkjaer and O'hara (2002) trading model for the current year,
EXPDAM	= expected loss damage following Skinner (1997) to measure potential litigation costs calculated as $-MVE * MKTADJRET * (1 - (1 - VOL) ** N)$ ; MVE=market value at the beginning of the year; MKTADJRET=market adjusted return over the year; VOL=average percentage of the firm's shares traded over the year; N=day period between the end of the year and the beginning of the year.

**Table 3: Tests for Quarterly Performance: Meeting/Beating Analyst Forecast****Panel A: Univariate Analysis**

	Means		Medians	
	dedicated	occasional	dedicated	occasional
MBE0	0.53	0.51	1.00	1.00
	p-value	0.02	p-value	<0.02
MBE	0.85	0.71	1.00	1.00
	p-value	0.00	p-value	0.00

**Panel B: Quarterly Earnings Guidance and Meeting/Beating Analyst Forecasts**

	MBE0=0		MBE0=1	
	MBE=0	MBE=1	MBE=0	MBE=1
Dedicated	1982 (30%)	4688 (70%)	175 (2%)	7229 (98%)
Occasional	3516 (53%)	3159 (47%)	410 (6%)	6652 (94%)
	p-value	0.00	p-value	0.00

**Panel C: Logistic Regression Analyses of Meeting/Beating Analyst Forecasts****Dep. Var. = MBE; # Obs. = 17,015**

Independent Variables	Predicted Sign	Coefficient	p-value
IND	*	*	*
DEDICATED	+	1.139	0.00
ML%INST	+	0.572	0.00
MLRDX	+	5.399	0.00
MLLABR	+	0.541	0.00
QLOSS	-	-0.534	0.00
GROWEST	+	0.009	0.00
POSUE	+	2.566	0.00
QLOGMV	+	0.136	0.00
AFE0	-	-37.061	0.00
Adj-rsq		41.35%	

Table 3 Panel A reports the univariate comparisons for the quarterly meeting/beating outcomes at the beginning of the quarter (MBE0) and at the end of the quarter (MBE) between dedicated guiders and occasional guiders. Dedicated guiders (occasional guiders) refer to firms that are in the top (bottom) third of their respective industry's distribution of guidance frequency. The p-values are two-sided. Tests for means are based on *t* test and for medians are based on Wilcoxon test. Panel B reports the interaction between the frequency of meeting/beating analyst forecasts at the beginning of the quarter and that at the earnings announcement for dedicated guiders and occasional guiders separately. All variables are based on firm-quarter-specific observations. Panel C reports the coefficients and two-sided p-values of the logit regressions of the probability of meeting or beating analyst forecasts. The variables are defined as follows:

MBE0	=	one if actual earnings per share is no less than the analyst forecast mean outstanding at the beginning of the quarter deflated by beginning-of-quarter stock price, and zero otherwise,
MBE	=	one if quarterly actual earnings per share is greater than or equal to the last analyst forecast mean for the quarter, and zero otherwise,
DEDICATED	=	one (zero) if the firm's quarterly earnings guidance frequency is in the top (bottom) third of their respective industry's distribution of guidance frequency based on the observation from year 2001 to 2003,
IND	=	industry dummy variables,
ML%INST	=	percentage of shares held by institutional investors averaged over the previous four quarters,
MLRDX	=	research and development expenses (Quarterly Compustat data#4) over total assets (Quarterly Compustat data#44) averaged over the previous four quarters,
MLLABR	=	one minus property, plant, and equipment (Quarterly Compustat data#42) divided by total assets (Quarterly Compustat data#44) averaged over the previous four quarters,
QLOSS	=	one if quarterly net income (Quarterly Compustat data#8) in each of the previous four quarters is negative, and zero otherwise,
GROWEST	=	median of analysts' long-term growth forecasts at the end of the year from IBES Summary file,
POSUE	=	one if earnings (Quarterly Compustat data#8) in the quarter is greater than earnings of the same quarter in the prior year, and zero otherwise,
QLOGMV	=	log of market value of equity (Quarterly Compustat data#61 x data#14) at the end of the quarter,
AFE0	=	absolute value of quarterly actual earnings per share minus the last analyst forecast mean outstanding at the beginning of the quarter deflated by beginning-of-quarter stock price.

**Table 4: Linking R&D Expenditure and Meeting/Beating Analysts' Consensus Forecasts**

**Panel A: Interaction between DEDICATED, ADJMBE and MBE**

	ADJMBE=0		ADJMBE=1	
	MBE=0	MBE=1	MBE=0	MBE=1
Dedicated	406 (36%)	715 (64%)	152 (5%)	2767 (95%)
Occasional	865 (56%)	678 (44%)	328 (12%)	2314 (88%)
	p-value	0.00	p-value	0.00

**Panel B: Relative Frequency between Meeting/Beating and Missing Market Expectations**

	ADJMBE			MBE		
	=0 (a)	=1 (b)	(b)/(a)	=0 (a)	=1 (b)	(b)/(a)
Dedicated	1121 (28%)	2919 (72%)	2.60	558 (14%)	3482 (86%)	6.24
Occasional	1543 (37%)	2642 (63%)	1.71	1193 (29%)	2992 (71%)	2.51

Panel A and Panel B of Table 4 present different contingency tables among DEDICATED, MBE, and ADJMBE based on quarterly observations during 2001 and 2003. Dedicated guiders (occasional guiders) refer to firms that are in the top (bottom) third of their respective industry's distribution of guidance frequency. MBE is an indicator variable that equals to 1 if the firm meets/beats market expectations at the time of earnings announcement, and 0 otherwise. ADJMBE is an indicator variable that equals to 1 if the firm meets/beats market expectations at the time of earnings announcements, had the firm maintained its R&D spending level in the same quarter of prior year, and 0 otherwise.

**Table 5: Tests for Long-Term Performance: Increase in ROA from 2000 to 2003**

**Panel A: Univariate Analyses**

	Means		Medians	
	dedicated	occasional	dedicated	occasional
CROA	0.045	0.041	0.031	0.031
	p-value	0.58	p-value	0.84

**Panel B: Regression Analyses**

<b>Dep. Var. = CROA; # Obs. = 851</b>			
<b>Independent Variables</b>	<b>Predicted Sign</b>	<b>Coefficient</b>	<b>p-value</b>
IND	*	*	*
DEDICATED	-	-0.011	0.02
BM <sub>2003</sub>	-	-0.029	0.00
LOGMV <sub>2003</sub>	-	0.001	0.47
GROWEST <sub>2003</sub>	+	0.001	0.00
ROA <sub>2003</sub>	-	-0.245	0.00
NMBE	+	0.004	0.00
Adj-Rsq		16.17%	

Table 5 Panel A reports univariate analyses for change in ROA between dedicated guiders and occasional guiders from 2003 to 2005. Dedicated guiders (occasional guiders) refer to firms that are in the top (bottom) third of their respective industry's distribution of guidance frequency. Numbers in parentheses are two-sided p-values. For means, the p-values are from *t* test; for medians, the p-values are from Wilcoxon test. Panel B reports the coefficients and two-sided p-values of ordinary least square regressions of change in ROA. All variables are based on one observation per firm. The variables are defined as follows:

- DEDICATED = one (zero) if the firm's quarterly earnings guidance frequency is in the top (bottom) third of their respective industry's distribution of guidance frequency based on the observation from year 2001 to 2003,
- IND = industry dummy variables,
- CROA = change in net income before extraordinary items (Compustat data#18) from fiscal year 2003 to 2005 deflated by total assets (data#6) at the end of fiscal year 2003,

- $BM_{2003}$  = ratio of book value of equity (Compustat data#60) to market value of equity (Compustat data#25 x data#199) at the end of fiscal year 2003,
- $MV_{2003}$  = market value (Compustat data#25 x data#199) at the end of fiscal year 2003,
- $LOGMV_{2003}$  = log of market value at the end of fiscal year 2003,
- $GROWEST_{2003}$  = median of analysts' long-term growth forecasts within three months prior to fiscal year end of 2003 from IBES Summary file,
- $ROA_{2003}$  = return on assets in 2003 (Compustat data#18 / data #6),
- $NMBE$  = number of quarters meeting or beating quarterly analyst forecasts during 2001-2003.