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Company Issued Guidance: Cheap-Talk or Signals of Value

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Abstract

We analyze the role of earnings guidance given by management before actual earnings release. Firms with better quality of information at the beginning of the period also have better quality of information before the end of the period. This later interim information is of no value for production-investment decisions. But by giving more accurate guidance, firms will be able to signal that they have high quality information environment which will lead to better investment decisions in future. We assume that firms can meet forecasts here only through guidance and not through earnings or accrual management, and find that firms with better guidance will enjoy a higher valuation over firms with similar earnings surprise that fail to give proper guidance. In addition, those firms will be rewarded by the market with higher investment capital. There will be a premium to guidance accomplishment as it is a predictor of future performance even if current earnings have no statistical relation to future earnings.

1 Introduction

The importance assigned to meeting earnings forecasts is widely established in the modern business environment. Financial press reports and analyst chatter emphasize and comment positively about a firm's ability to meet its earnings guidance consistently. Recent empirical research provides strong evidence that firms that meet or beat the final analysts' earnings forecasts (MBF) enjoy a higher return than firms with similar forecast errors that fail to meet these expectations. In this paper, we study the role of management earnings guidance in a production-investment economy, and show the economic nature of market premium to meeting guidance.

This paper focuses on firms that achieve MBF through expectations management. Market expectations are altered by the management issuing guidance before the actual earnings are announced. Following the guidance, analysts revise their forecasts and the expectations are changed (Waymire 1986; Jennings 1987). With more current data, Cotter et al. (2006) document that most analysts revise their forecasts within five days of guidance. If there is a market premium to firms that MBF, then the management may have been induced to offer guidance. So in one sense, ability to MBF is related to the ability of the firm to manage earnings expectations through guidance.

Firms achieving MBF may have done it by managing reported earnings through ac-

crual and other accounting games. The managers are motivated to behave that way to boost the stock price, to avoid lawsuits that could be prompted by adverse earnings shocks and to increase their earnings-based bonus. In this paper we will not consider these motives for MBF and assume that either earnings manipulation is not possible or that it will be detected and punished.

In the past managers were reluctant to issue earnings guidance and other forward-looking statements for fear of litigation. They could be sued if their forecasts tuned out to be untrue. Congress enacted the Private Securities Litigation Reform Act of 1995 (PSLR Act), with a safe-harbor provision to protect managers from litigation arising from inaccurate guidance. This legislation was broadly appreciated, but there was a fear that ... "safe harbor would encourage firms to issue false, reckless, or even fraudulent statements about expected future performance", as documented by Johnson et al., (2001). However they find "no evidence that forecasts issued after the Act's passage are more optimistically biased than those issued previously". In this paper we will show that in most environments there are sufficient disciplinary mechanisms within the market-pricing context that will render voluntary guidance of value.

The factor that we focus in this paper is market perception on firm's information quality (I-quality). By this we mean the market belief on the quality of information environment that the firm faces. High I-quality firms get better quality of information about future operational and product market profits than low I-quality firms. So they will be able to make better operational and investment decisions when faced with uncertainty. Their expected earnings and cash flows will be higher, and the market will value high I-quality. There are several factors that affect the firm's I-quality, and it will be assessed by the market by looking at past performance. Every time a firm gets high earnings, its market perception on I-quality will increase. As market perception increases, the firm's cost of capital will decrease in capital markets and it will be able to raise its investment levels. In this paper, in addition to past earnings performance, the reputation of firm management to give accurate guidance is a key factor used to assess firm's I-quality.

The critical assumption of this paper is that if a firm can see the states of the world better a year ahead, it can also see the state of the world better three months before. If this temporally correlated information environment is true then there is a role for company issued guidance. If a firm has a high quality information environment, then not only will its expected earnings be higher, but it will also able to give better guidance. The market will react to the guidance more if the perceived I-quality is higher. It is also important to wait and see the actual earnings, and only then, formulate an expectation of the firm's

I-quality. The market can infer guidance accuracy only after the actual earnings are released. Only by seeing the actual earnings can an expectation of the firm's I-quality be formed. We show that the reaction of the market to the same actual earnings will depend on the guidance that was issued earlier. If the guidance was accurate, then the perceived I-quality will be revised upward. A high earnings outcome will be rewarded more if the firm gave a positive earnings guidance ahead of the earnings announcement. More importantly a low earnings outcome will be punished more if the firm gave a positive guidance ahead compared to the situation where it gave a negative guidance. Guidance releases are not audited and there is usually no third party that corroborates the disclosure and so guidance is "cheap-talk". We show that in equilibrium even with "cheap-talk" guidance, the market valuation and pricing structure may lead the firms to give proper truthful guidance.

Guidance management takes place whenever management intentionally dampens analyst's earnings forecasts to produce a positive earnings shock (or avoid a negative earnings shock) upon earnings release. In cases where forecasts are likely to have been managed downward through guidance, if there is a large positive earnings shock, there are two contradictory effects. The positive earnings surprise will lead to a large positive stock price reaction due to increased current cash flows but the inability of the firm to give accurate guidance will reduce the market perception of I-quality. For the same high actual earnings, if the firm had given a higher guidance, the market value would be higher from the higher perceived I-quality. A converse situation also arises. Given that the actual earnings are lower than the initial forecasts, if a firm gives lower guidance during the period before the actual earnings are released, its market premium will go up. Even though the bad earnings news will lead to negative price reaction, the accurate guidance will mitigate it. Hirst et al. (2008) provide a framework to view guidance as having three components: antecedents, characteristics, and consequences. What we show in this paper is that guidance consequences in one period are the antecedents for the next period and complete the information disclosure feedback cycle.

With the ability to give guidance without threat of legislation and added costs, "sorting"of the firm's quality of information environment will take place faster. In the production-investment economy modeled here, the cost of capital of a firm with high quality information environment will be lower and it will be able to attract and invest high levels of investment. Allowing company issued guidance with the least impediments improves welfare. This will also be reflected in firm valuation and we show that all firms but the ones with the lowest quality information environment will prefer to have guidance not

proscribed. Most of the empirical research in disclosure focuses on situations where managers are more likely to offer over-optimistic guidances, because the expected threat of litigation is lower after PSLR. But in this paper we show that even without litigation threats, management will give proper guidance to improve market perception of I-quality and reduce future cost of capital. We achieve this by assuming that the manager tries not to maximize the value of the firm after the guidance is released but the value of the firm after the actual earnings are released. The ability to give accurate guidance may also benefit the firm's stockholders and creditors by helping them in their consumption savings decisions, but that motive for guidance is not modelled in this paper.

The next section describes other studies on guidance and section 3 introduces the model. Section 4 presents the main results and section 5 analyzes cheap-talk guidance. Market reactions to guidance and actual earnings announcement are investigated in section 6. Section 7 provides more empirical observations and summarizes the paper. All proofs are presented in the appendix.

2 Valuation and the Ability to Manage Guidance Background and Other Studies

Trueman(1986) first analyzed why managers voluntarily release earnings forecasts, even if it is costless, given that actual earnings will be released soon. In his setting, the manager can adjust a production variable based on product market information received in the middle of the period. The intermediate information is of economic value to the firm and the earlier it comes, the more its value. The only equilibrium is one where firms release the information as soon as it comes, and the information is different from earnings forecast. As pointed out there, earnings forecasts are of no value in that model. In our setting, we assume that production-investment plans cannot be changed during the period and still find value for guidance.

Hirst et al. (2008) provide a review of the management earnings forecasts literature. They point out that "much of the prior research ignores the iterative nature of management earnings forecasts"- that is, forecast consequences of the current period influence antecedents and chosen characteristics in subsequent periods. This paper tries to address some of these intertemporal issues related to guidance.

Lang and Lundholm (2000) provide evidence that firms with more informative disclosure policies have a larger analyst following, more accurate analyst earnings forecasts,

less dispersion among individual analyst forecasts and less volatility in forecast revisions. Bartov et al. (2002) find that after controlling for the earnings forecast error for the period, there is a market premium to firms that MBF release of quarterly earnings. They point out that "for a premium to MBF to exist, the return over the period must be a function of not only unexpected earnings for the period, but also the manner by which earnings expectations changed over the period". They conclude that earnings shocks possess information content with respect to future earnings as there is a positive association between them and future firm performance, without investigating the reasons underlying this association. This paper posits that market perception of I-quality is the key variable that affects both: earnings shocks and future performance.

Many studies have shown that firms that meat or beat forecasts (MBF) are rewarded by the markets. This of course will lead those firms to manage the final earnings expectations. As documented by Brown (2003) and Matsumoto (2002), actual earnings come very close to the final expectation so that they are only a few cents off. Negative forecast errors are often managed with aggressive downward guidance (Burgstahler and Eames (2006)). By signaling that they are at least aware of bad outcomes before they are released, the companies may try to convince the market that past erroneous investment decisions were a chance occurrence as shown by Skinner (1997), Kasznik and Lev (1995), Francis et al. (1994) and Soffer et al. (2000).

Chevis et al. (2007) develop the notion that firms self-select to give guidance so that they will be able to MBF consistently. They show that the reported earnings are valued differentially for the self-selected group. The earnings path described by them is related to information quality of our study and we show that such firms will have higher valuation for their additional investment that they will be able to generate in the future.[2]

The market perception of firm's I-quality will depend on the guidance accuracy and expectations management. Lower market perception implies that its future production-operations will be of lower quality and future expected earnings will be lowered. Kasznik and McNichols (2002) find firms meeting expectations have higher future earnings forecasts and earnings than firms that do not. They also find that those firms also get higher valuations only through higher future earnings. Johnson et al. (2001) show that stock price reaction to PSLR act was positive for firms in high-litigation-risk industries as would be expected from the results of this paper, but Ali and Kallarpur (2001) show that the results are mixed. The act contains several provisions including, making frivolous law-

[2]In this paper, we do not have serial correlation, i.e., current high earnings will not lead directly to future high earnings.

suits about management fraud more difficult, moving to proportional liability instead of joint and several liability, and of course a safe harbor for management's forward-looking disclosures. In this paper we show that allowing firms to issue guidance with reduced expected litigation costs improves welfare. A major reason for this result is that we assume that the management can not bail out with equity based cash compensation after the guidance is released. They have to stay with the firm till the actual earnings are released. The market will observe guidance accuracy appropriately value the firm.

Langberg and Sivaramakrishnan (2009) study the efficiency implication of voluntary disclosure when feedback from financial market is potentially useful to managers in undertaking value maximizing actions. In their model, managers need to find out "correct"state so that they can choose the "correct"action to maximize the firm value. After issuing voluntary disclosure, managers are able to observe a feedback signal from the market which reveals incremental information about the "correct"status. So the propensity for voluntary disclosure is related to manager's information quality. They show that voluntary disclosure increases the firm value by inducing more "correct"actions. Our paper also studies firm's information quality. Instead of market's feedback, we study how the ability of MBF relates to information quality, and the revelation of information quality improves future profits in a multi-period model.

This paper considers changes in investment levels based on I-quality revelation. Faster I-quality discovery, will ultimately enhance the production-investment efficiency of all firms. We show that even allowing unverified guidance will accelerate this process and improve social efficiency. Even in a pure exchange economy, guidance accuracy will be valued by the markets, but it is socially wasteful if costly.

3 The Model

Our model considers a risk-neutral firm traded in a competitive, risk-neutral capital market for two periods. In each period, the firm's manager makes both a production-investment decision and then an earnings guidance decision based on her private information. We start by describing a representative period in our model.

The firm's manager has to choose among two product markets, denoted by M and N. In each period, one product market has higher expected profit than the other product market. The manager has to make the decision about production strategy at the beginning of each period. That is, the manager can only focus on one product market, either product

line M or product line N.

Before the investment decision, the manager privately observes a signal θ_1, $\theta_1 \in \{M, N\}$, which is informative about the current period's high profit product market S_t, $S_t \in \{M, N\}$, where $t \in \{1, 2\}$, denotes the time period. The prior probability that the higher profit product is M or N is half i.e., $\Pr(S_t = M) = \Pr(S_t = N) = 0.5$, and the distribution is independent over time. After observing the private signal θ_1, the manager makes a public investment decision in two dimensions, (i) which product line to invest (M or N), and (ii) how much to invest (high or low). The investment decision is denoted by I_t, $I_t \in \{I_L^M, I_H^M, I_L^N, I_H^N\}$, $I_H^M = I_H^N > I_L^M = I_L^N > 0$, where the superscript indicates product line and the subscript indicates investment level. The earnings x_t from the investment is related to both the high profit state S_t and the manager's investment decision I_t. The gross revenue from the investment is $x_t + I_t$. The common knowledge of the earnings x_t conditional on the high profit state (S_t) and the investment decision (I_t) is given in Table 1, where $\bar{x}$, π, l, $\delta > 0$.

Table 1 shows that the earnings will be higher when the manager's investment decision matches with the high profit state. The magnitude of gain or loss depends on the investment level. When the investment level is high, the earnings could be either very high ($\bar{x} + \pi$) or very low ($\bar{x} - l$) depending on whether the investment decision matches with high profit state. If the investment level is low, the earnings could be slightly high ($\bar{x} + \delta$) or low ($\bar{x} - \delta$). We assume $\delta < \pi < l$. Since the manager's private information does not perfectly reflect the high profit state, high investment is not optimal in some situations. The manager's efficiency of investment decisions depends on the quality of her private information.

Table 1: Earnings x_t with investment level I_t and high profit state $S_t \in \{M, N\}$

	S_t	
I_t	M	N
I_H^M	$x_t = \bar{x} + \pi$	$x_t = \bar{x} - l$
I_H^N	$x_t = \bar{x} - l$	$x_t = \bar{x} + \pi$
I_L^M	$x_t = \bar{x} + \delta$	$x_t = \bar{x} - \delta$
I_L^N	$x_t = \bar{x} - \delta$	$x_t = \bar{x} + \delta$

There are two types of the firms in the market: informed firms and uninformed firms.

The private signal θ_1 observed by informed firms is more related with the high profit state (S_t) than the θ_1 observed by uninformed firms.

For informed firms, $\Pr(\theta_1 = M|S_t = M) = \Pr(\theta_1 = N|S_t = N) = p$, where $p \in (0.5, 1)$. For simplicity, we suppose the uninformed firms' private signal θ_1 is completely uninformative, i.e., $\Pr(\theta_1 = M|S_t = M) = \Pr(\theta_1 = N|S_t = N) = 0.5$. This probability structure implies that by investing based on its private signal, informed firm has higher expected earnings than uninformed firm.

After the investment decision, but before the actual earnings are realized, the firm privately observes a second signal θ_2, $\theta_2 \in \{M, N\}$, which is also informative about the forthcoming high profit state. The information content of θ_2 depends on the type of the firm. For informed firms, the second signal perfectly predicts the high profit state, and so, perfectly predicts the earnings, i.e., $\Pr(\theta_2 = M|S_t = M) = \Pr(\theta_2 = N|S_t = N) = 1$. And for uninformed firms, the second signal θ_2 is completely uninformative, i.e., $\Pr(\theta_2 = M|S_t = M) = \Pr(\theta_2 = N|S_t = N) = 0.5$.

The firm observes the second signal after investment decision are taken and so this signal is useless for the purpose of production-investment decision in current or future periods. But it will be useful for the market to distinguish the firm's type after earnings are realized. After observing θ_2, the firm issues an earnings guidance to the market, g_t, $g_t \in \{G, B\}$, about the actual earnings x_t. The earnings guidance is non-audited and costless to the firm. Thus, the firm may not issue the guidance truthfully.

The exact type of a firm is assumed to be unknown. The investors' prior beliefs regarding the firm's type are determined by previously observed information. We refer to this market perception on information quality (I-quality) as γ_t, $t \in \{1, 2\}$, where γ_t indicates the probability of an informed firm at the beginning of period t, and the probability of an uninformed firm is $1 - \gamma_t$. Market perception γ_t is based on the relevant history that will include all past guidance releases and earnings announcements. As we will show, γ_t will increase with better earnings performance and accurate guidance. Since each firm's manager serves for only one period, the newly hired manager learns the firm's I-quality only from available public information. Thus, in the beginning of each period, the manager shares the same belief with the outside investors regarding the firm's γ_t. The true type of each firm is consistent over periods. All other variables (S_t, θ_1, θ_2) are assumed to be independent over periods.

Assumptions: (i) $l > \pi > \delta > 0$; (ii) $p > \bar{P}; = \dfrac{l - \delta}{\pi + l - 2\delta} < 1$.

Assumption (i) implies that for an uninformed firm, the high investment level has nega-

tive expected earnings as $l > \pi$ i.e.,

$$0.5(\bar{x} + \pi) + 0.5(\bar{x} - l) < 0.5(\bar{x} + \delta) + 0.5(\bar{x} - \delta) = \bar{x}.$$

That is, without any information about the high profit state, the ex ante expected earnings from investing high $E[x_t|I_t = I_H]$ are lower than that of investing low $E[x_t|I_t = I_L]$. So for uninformed firms, it is always optimal to invest low (I_L). But if the firm has good quality of information (p is high) and can pick the right product market, investing high may be optimal. Assumption (ii) implies that

$$p(\bar{x} + \pi) + (1 - p)(\bar{x} - l) > p(\bar{x} + \delta) + (1 - p)(\bar{x} - \delta). \tag{1}$$

For informed firms, the optimal investment level is high based on signal θ_1. $\bar{P}$ is the threshold where the expected earnings are the same regardless of investment level. The assumption that p is higher than $\bar{P}$ makes sure that informed firms' private signal quality is good enough to make high investment levels optimal.

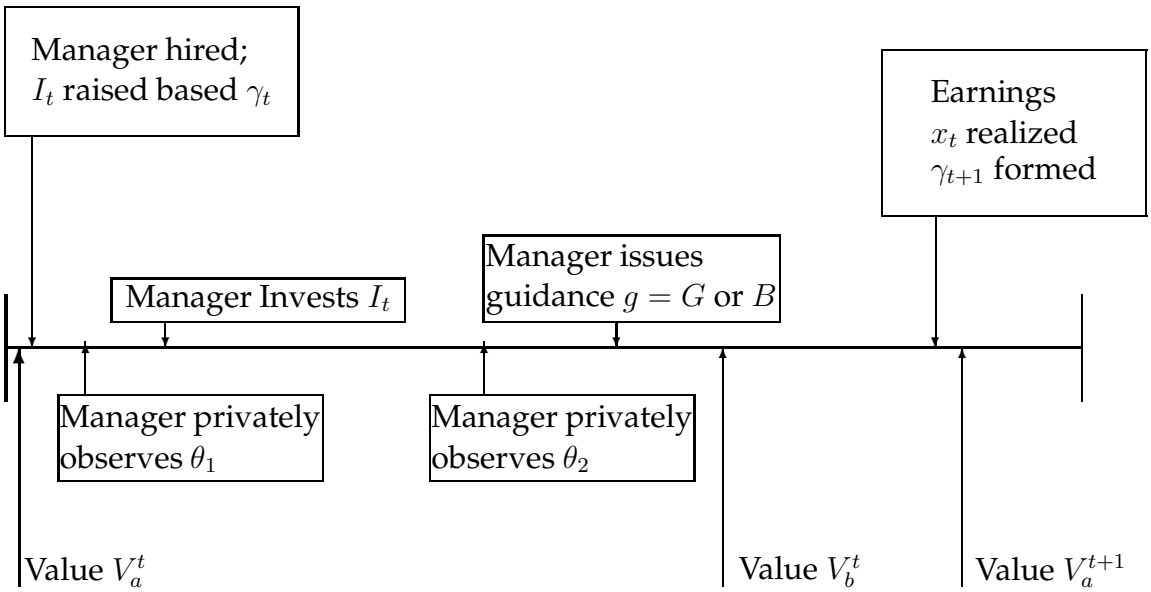
Since the exact type of each firm is assumed to be unknown, the relevance of θ_1 is also unknown. The expected accuracy is the weighted average of p (informed firm) and 0.5(uninformed firm) with respect to the market perception γ_t, i.e., $\gamma_t p + (1-\gamma_t)0.5$. Substituting this in the inequality (1), we can find the cutoff point, denoted by $\bar{\gamma}$, above which high investment is optimal, i.e., $\bar{\gamma} = \dfrac{l - \pi}{(\pi + l - 2\delta)(2p - 1)}$. If γ_t is higher than $\bar{\gamma}$, its observed information θ_1 is of higher quality and high investment is optimal.

At the end of each period, the earnings are realized and publicly observed by the market. Following Dye(1988)'s overlapping generations model, at the end of each period, the current firm owners sell the entire firm to the next generation of shareholders. Without loss of generality, we assume that the manager acts in the interest of the current firm owners. Thus, the manager is motivated by the market value at the end of the period, or say, at the beginning of the next period. That is, the manager makes the investment and guidance decision to maximize the value V_a^{t+1}. We assume that cash flow equal earnings in each period, the discount rate is zero and no dividends are paid until a terminal date. At the end of first period, the market value equals the market expectation of both periods' earnings given all public information available, that is

$$V^t = E[x_1 + x_2|\Omega]. \tag{2}$$

The information set Ω is all public information available for pricing. At the end of the second period, the firm is wound down and all investment earnings are realized. The sequence of events in each period is summarized in Figure 1.

Figure 1: **Time Line of Events for a typical period**



In Figure 1, V_a^t represents the market value of the firm in the beginning of each period after the earnings of the last period are realized; V_b^t represents the market value of the firm after the firm issues the earnings guidance.

4 Analysis of the model

4.1 Equilibrium of the second period

Following backward induction, we start the analysis from the second period. At the end of the second period, the manager is not concerned about future valuation. Therefore, she makes investment and earnings guidance decisions only to maximize the current earnings. There is no market friction, and the manager simply chooses the optimal investment decision. Guidance strategy is irrelevant, and she will choose to truthfully disclose the observed signal θ_2. Suppose at the beginning of the second period, the market's (and the manager's) perception on the firm's I-quality is γ_2. Given assumptions (i) and (ii), if $\gamma_2 > \bar{\gamma}$, the perceived I-quality is high enough, and the firm's optimal strategy is to invest high based on θ_1. If $\gamma_2 < \bar{\gamma}$, the perceived I-quality is too low, and the firm's optimal

strategy is to invest low.

Lemma 1 *Given the optimal investment strategy, the expected earnings of the second period conditional on γ_2 is*

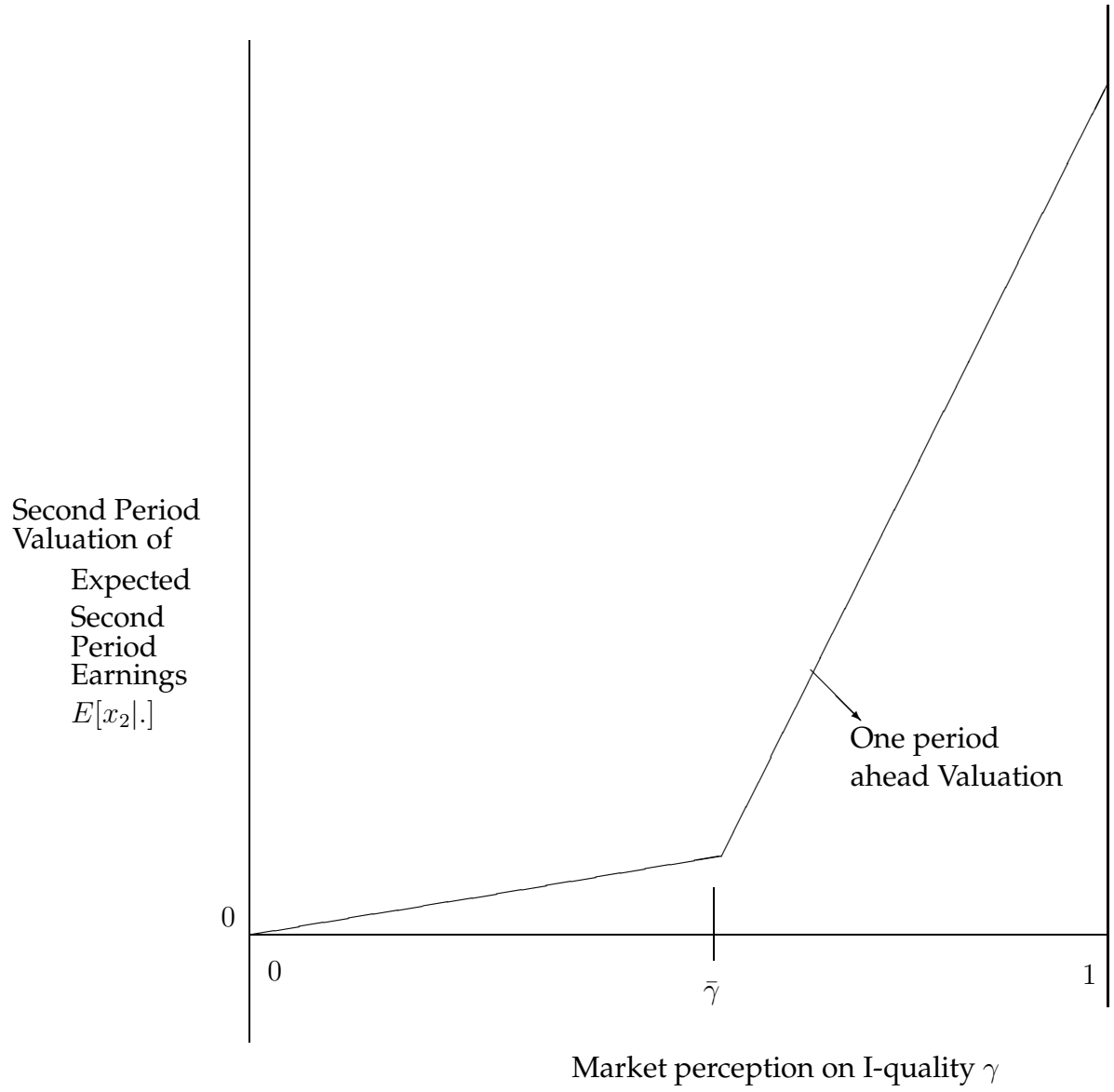
$$\begin{aligned} E[x_2|\gamma_2] &= \begin{cases} \bar{x} - \dfrac{l-\pi}{2} + A_1\gamma_2, & \textit{if } \gamma_2 > \bar{\gamma} \\ \bar{x} + A_2\gamma_2, & \textit{if } \gamma_2 < \bar{\gamma} \end{cases} \\ \textit{where } \bar{\gamma} &= \frac{l-\pi}{(\pi+l-2\delta)(2p-1)},\ A_1 = (2p-1)\frac{\pi+l}{2},\ A_2 = (2p-1)\delta \end{aligned} \tag{3}$$

The result in Lemma 1 is illustrated in Figure 2. The expected earnings are not linear in market perception on firm I-quality γ_2. When γ_2 is lower than the threshold $\bar{\gamma}$, the expected earnings increase at a lower rate A_2. Low γ_2 indicates that the perceived I-quality is low and it is optimal to invest only at low levels. Expected earnings increase slightly with γ_2 in this region. When γ_2 is higher than the threshold $\bar{\gamma}$, expected earnings increase in γ_2 at a higher rate $A_1 > A_2$. With high γ_2, the perceived I-quality is high enough to make high investment levels optimal. This quasi-convex relationship between the expected earnings and γ_2 in the second period will lead to the quasi-convex valuation function at the end of first period, which will in turn affect the firm's investment and guidance strategy in the first period. This varying investment levels based on γ_2 generate value for guidance in this paper. If investment levels are fixed and independent of γ_2, the expected earnings as a function of γ_2 will be linear. Guidance and thereby more pronounced sorting of firms are of no value in a risk neutral economy. Guidance may be used by firms to distinguish themselves but it will be wasteful overall if it is costly.

4.2 Equilibrium in the first period

The firm's investment and guidance decisions are quite different in the first period. The manager has to consider both the current period earnings, and the market perceived I-quality (γ_2) it will end up with for the second period as this will affect the second period investment level. Suppose in the beginning of the first period, the initial perception on firm's I-quality is γ_1, and the manager makes both investment decision I_1 and earnings guidance decision g_1 to maximize the firm value at the end of the first period. Given the analysis of the second period, the firm value at the end of the first period will equal the realized earnings in the first period plus the market's expectation about earnings in the second period, which is provided in (3).

Figure 2: **Second Period Valuation of Second Period Earnings as a Function of γ_2**



4.3 Benchmark Setting: No Earnings Guidance

We first consider a setting without interim information θ_2 and so there is no possibility of issuing earnings guidance. The market only observes the firm's investment decision I_1 and the first period earnings x_1 for valuation purposes. We now analyze the equilibrium of the first period without earnings guidance in this benchmark setting in Theorem 1.

Theorem 1 *Suppose earnings guidance is not issued by the firm; there exists a unique equilibrium, which is given by*

(i) First period equilibrium investment decision:

$$I_1 = \begin{cases} I_H^{\theta_1}, & \text{if } \gamma_1 > \bar{\gamma} \\ I_L^{\theta_1}, & \text{if } \gamma_1 < \bar{\gamma} \end{cases} \tag{4}$$

(ii) Second period market perception γ_2 and equilibrium market pricing function:

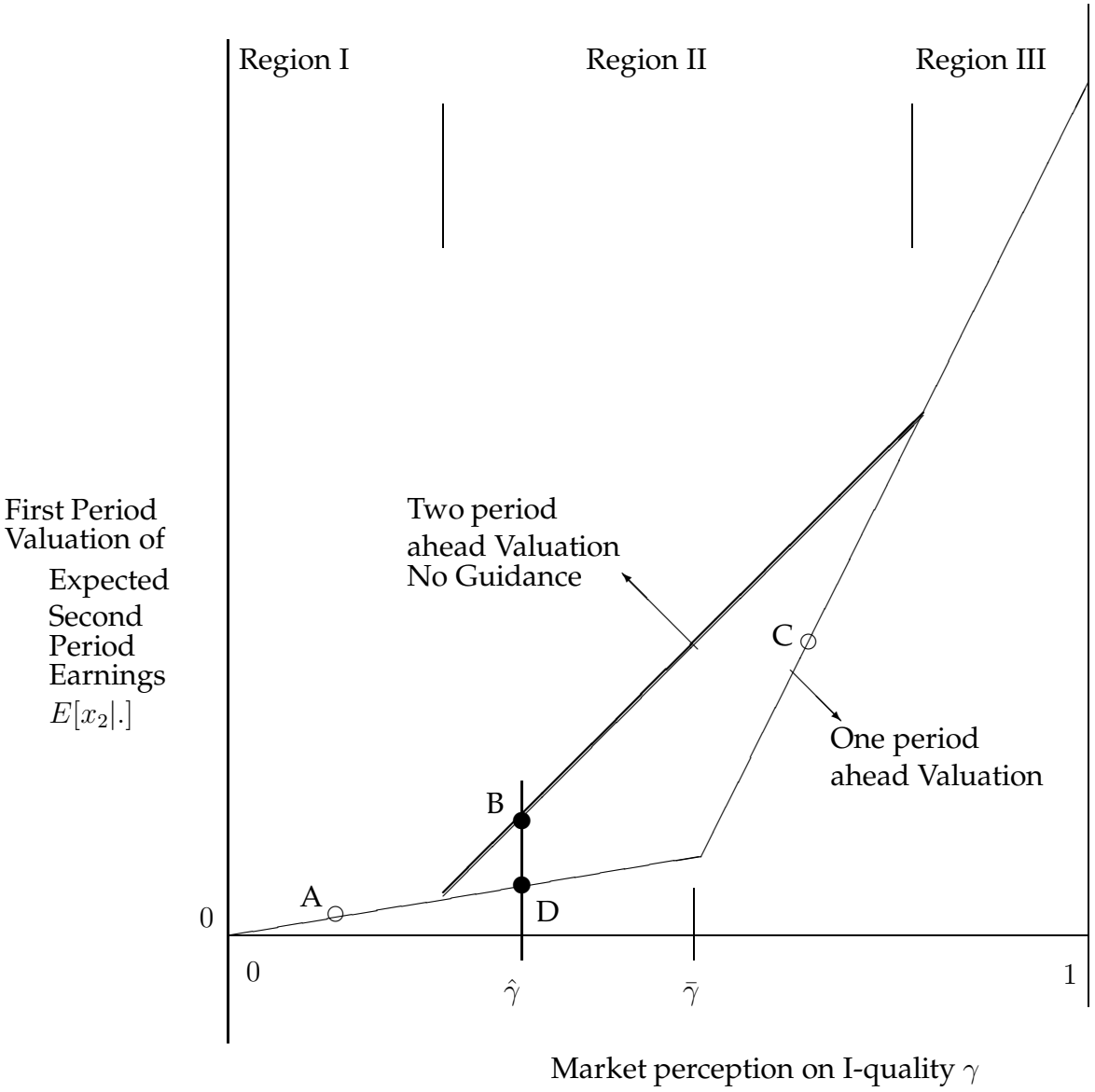
$$\gamma_2 = \begin{cases} U(\gamma_1) = \dfrac{p\gamma_1}{p\gamma_1 + 0.5(1-\gamma_1)}, & \text{if } x_1 > \bar{x} \\ D(\gamma_1) = \dfrac{(1-p)\gamma_1}{(1-p)\gamma_1 + 0.5(1-\gamma_1)}, & \text{if } x_1 < \bar{x} \end{cases} \tag{5}$$

$$V_a^2 = \begin{cases} x_1 + \bar{x} - \frac{l-\pi}{2} + A_1\gamma_2, & \text{if } \gamma_2 > \bar{\gamma} \\ x_1 + \bar{x} + A_2\gamma_2, & \text{if } \gamma_2 < \bar{\gamma} \end{cases} \tag{6}$$

Based on the initial perception on firm's I-quality (γ_1) and the private signal (θ_1), the firm makes its investment decision (I_1). Since γ_1 and the firm's investment decision are publicly observable, the firm always chooses the optimal investment decision, which is to invest high (low) if $\gamma_1 > \bar{\gamma}(\gamma_1 < \bar{\gamma})$, based on θ_1. In fact, we could assume that a firm with low γ_1 (less than $\bar{\gamma}$) can not raise more than I_L to invest, or that, its board of directors will not approve higher investment levels. Only with higher γ_1 will the firm be able to raise higher capital.

The market value at the end of the first period depends on the expected earnings in second period conditional on all publicly available information. From the analysis in the last section, the expected earnings in the second period is a quasi-convex function in the firm's updated γ_2. The market value then will depend on the realized first period earnings and the updated γ_2. The first term in (6), x_1 is the cash component of the realized earnings. The other terms are as in (3), the second period expected earnings based on γ_2. The market updates its perception on firm's I-quality based on the initial perception (γ_1) and the first period earnings x_1 as in (5).

Figure 3: **First Period Valuation of Second Period Earnings as a Function of γ_1**



Since informed firms' private signals are more indicative of the true high profit state than those of uninformed firms, when the earnings in the first period are high, the market's updated perception increases to $U(\gamma_1) > \gamma_1$. When the earnings in the first period are low, the updated perception decreases to $D(\gamma_1) < \gamma_1$. On average, the market updated perception on I-quality (γ_2) is more related to the firm's true type than the initial perception (γ_1). Of course the expected second period market perception γ_2 is still the first period γ_1. We now analyze the ex ante expected second period earnings to interpret the economic effect of the updated market perception on firm's I-quality.

Lemma 2 *Given the equilibrium described by Theorem 1, the ex ante expected second period earnings conditional on γ_1 is (where A_1 and A_2 are defined in Lemma 1),*

$$E[E(x_2|\gamma_2)|\gamma_1] = \begin{cases} \bar{x} - \dfrac{l-\pi}{2} + A_1\gamma_1, & \text{if } D(\gamma_1) > \bar{\gamma} \\ \bar{x} - \dfrac{l-\pi}{4} + [A_1 p & \\ \quad + A_2(1-p) - (2p-1)\dfrac{l-\pi}{4}]\gamma_1, & \text{if } D(\gamma_1) < \bar{\gamma} < U(\gamma_1) \\ \bar{x} + A_2\gamma_1, & \text{if } U(\gamma_1) < \bar{\gamma} \end{cases}.$$

The result in Lemma 2 is illustrated in Figure 3 which is different from Figure 2, due to the market's updated perception on firm's I-quality at the end of the first period. Therefore, the ex ante expected earnings of the second period change accordingly. In region I ($U(\gamma_1) < \bar{\gamma}$), the expected earnings are the same as in Figure 2. When γ_1 is very low, even when the first period earnings are high, the updated γ_2 is lower than the threshold $\bar{\gamma}$. Therefore, the firm will never be able invest at high levels in the second period and the expected earnings in the second period do not change even with the updated γ_2. Similarly in region III ($D(\gamma_1) > \bar{\gamma}$), γ_1 is very high, and even when the first period earnings are low, the updated perception (γ_2) is expected to be higher than the threshold $\bar{\gamma}$. Therefore, the firm will always be able invest at high levels in the second period and the expected earnings in the second period do not change either. If the initial perception on I-quality is too low or too high, the first period earnings do not change the market's belief enough to change investment decision in the second period.

In region II ($D(\gamma_1) < \bar{\gamma} < U(\gamma_1)$), γ_1 is in the middle range. If the first period earnings are high (low), the firm will invest at high (low) level in the second period. Here the updated γ_2 could be higher (lower) than $\bar{\gamma}$ even if γ_1 is lower (higher) than $\bar{\gamma}$. The updating of market perception on I-quality is directly influenced by earnings performance. Note that the expected second period market perception γ_2 is always the first period γ_1 and so this information is not of value if the investment levels are fixed. It may be useful for valuation in the market but is not of social value. Only if investment levels can be varied,

and as the market rewards good earnings performance with higher capital, the updating of market perception is of value.

This can be seen by comparing Figures 2 and 3. Investment efficiency is improved in region II. In regions I and III, the investment strategy and expected earnings do not change because the initial market perception γ_1 is either too low or too high and so the updated γ_2 cannot go across the threshold $\bar{\gamma}$. In region II, γ_1 is closer to $\bar{\gamma}$, so γ_2 may go across $\bar{\gamma}$, and change the investment decision of the second period. Consider $\gamma_1 = \hat{\gamma}$. If earnings are high in the first period, $U(\gamma_1) = \gamma_2$ could be at C and so the firm will be invest at high level. If earnings are low in the first period, $D(\gamma_1) = \gamma_2$ could be at A and so the firm will invest at low level. The expectation of points A and C is point B which is above D. With $\hat{\gamma}$, the last period expected earnings are at point D if one period is left and at point B if two periods are left. The valuation line with two periods left (the thick line in figure 3) is higher than the valuation line with one period left as in figure 2. One can imagine that if we extend the model to three or more periods, the learnings and updating based on earnings will improve the efficiency for all γ and the valuation line will be a smooth convex curve.

4.4 Earnings Guidance

In this section, we suppose that earnings guidance g_t, $g_t \in \{G, B\}$, can be issued by the firm after the investment is made and before earnings are realized in each period. Though new information is irrelevant for the current period's investment decision, through guidance it may affect the market perception on the firm's I-quality. Guidance accuracy may influence the market valuation. We first provide the analysis for the case where all earnings guidance is to be truthfully issued. The firm commits to get the interim information θ_2 and releasing a high earnings guidance $g_1 = G$, if $\theta_1 = \theta_2$ i.e. the firm has invested in the high profit product market. If $\theta_1 \neq \theta_2$, the firm will truthfully release a low earnings guidance as its investment is in the wrong market. In the following theorem, we analyze how earnings guidance affects the updated market perception on firm's I-quality, and how that in turn affects the market valuation.

Theorem 2 *Suppose firms give truthful earnings guidance after observing interim information θ_2, that is $g_1 = G$ if $\theta_1 = \theta_2$ and $g_1 = B$ if $\theta_1 \neq \theta_2$. The firm's investment decision then follows (4); (6) sets the equilibrium market valuation based on second period market perception γ_2 given*

by:

$$\gamma_2 = \begin{cases} U^+(\gamma_1) = & \dfrac{p\gamma_1}{p\gamma_1 + 0.25(1-\gamma_1)}, & \text{if } g_1 = G \text{and } x_1 \in H; \\ D^+(\gamma_1) = & \dfrac{(1-p)\gamma_1}{(1-p)\gamma_1 + 0.25(1-\gamma_1)}, & \text{if } g_1 = B \text{and } x_1 \in L; \\ 0, & \text{otherwise} & \end{cases} \tag{7}$$

The firm's investment decision in the first period does not change with earnings guidance and is the optimal strategy (4) as described in Theorem 1. The equilibrium valuation function is also the same as in (6) based on the realized earnings and updated γ_2.

Since informed firms can always accurately guide the market up or down, and have their earnings meet their guidance, once a firm fails to meet its own guidance, either too optimistic, or too pessimistic, the market perception on I-quality will go down sharply to the lowest level zero ($\gamma_2 = 0$). On the other hand, if a firm's earnings meet its guidance, the market value increases even more than in the situation with no guidance. Informed firms can always issue accurate guidance, and so that outcome is valued by the market. More specifically, when the guidance is high and the earnings also turn out to be high, the market will update the market perception on I-quality sharply upward to $U^+(\gamma_1)$ which is greater than $U(\gamma_1)$, the updating for high earnings with no guidance.

When the firm guides the market down and the earnings turns out to be low, the perceived I-quality ($\gamma_2 = D^+(\gamma_1)$), is still positive and greater than $D(\gamma_1)$, the perceived I-quality if earnings are low with no guidance, but not as high as in the case when both guidance and earnings are high. Informed firms have more chance to have consistent first and second signals and realize high earnings than uninformed firms. Though the firm correctly guides the market down, the inconsistent signals show that the firm still have large chance to be a type- B firm. The following lemma gives the ex ante expected second period earnings with market perception updated from earnings guidance.

Lemma 3 *Given the equilibrium described by Theorem 2, the ex ante expected earnings of the second period conditional on γ_1 is*

$$E[E(x_2|\gamma_2)|\gamma_1] = \begin{cases} \bar{x} - \dfrac{l-\pi}{4} + [A_1 - \dfrac{l-\pi}{4}]\gamma_1. & \text{if } D^+(\gamma_1) > \bar{\gamma} \\ \bar{x} - \dfrac{l-\pi}{8} + [A_1 p + & \\ \quad A_2(1-p) - (4p-1)\dfrac{l-\pi}{8}]\gamma_1 & \text{if } D^+(\gamma_1) < \bar{\gamma} < U^+(\gamma_1) \\ \bar{x} + A_2\gamma_1, & \text{if } U^+(\gamma_1) < \bar{\gamma} \end{cases} \tag{8}$$

Figure 4 is different from Figure 3, because the market updates its perception on I-quality at the end of the first period based on both the guidance and actual earnings. Therefore, the ex ante expected earnings of the second period change accordingly. In region I ($U^+(\gamma_1) < \bar{\gamma}$), the expected earnings are the same as in Figure 3. When γ_1 is very low, even when the firm issues high guidance and gets high earnings, the updated γ_2 is still lower than the threshold $\bar{\gamma}$. The firm will never be able invest at high levels in the second period and the expected earnings in the second period do not change with the updating of market perception. But in regions II and III, there is the possibility that the firm is uninformed and its guidance will not be matched by actual earnings. When that wrong guidance occurs, the firm will be revealed as uninformed and γ_2 will fall to zero. The firm will be able to invest only low levels which is the optimal decision given the truth. The expectation of this loss avoidance will increase the firm value ex ante.

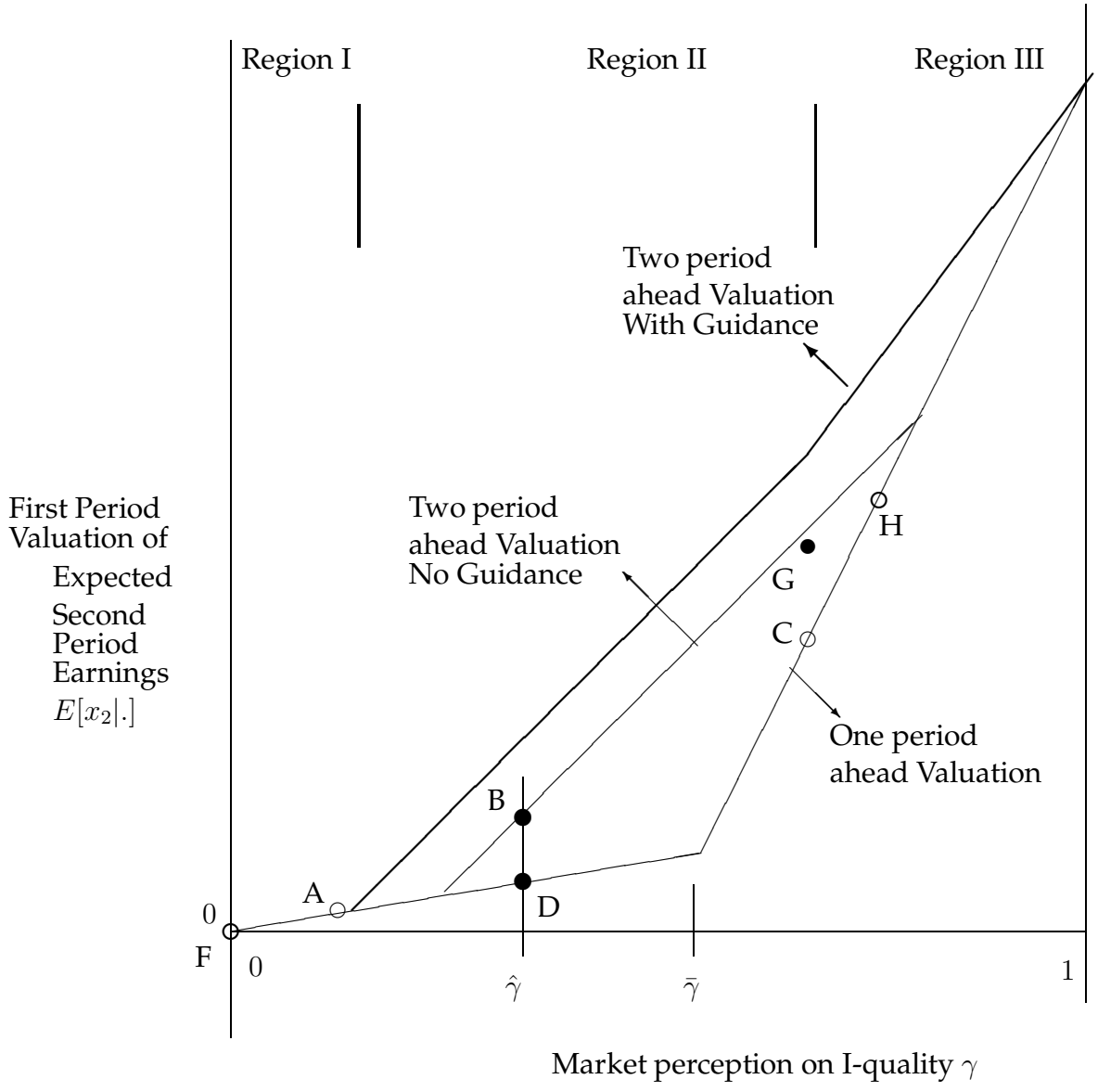
This can be seen by comparing Figures 3 and 4. Investment efficiency is improved in regions II and III. In those regions there is chance that the firm will not be able to meet its guidance if it is an uninformed firm and so will be revealed. Consider $\gamma_1 = \hat{\gamma}$ as in the analysis for Figure 3. If earnings are high and there is no guidance in the first period, $U(\gamma_1) = \gamma_2$ could be at C. An uninformed firm would have given negative guidance with high actual earnings and would have been identified. This is marked as point F. If high earnings were achieved after giving positive guidance, market perception will move up to $\gamma_2 = U^+(\gamma_1) > U(\gamma_1)$. This is marked as point H. The expectation of points F and H is point G which is above C. A similar change can occur for low earnings also. With first period $\hat{\gamma}$, the last period expected earnings are at D if one period is left, at B if two periods are left with no guidance. The valuation line with guidance, the thick line in figure 4 will be higher than the valuation line with no guidance as in figure 3. If we extend the model to three or more periods, the learnings and updating based on earnings guidance will improve the efficiency for all γ and the valuation line will be a smooth convex curve.

Prior guidance accuracy of earlier period changes the credibility of future performance and forecasts as Hutton and Stocken (2007) document empirically. The results of this section extend that observation by demonstrating that the rational market will value guidance accuracy (i.e. past history) not only for evaluating current earnings but also for future earnings, which are affected by investment levels.

4.5 Efficiency implications of earnings guidance

Since the market is assumed to be perfectly competitive and all agents are risk-neutral, the market value of the firm at the beginning (V_a^1) equals the market's ex ante expected earn-

Figure 4: **First Period Valuation of Second Period Earnings as a Function of γ_1 with Earnings Guidance**



ings of both periods. Higher market value also translates into investment efficiency over the life of the firm. In this section, we analyze how earnings guidance changes investment efficiency, that is how V_a^1 changes with earnings guidance. To analyze the efficiency implications, we need to focus on how the firm's earnings guidance in the first period affects the investment decision in the second period. In particular, the efficiency implication of earnings guidance is decided by how the earnings guidance (g_1) affects the ex ante expected return of the second period earnings ($E[E(x_2|\gamma_2)|\gamma_1]$) through its updating on market perception of firm I-quality. We have the following results for truthful earnings guidance.

Theorem 3 *If earnings guidance is truthful and costless, the ex ante value of the firm is more than that in a setting without earnings guidance for all initial perception γ_1 such that $U^+(\gamma_1) > \bar{\gamma}$.*

Theorem 3 shows that when earnings guidance is truthfully issued, the investment efficiency is strictly improved if γ_1 is high ($U^+(\gamma_1) > \bar{\gamma}$). Second period market perception γ_2 increases the most (to $U^+(\gamma_1)$) if the firm issues a positive guidance and meets the guidance. Since the second signal (θ_2) observed by informed firms is always more informative than those observed by uninformed firms, accurate earnings guidance helps the market to distinguish different types of firm. Informed firms have more likelihood to have their earnings meet guidance. By the guidance, the market is better able to differentiate firm's information environment, which leads to better investment decision in the second period.

When the initial perception (γ_1) is very low ($U^+(\gamma_1) < \bar{\gamma}$), (8) shows that there is no efficiency improvement of the investment decision, because the updated γ_2 will never exceed the threshold ($\bar{\gamma}$) regardless of earnings guidance and actual earnings. Even in the best case, which is high guidance and high earnings, the updated belief ($\gamma_2 = U^+(\gamma_1)$) is still below the threshold ($\bar{\gamma}$), and the firm will have to invest low in the second period. Once γ_1 is high ($U^+(\gamma_1) > \bar{\gamma}$), it is possible that the updated γ_2 goes above the threshold ($\bar{\gamma}$) and changes the investment decision, so that improves the efficiency.

Suppose we extend the model to more periods, that is, there are unlimited periods in this model ($t \in \{1, 2, .., +\infty\}$) and all other assumptions remain the same. There is always a possibility that the market perception on I-quality will increase in the next period. It may not cross the threshold in the next period but will do so after a few periods of meeting and beating high guidance. The investment decisions of the following periods will change and improve the efficiency all the time. With more periods, guidance will be of value for all firms with any interior initial perception γ_1 ($\gamma_1 \in (0, 1)$).

Lemma 4 *Suppose*
(a) the potential gain from investing high (π) increases to the potential loss from investing high (l)

(threshold level for high investment is zero ($\bar{\gamma} = 0$)) or

(b) the potential gain from investing high (π) decreases to the potential gain from investing low (δ) (threshold level for high investment is one ($\bar{\gamma} = 1$),

earnings guidance will never affect the ex ante value of the firm.

Suppose the potential gain from investing high (π) increases to the potential loss from investing high (l). Then the threshold level ($\bar{\gamma} = \frac{l-\pi}{(l-\pi+2(\pi-\delta))(2p-1)}$) is very low and approaches zero, which indicates the threshold probability point ($\bar{P} = \frac{l-\delta}{2((l-\delta)-(l-\pi))}$) approaches 0.5. All types of firms, even firms with poor I-quality (i.e., p slightly greater than 0.5), will be better off by investing high levels all the time. And any updating on the market perception does not fundamentally change the future investment decision, which turns out to have no effects on efficiency.

Similarly, suppose the potential gain from investing high (π) decreases to the potential gain from investing low (δ). Then the threshold level ($\bar{\gamma} = \frac{l-\pi}{(l-\pi+2(\pi-\delta))(2p-1)}$) approaches one, which indicates the threshold probability point ($\bar{P} = \frac{l-\delta}{l-\delta+\pi-\delta}$) approaches one. Then, unless it is certain that the firm is informed, it is always better off to invest low, since the gain from investing high in good state (π) is too low to cover the loss (l) in bad state. Thus, any updating on the market perception does not change the future investment, and there will no effects on efficiency either.

In these two cases, i.e., when the potential gain from investing high (π) is either too high or too low, even though guidance is of no social value, the market will use guidance performance in valuation if it is observed. Note that any firm with improved market perception will get higher valuation in the second period. This will lead the firms to issue guidance if the interim information θ_2 is good. There will be the same equilibrium as described in theorem 2.

It would be interesting to analyze whether costly earnings guidance affects the efficiency in the current setting.[3] Though the earnings guidance ex ante does not change the efficiency in the cases described by Lemma 4, ex post, the firm may find it useful to inflate the market value. For example, when the firm observes consistent interim information (θ_1 and θ_2), the firm may like to issue high guidance, because the market will adjust its perception (γ_2) upwards when the guidance is met. The firm will issue costly earnings guidance to boost market value in the second period, which hurts efficiency by incurring a dead-weight loss. The firm's propensity to issue guidance depends on the sensitivity of market value to the updated γ_2. When the potential gain from investing high (π) increases

[3]The possible reason of costly earnings guidance could be either that it is costly for the firm to observe the second signal θ_2, or the earnings guidance issuance process is costly.

to the potential loss from investing high (l) (case (a) of Lemma 4), the threshold level $\bar{\gamma}$ approaches zero, the sensitivity (A_1) is higher and will lead to more use of costly guidance. Alternatively, when the potential gain from investing high (π) (case (b) of Lemma 4) decreases to the potential gain from investing low (δ), the threshold level ($\bar{\gamma}$) approaches one, the market value is less sensitive which leads to less use of costly guidance.

5 Cheap-talk Guidance

Next, we consider the firm's strategy in equilibrium when guidance is unverified. We refer to these unverified and completely costless earnings guidance releases as cheap-talk.[4] Thus, regardless of whether the firm tells the truth about the interim signal (θ_2) or not, there is no cost associated with the earnings guidance. If the current shareholders don't sell off the firm, and do not care about the market value, the firm is always indifferent toward guidance strategy. But in our setting, the firm is concerned about the period-end market value, and so it may strategically issue the earnings guidance to influence market perception in its favor. We denote the manager's equilibrium guidance strategy by $g_t(\bar{\gamma}, p.\gamma_1, \theta_2)$. A fully revealing guidance equilibrium does not exist. The equilibrium will involve mixed strategies by the firm when issuing guidance with adverse interim information. We now analyze the earnings guidance strategy of the first period in equilibrium in Theorem 4.

Theorem 4 *Suppose firms give unverified earnings guidance after observing interim information. The firm's investment decision then follows (4); (6) sets the equilibrium market value based on second period market perception γ_2.*

(i) equilibrium earnings guidance decision is described by two thresholds γ^* and γ^{**}:

$$\begin{aligned} &\text{if } \theta_2 = \theta_1, g_1 = G \\ &\text{if } \theta_2 \neq \theta_1 \begin{cases} \text{if } \gamma_1 < \gamma^*, & g_1 = G \\ \text{if } \gamma^* < \gamma_1 < \gamma^{**}, & \Pr(g_1 = B) = 1 - \Pr(g_1 = G) = m(\gamma_1) \\ \text{if } \gamma_1 > \gamma^{**}, & g_1 = B \end{cases} . \end{aligned} \tag{9}$$

$$0 < m(\gamma_1) < 1, \gamma^* < \gamma^{**}, \text{and } \gamma^{**} = \frac{pA_1 - (1-p)[p\pi - (1-p)l]}{pA_1 + (4p-1)(1-p)[p\pi - (1-p)l]}. \tag{10}$$

[4] A cheap-talk game is a signalling game in which the players' payoffs do not directly depend on the sender's costless message but only on the receiver's action it induces (Stocken [2000]).

(ii) equilibrium γ_2 updates:

$$\gamma_2 = \begin{cases} U^+(\gamma_1). & \text{if } \gamma_1 > \gamma^{**},\ g_1 = G \text{ and } x_1 \in H \\ D^+(\gamma_1). & \text{if } \gamma_1 > \gamma^{*},\ g_1 = B \text{ and } x_1 \in L \\ U^m(\gamma_1). & \text{if } \gamma^* < \gamma_1 < \gamma^{**},\ g_1 = G \text{ and } x_1 \in H \\ D^m(\gamma_1). & \text{if } \gamma^* < \gamma_1 < \gamma^{**},\ g_1 = G \text{ and } x_1 \in L \\ U(\gamma_1). & \text{if } \gamma_1 < \gamma^* \text{ and } x_1 \in H \\ D(\gamma_1). & \text{if } \gamma_1 < \gamma^* \text{ and } x_1 \in L \\ 0, & \text{if otherwise.} \end{cases} . \tag{11}$$

$$U^m(\gamma_1) = \frac{p\gamma_1}{p\gamma_1 + 0.25(1-\gamma_1)(2-m(\gamma_1))},$$

$$D^m(\gamma_1) = \frac{(1-p)\gamma_1(1-m(\gamma_1))}{(1-p)\gamma_1(1-m(\gamma_1)) + 0.25(1-\gamma_1)(2-m(\gamma_1))}.$$

The crucial part of Theorem 4 is the interaction of the firm's earnings guidance strategy with the market's valuation. As the market value is weakly increasing in the updated γ_2, the firm would strategically guide the earnings to maximize the expected γ_2 after observing θ_2.

When the first private signal observed before the investment decision and the interim signal are consistent ($\theta_1 = \theta_2$), the firm will truthfully give high earnings guidance ($g_1 = G$) all the time regardless of (γ_1) because the expected updated market perception ($E[\gamma_2]$) is much higher if truthful guidance is issued. If the firm is informed, θ_2 is a confirmation of θ_1 that the investment decision is correct, and if the firm is uninformed, both signals are not informative, and the probability of a successful investment is still a half. Overall, the firm has a high chance of meeting its guidance with truthful earnings guidance.

When the second signal contradicts with the first signal ($\theta_1 \neq \theta_2$), the news is bad and the probability of high earnings is low. The firm may truthfully guide down the market ($g_1 = B$), or choose the mixed strategy ($\Pr(g_1 = B) = 1 - \Pr(g_1 = G) = m(\gamma_1)$), or choose to misguide the market ($g_1 = G$) depending on the initial perception (γ_1). If γ_1 is quite low ($\gamma_1 < \gamma^*$), there exists a pure strategy equilibrium where the firm always chooses to misguide the market by issuing high guidance. The reason is two-fold. First, the low γ_1 itself indicates that the firm has a high chance to be an uninformed firm, which means the private signals are completely uninformative. Second, after observing the contradictory signals, the firm updates its own perception on I-quality downward because uninformed firm has higher chance of observing contradicting signals. The firm would choose to issue guidance opportunistically, because if the firm is really an uninformed firm and the earnings turn out to be high, by issuing a high guidance ($g_1 = G$), the market's updated

perception (γ_2) will increase dramatically ($\gamma_2 = U(\gamma_1)$). Of course, in this case, since all firms choose to issue good guidance regardless of their private signals, the guidance has no information content.

Chevis et al. (2007) document that price response to earnings is increasing as the length of the horizon over which a firm consistently meets expectations increases. If the market is truly in a cheap-talk equilibrium, the result from this section - that the market will ignore the guidance of firms with low I-quality - is confirmed by their findings.

On the other hand, if the initial perception γ_1 is quite high ($\gamma_1 > \gamma^{**}$), there always exists such a pure strategy equilibrium where the firm chooses to truthfully guide the market downward by issuing low guidance ($g_1 = B$) if adverse interim information is observed. The high γ_1 indicates the firm has a high chance to be an informed firm, so that the second signal (θ_2) is probably a correction of the first signal (θ_1), and the firm is better off to truthfully disclose the second signal and guide the market down. To understand this pure strategy equilibrium, we turn to the probability structure. Conditional on $\theta_1 \neq \theta_2$, the probabilities for current earnings are:

$$Pr(x_1 > \bar{x}|\theta_1 \neq \theta_2, \gamma_1) = \frac{0.25(1-\gamma_1)}{\gamma_1(1-p) + 0.5(1-\gamma_1)} \tag{12}$$

$$Pr(x_1 < \bar{x}|\theta_1 \neq \theta_2, \gamma_1) = \frac{\gamma_1(1-p) + 0.25(1-\gamma_1)}{\gamma_1(1-p) + 0.5(1-\gamma_1)} \tag{13}$$

where, $\gamma_1(1-p)$, represents the probability that the firm is informed and observes contradictory signals, and $0.25(1-\gamma_1)$ represents the probability that the firm is uninformed and any outcome. The firm's guidance strategy affects the market's expectation of the second period's earnings through the updated γ_2. If the earnings are low, and the firm correctly guides down the market, the updated perception on I-quality moves to ($\gamma_2 = D^+(\gamma_1)$). If the earnings are high, which means the firm was overly pessimistic, the market is certain that the firm is uninformed, and the updated perception decreases to the lowest level ($\gamma_2 = 0$). So by truthfully issuing low guidance the firm's expected payoff denoted by Π_T, will be,

$$\Pi_T = \Pr(x_1 < \bar{x}|\theta_1 \neq \theta_2, \gamma_1)V_a^2(\gamma_2 = D^+(\gamma_1)) + \Pr(x_1 > \bar{x}|\theta_1 \neq \theta_2, \gamma_1)V_a^2(\gamma_2 = 0).$$

If the firm misguides the market by issuing high guidance, the updated belief drops to the lowest level ($\gamma_2 = 0$) when the earnings is low, and increases tremendously ($\gamma_2 = U^+(\gamma_1)$) when the earnings are high. By misguiding the market, the firm's expected payoff is denoted by Π_M, where

$$\Pi_M = \Pr(x_1 < \bar{x}|\theta_1 \neq \theta_2, \gamma_1)V_a^2(\gamma_2 = 0) + \Pr(x_1 > \bar{x}|\theta_1 \neq \theta_2, \gamma_1)V_a^2(\gamma_2 = U^+(\gamma_1)).$$

As defined in (6), the valuation V_a^2 depends on x_1 and γ_2. Guidance does not affect the current period earnings but will affect γ_2. When γ_1 is very high and approaches 1, $\Pr(x_1 < \bar{x}|\theta_1 \neq \theta_2, \gamma_1)$ approaches 1 and $\Pr(x_1 > \bar{x}|\theta_1 \neq \theta_2, \gamma_1)$ approaches zero, and the firm is better off by issuing truthful guidance, i.e., $\Pi_T > \Pi_M$. Given the continuity of this setting, one can see that as long as γ_1 is high enough, the firm always tends to truthfully disclose its private signal through earnings guidance.

When the initial perception γ_1 is in the middle range ($\gamma^* < \gamma_1 < \gamma^{**}$), there is no pure strategy equilibrium, instead, there exists such a mixed strategy equilibrium where the firm chooses to truthfully guide down the market with probability $m(\gamma_1)$, and chooses to misguide the market with probability $1 - m(\gamma_1)$, where $m(\gamma_1)$ is a function of γ_1. When γ_1 is in the middle range, $\Pr(x_1 < \bar{x}|\theta_1 \neq \theta_2, \gamma_1)$ is just slightly higher than $\Pr(x_1 > \bar{x}|\theta_1 \neq \theta_2, \gamma_1)$, and the firm's overall expected payoff could be higher by misguiding the market. Meeting a high guidance is much more valuable than meeting a low guidance. Even though the probability of latter is higher, it may be better to give good guidance opportunistically and hope that the second signal is wrong. The firm hopes it is uninformed and the market will improperly assign a high γ_2. The firm's objective is to increase the firm valuation V_a^2 but not the expected earnings $E[x_2]$. More specifically, at a threshold level γ^{**}, the firm is indifferent between issuing truthful guidance and misleading guidance, and γ^{**} as defined in (10) is decided by $\Pi_T = \Pi_M$. From (10) we can show that $\gamma^{**} < 1$. When γ_1 is lower than γ^{**}, the firm will misguide the market with some probability.

Overall, the results thus far show that, in this cheap-talk setting, the firm may not be induced to truthfully report its interim information. Instead, the firm may issue overly optimistic guidance sometimes if its I-quality is not high. The market will update its perception on firm I-quality by using all information available including the earnings guidance, and the updated belief will be used for investment decisions in the next period. Though the firm strategically issues earnings guidance to maximize market value at the end of the current period, the guidance may indirectly and adversely affect the firm's investment efficiency in the next period, which will hurt the next generation of shareholders.

The following theorem summarizes how earnings guidance affects investment efficiency in the equilibrium described by Theorem 4.

Theorem 5 *In the cheap-talk equilibrium with unverified guidance described by Theorem 4, the ex ante value of the firm (V_a^1) is higher than that in the setting without earnings guidance if $\gamma_1 > \gamma^*$.*

Theorem 5 implies that in the equilibrium with cheap-talk, earnings guidance still weakly improves the investment efficiency, though the firm is induced to issue overly optimistic guidance sometimes. In the equilibrium described by Theorem 4, when the initial perception γ_1 is quite low ($\gamma_1 < \gamma^*$), there exists such a pure strategy equilibrium where the firm always chooses to misguide the market by issuing high guidance ($g_1 = G$), that is, earnings guidance has no information content. This situation is equivalent to the results without guidance, and no improvement in efficiency arises.

When the initial perception γ_1 is very high ($\gamma_1 > \gamma^{**}$), there exists a truth-telling equilibrium where the firm always truthfully discloses its second signal through proper earnings guidance. So the efficiency is the same as in the setting where all earnings guidance is truthful, as described in Theorem 3.

When the initial perception γ_1 is in the middle range ($\gamma^* < \gamma_1 < \gamma^{**}$), the firm truthfully guides the market downwards with probability $m(\gamma_1)$, and misguides the market with probability $1 - m(\gamma_1)$ when $\theta_1 \neq \theta_2$. As a result, the information content revealed by the earnings guidance is deflated with the mixed strategy parameter m. Therefore, the efficiency improvement driven by the earnings guidance is also deflated. When m is high, a large proportion of firms still choose to issue truthful guidance, and the market's updated perception is more accurate which improves the investment efficiency. When m is low, fewer firms issue truthful guidance, which reduces the efficiency. Though the mixed strategy m may influence the total efficiency improvement, as long as m is strictly positive, there is always improvement in the efficiency.

Lemma 5 *Truthful earnings guidance weakly induces more efficiency than cheap-talk guidance.*

Lemma 5 shows that the truthful earnings guidance outperforms the cheap-talk guidance in some ranges. We can see this from Theorem 5, which shows that cheap-talk guidance leads to the mix strategy equilibrium or complete misguiding equilibrium in some cases. Thus, cheap-talk guidance induces less investment efficiency in those cases. In other words, the verification of earnings guidance is of value in those cases.

6 Market Reactions to Guidance and Earnings Announcements after Guidance

Theorems 1, 2 and 4 address several aspects of the relationships among investment decision, earnings guidance and market reaction in equilibrium. Market reactions to various

corporate disclosures have been studied extensively in the financial accounting literature. In this section we will derive the properties of the market reaction functions. The market value in the first period equals the expectation of total earnings in the first and second periods. To study how the market responds to earnings guidance and the realized earnings in the first period, we decompose the market reaction into two parts. First, we study how the market revises its expectation of current (i.e., first period) earnings, $E[x_1]$, upon earnings guidance and actual earnings announcement (labelled as *the current effect*). Second, guidance and meeting guidance will also change the market's perception of firm I-quality, and this will change its expectation of future earnings ($E[x_2]$) even if earnings have no statistical relation over time. We study how the market revises its expectation of future earnings ($E[x_2]$) upon guidance and earnings announcement (labelled as *the future effect*). The following Lemma discusses the current effect of earnings guidance.

Lemma 6 : *(i) With truthful guidance, the market's expectation of current period earnings increases if earnings guidance is good and decreases if earnings guidance is bad, i.e.,* $E_b^1(x_1|g_1 = G) > E_a^1(x_1) > E_b^1(x_1|g_1 = B)$*;*

(ii) The market's revision of current earnings expectation upon earnings guidance increases in γ_1*, i.e.,* $\frac{\partial[E_b^1(x_1)-E_a^1(x_1)]}{\partial\gamma_1} > 0$*, if* $\gamma_1 < \frac{\sqrt{p/(4p-2)}-0.5}{p-0.5}$*, and decreases in* γ_1*, i.e.,* $\frac{\partial[E_b^1(x_1)-E_a^1(x_1)]}{\partial\gamma_1} < 0$*, if* $\gamma_1 > \frac{\sqrt{p/(4p-2)}-0.5}{p-0.5}$*, and guidance is good.*

Lemma 6 analyzes how the market revises its expectation of current period earnings upon the release of earnings guidance. Given the initial market perception γ_1, before guidance release, the market expects the firm will have high current period earnings with probability $p\gamma_1 + 0.5(1-\gamma_1)$. In equilibrium with truthful guidance, if the firm issues good guidance ($g_1 = G$), the firm must have observed consistent signals ($\theta_1 = \theta_2$) and has a higher probability of high current period earnings. The probability of high earnings increases to $\frac{p\gamma_1+0.25(1-\gamma_1)}{p\gamma_1+0.5(1-\gamma_1)}$ upon good guidance and the market revises its expectation of current earnings upwards. Similarly, if the earnings guidance is downwards, the probability of high earnings decreases to $\frac{0.25(1-\gamma_1)}{(1-p)\gamma_1+0.5(1-\gamma_1)}$ and the market revises its expectation downwards.

Parts (ii) of Lemma 6 analyzes how the current effect of guidance varies with the initial market perception γ_1. Intuitively, higher γ_1 implies that the earnings guidance is more accurate and thereby more relevant to revise expectation of current period earnings. The current effect of earnings guidance is higher, and the market revises its expectation of current period earnings more upon earnings guidance $\frac{\partial[E_b^1(x_1)-E_a^1(x_1)]}{\partial\gamma_1} > 0$. But this is true only when the initial market perception is not high, i.e., $\gamma_1 < \frac{\sqrt{p/(4p-2)}-0.5}{p-0.5}$. When

the initial market perception is high ($\gamma_1 > \frac{\sqrt{p/(4p-2)}-0.5}{p-0.5}$) and the earnings guidance is good, the current effect of earnings guidance decreases in γ_1. Both γ_1 and p must be high for $\gamma_1 > \frac{\sqrt{p/(4p-2)}-0.5}{p-0.5}$.[5] In that case, the market believes the firm's private information (θ_1) is accurate. The firm has high probability of taking correct investment decisions, and so, the expected earnings are already very high. Observing good guidance provides less incremental information to the market, and the expectation of the current earnings increases lesser. For firms with high market perception on I-quality, good guidance is expected, and so when it is released, it is not of high value to the market.

Lemma 7 *(i) With truthful guidance, the market's expectation of future earnings increases if earnings guidance is good and decreases if earnings guidance is bad, i.e.,* $E_b^1(x_2|g_1 = G) > E_a^1(x_2) > E_b^1(x_2|g_1 = B)$*; (ii) The market's revision of future earnings expectation upon earnings guidance is not monotonic in* γ_1*, and approaches zero when* γ_1 *approaches* 0 *or* 1*.*

Lemma 7 analyzes the future effect of current earnings guidance. Guidance in the current period is relevant for future performance only because an informed firm has a higher chance of observing consistent signals. Good earnings guidance will lead the market to update its perception on I-quality upwards. This leads to a higher future earnings expectation as informed firms make better investment decisions. Similarly, a bad earnings guidance shows the firm has less change to be an informed firm, and the updated market perception is reduced, which leads to a lower future earnings expectation.

Part (ii) of Lemma 7 shows that the future effect of earnings guidance also changes with the initial market perception γ_1. When the initial perception is close to either 0 or 1, i.e. extremely low or high, the market does not revise its future earnings expectation upon guidance. If γ_1 is very low, earnings guidance is not useful to ascertain the true type of the firm at all, which leads to low market reaction. Similarly, when γ_1 is very high, the market believes that the earnings guidance is always the perfect predictor. There is little room left for updating of market perception, which also leads to low market reaction. Instead, the future effect of earnings guidance is more pronounced when γ_1 is in the middle range of $[0, 1]$. When γ_1 is in the middle range, earnings guidance induces more updating of market perception and leads to more revision of the future earnings expectation.

Lemma 8 *In equilibrium with truthful guidance, when* $\gamma_1 > \bar{\gamma}$*,*

(i) the market value increases if actual earnings are high and decreases if actual earnings are low, whether or not guidance is good or bad, i.e., $V_a^2(x_1 > \bar{x}) > V_b^1 > V_a^2(x_1 < \bar{x})$*.*

[5]More specifically, only when $p > 0.81$, the threshold is lower than one, i.e., $\frac{\sqrt{\frac{p}{4p-2}}-0.5}{p-0.5} < 1$. And γ_1 could be possibly higher than the threshold.

(ii) the earnings response coefficient is higher than one if the guidance is good, and lower than one if the guidance is bad, i.e.,

$$\frac{V_a^2(x_1, g_1 = G) - V_b^1(g_1 = G)}{x_1 - E[x_1|g_1 = G]} > 1, \frac{V_a^2(x_1, g_1 = B) - V_b^1(g_1 = B)}{x_1 - E[x_1|g_1 = B]} < 1.$$

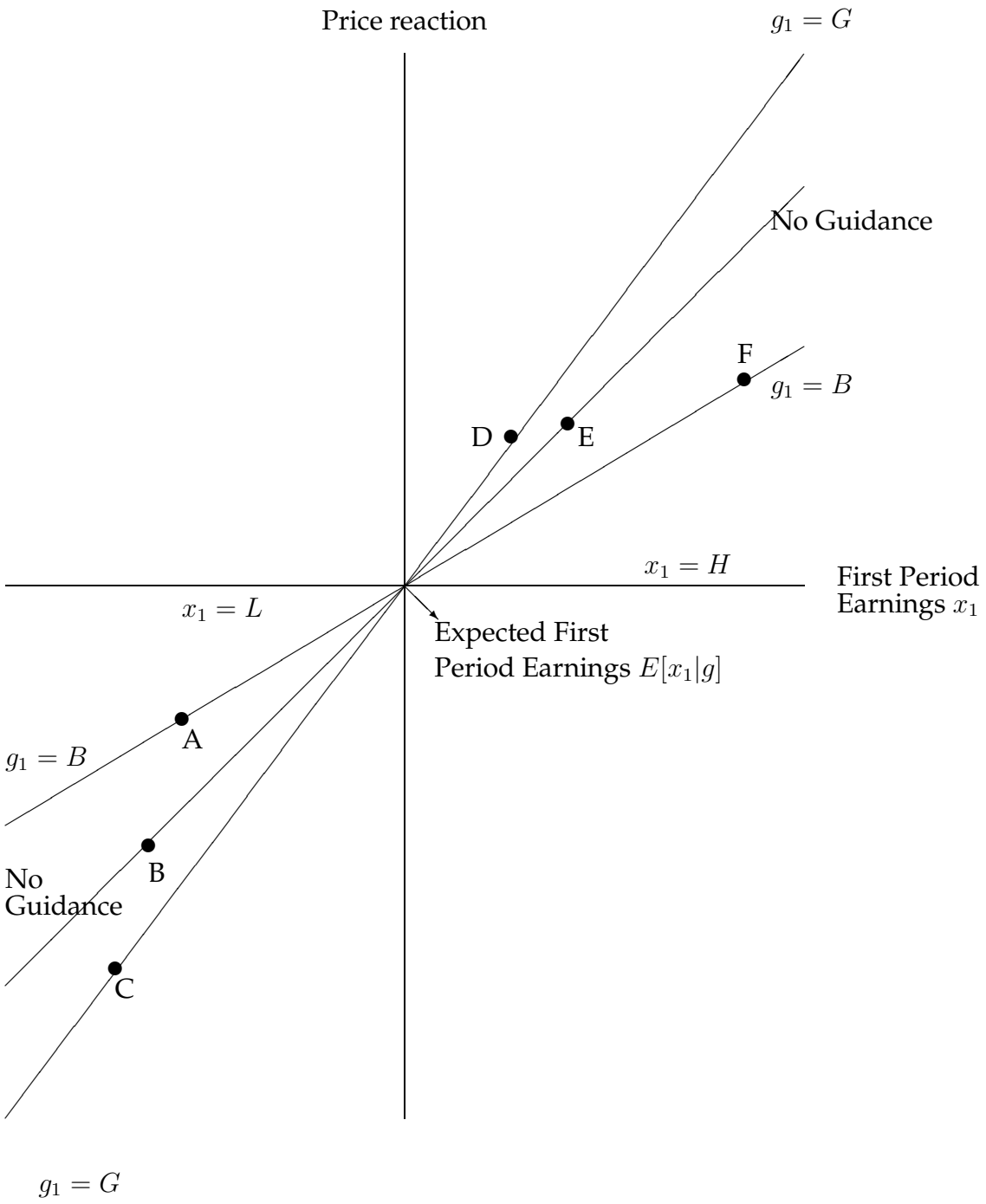
With no learning by the market based on earnings or guidance performance, when the firm releases its first period earnings, the earnings response coefficient should be one as the earnings in the two periods are statistically independent ex ante. But the induced correlation among the earnings of the two periods will be higher than one as better earnings performance in the first period will lead to higher earnings in the second period due to market perception on I-quality increase if guidance was correct. In addition, if market perception increases enough, the firm will be able to attract higher investment in the second period. This in turn will leads to higher expected earnings in the second period.

The result in Lemma 8 is illustrated in Figure 5. Part (i) of Lemma 8 analyzes how the market reacts to the realized earnings ($V_a^2 - V_b^1$), which depends on how the market revises its expectation on both the current and the future earnings. Figure 5 shows when x_1 is high (low), the market always reacts positively (negatively) regardless of the prior earnings guidance. Though the results look quite similar, the underlying reasons are different depending on whether good or bad guidance.

When the earnings guidance is good and the realized earnings are also high, the market's expectation on both the current earnings and I-quality goes up, which leads to positive market reaction, as shown in Figure 5 at point D. Similarly, if the realized earnings are low, the market's expectation on both drops down dramatically, as shown in point C. On the other hand, if the earnings guidance is bad and the realized earnings are high, the market's valuation of the current earnings goes up. But the market perception on I-quality goes down as the guidance was inaccurate. The firm issued over-pessimistic guidance which implies that the firm is less likely to be an informed firm. The market's expectation of future earnings goes down. So the net effect on market reaction depends on which revision is dominant. Since the market's expected future earnings are revised downward through the updated perception on I-quality, when γ_1 is high, the downward revision is always dominated by the upward revision on the current earnings.[6] So the market always responds positively in total to positive earnings surprises, as shown at point F. Similarly, if the earnings guidance is bad and the realized earnings are low, the market values the current earnings downward, but I-quality of the firm goes up as the

[6]The results in Lemma 8 are based on our two-period setting with identical investment technology. If we assume discount rate is low and the firm's type remains sticky, in a multiple-period setting, the future effect could dominate the current effect.

Figure 5: **Price Reaction to first period earnings announcement x_1. Comparison of no guidance seting with guidance $g_1 = G(good) or B(bad)$**



guidance was accurate and the expectation on future earnings goes up. In total, the market still responds negatively, as shown in Figure 5, at point A.

¿From above analysis on market reaction to realized earnings, we find that the market expectation revisions on the current and future earnings may or may not be consistent with each other. In part (ii) of Lemma 8, we analyze the earnings response coefficient of the current earnings, that is, how the market infers firm's I-quality and future earnings from the current earnings.

When the guidance is good, the market revisions on the expectation about the current and future earnings are consistent. Either both of them go up when the realized earnings are high, or both of them go down when the realized earnings are low. So the earnings response coefficient must be higher than one. As shown in Figure 5, the line of $g_1 = G$ is steeper. When the earnings guidance is downward, the market expectation revisions on the current and future earnings are always opposite to each other. We show that the revision on current earnings always dominates the revision on future expected earnings. Hence, the earnings response coefficient is still positive but less than one. In the figure, the line of $g_1 = B$ is less steep.

Das et al. (2008b) argue that the market reaction to guidance should be measured over the horizon of the forecast rather than in the short window surrounding the guidance announcement. As Lemma 8 shows, the market reaction to earnings announcement critically depends the guidance that was issued and the actual earnings.

7 Empirical Observations and Summary

Firms issue guidance to seek higher valuations and as we show in this paper, by issuing more accurate guidance, firms will be able to signal that they have high quality information environment that will lead to better investment decisions in the future. Thus firms that meet their own guidance will enjoy a higher valuation. From observing earnings guidance and meeting of the guidance, the market is able to distinguish firm's information environment better and faster, which improves firm's future investment decisions. If firms can show that they have better information environment they will attract more investment. We find that this sorting is faster with earnings guidance which leads to higher economic efficiency and social welfare faster.

The safe-harbor provision (PSLR Act) that protected companies from legal liability for missing forecasted performance was passed in the late 1990s. After that, the practice of providing forward-looking earnings targets became popular. The number of firms

providing guidance increased from 92 in 1994 to approximately 1,200 by 2001 (Economist, 2006).

The issue of whether or not companies should provide earnings guidance has been debated extensively. Popular business media have published articles featuring companies that issue earnings guidance below market expectations so that they can beat it easily. Many companies agonize over their earnings forecast numbers at the time of guidance. As a reaction to this, some firms are curtailing disclosures, and others have stopped giving earnings guidance. In December 2008, General Electric announced that it would no longer provide quarterly earnings guidance. These trend-setters believe and say that earnings guidance promotes short-term thinking and does little to increase the company's long-term value. But as shown in this paper, and discussed later, this is not the whole story. After the corporate and debt market crises of 2009, many executives and regulators are again weighing the benefits and risks associated with publishing forward-looking earnings guidance.

In 2003, Deloitte LLP and Financial Executives Research Foundation published a report "Meeting the Street", which explored trends and implications of providing earnings guidance. The report noted that some organizations, regulators, and investors believed that by focusing attention on meeting earnings guidance - firms may be distracted from the their long-term goals. The growing information environment has reduced the reaction time of today's markets, putting additional pressure on executives to think and act with a short-term bias. But as some commentators have pointed out, the role of guidance is to get investors to upgrade their belief about firm's future ability to pick correct investment choices. In this expansive interpretation, quarterly earnings projections indicate more than current period earnings performance. Analysts expect earnings guidance and as Deloitte (2009) report pointed out "earnings guidance improves transparency and shows that finance has its act together."

Critics have pointed out the time and effort that is spent on earnings guidance could be better spent on activities that actually increase business profitability. Deloitte (2009) quotes an executive's words "providing earnings guidance is a pain in the neck, but the market will hammer us if we don't do it."Earnings guidance is just one part of the picture that provides information about the firm's ability to forecast better. Even though there may be other means to tell the story we should expect it to be used. Another criticism is that forecasts about long-term focus that aligns with the company's objectives and strategy over a more extended horizon, rather than a short-term focus on share price would be more beneficial. In this paper, all investment returns are realized within one period. In most long-term investments with return extending over more than one period, earn-

ings from earlier periods will be correlated with the eventual profitability. If some firms are able to foresee the direction earlier, they will have higher valuations as their future investments will be better placed and so earnings guidance will be of value.

CED (2007), a committee of regulators and expected-commissioners, called for the elimination of quarterly guidance on EPS, claiming such guidance encourages a focus on (and sometimes a distortion of) short-term financial results and attracts short-term, speculative trading rather than long-term investing. In this paper we assume that markets are rational and the short term fluctuations in price are due to changes in expectations of the long-term prospects of the firm. Others have pointed out that financial markets' focus on quarterly results hinders search for new innovations and diminishes the corporation's ability to consider and act on long-term issues. They have asserted that the practice of giving quarterly guidance exacerbates this problem. In this paper we do not address the criticism that earnings guidance promotes short-term myopia but focus on the fact that giving more accurate guidance signals the better foresight of the firm.

Some firms have avoided giving earnings guidance because they cannot produce reliable forecasts and are tired of embarrassing themselves. These firms are often penalized by the market. The popular notion is that detailed guidance and actual accomplishment of the guidance lead to better valuations. But guidance gives a means to demonstrate that investments and assets have been positioned by the firm to pay off in response to specific geographic, consumer taste and macroeconomic trends. If investors buy into the story, they will likely remain positive about the firm as long as the trends unfold as expected and earnings guidances are met. Firms in many industries have to be able to figure out how trends in interest rates, energy prices, health care costs and population affect their business. Management confidence in investment strategies depends on the information about the interaction of those fundamental factors with the firm profitability. Meeting or exceeding investor expectations even if they are guided by the firm is better than giving no guidance.

Recent academic studies have found that only a few firms have stopped issuing guidance despite calls from regulators and commentators encouraging firms to do so. Chen et al, (2006) investigated 96 companies that stopped quarterly EPS guidance and found that: stoppers had poor stock performance and poor prospects for future performance; and they had poor earnings, both past and anticipated. After eliminating guidance, they found that there was no change in overall stock return volatility or analyst following but analyst forecast dispersion increased and forecast accuracy decreased. Houston et al. (2008) looked at 222 firms that stopped issuing guidance and found similar results. In addition to the results of Chen et al (2006), they found that anticipated difficulty in

predicting earnings was the major reason for stopping earnings guidance.

In a related vein, Deloitte (2009, page 16) reports executives noting that "if guidance wasn't provided it could decrease investment and increase volatility. ... We think that we would lose investors if we stopped providing earnings guidance."It also noted that many firms are not recognizable enough for analysts to generate their own estimates. To be covered at all, they argue, they must provide specific financial performance measures which is shown in this paper formally as providing value. But a 2009 survey by the National Investor Relations Institute (NIRI(2009)), points out that there was a relatively fairly small four percent decrease in the number of companies that provide EPS guidance (60 percent in 2009 versus 64 percent in 2008). Thompson (2007) summarizes that 70 percent of companies are providing earnings guidance with a move toward annualized guidance with quarterly updates. Relatively few companies are considering dropping earnings guidance with about half of those concerned that if they were to do so, they would lose analyst coverage. The most common benefits reported by firms for issuing guidance are: intensifying management's focus on achieving financial targets, moderating the volatility of the company's share price, achieving higher valuations, building a wider shareholder base and increasing liquidity.

8 Appendix

Proof. (of Lemma 1) Given the optimal investment strategy, if $\gamma_2 > \bar{\gamma}$, the firm invests high ($I_H^{\theta_1}$), and the expected earnings are

$$\begin{aligned} E[x_2|\gamma_2] &= \gamma_2[p(\bar{x}+\pi)+(1-p)(\bar{x}-l)]+(1-\gamma_2)[0.5(\bar{x}+\pi)+0.5(\bar{x}-l)] \\ &= \bar{x}-\frac{l-\pi}{2}+A_1\gamma_2 \end{aligned}$$

where $A_1 = (2p-1)\frac{\pi+l}{2}$. Similarly if $\gamma_2 < \bar{\gamma}$, the firm invests low ($I_L^{\theta_1}$), and the expected earnings are $\bar{x}+A_2\gamma_2$, where $A_2 = (2p-1)\delta$. ■

Proof. (of Theorem 1) Assuming no earnings guidance is issued by the firm, the probability structure is summarized in the table followed:

x_1	$Pr(\text{type-}A) = \gamma_1$	$Pr(\text{type-}B) = 1-\gamma_1$
H	p	0.5
L	$1-p$	0.5

where H (L) denotes the earnings are high (low), i.e., $x_1 = \bar{x}+\pi$ or $x_1 = \bar{x}+\delta$ ($x_1 = \bar{x}-l$ or $x_1 = \bar{x}-\delta$). Given above probability structure, it is easy to find the updated

probability of informed firm is $U(\gamma_1) = \frac{p\gamma_1}{p\gamma_1+0.5(1-\gamma_1)}$ when the earnings are high and $D(\gamma_1) = \frac{(1-p)\gamma_1}{(1-p)\gamma_1+0.5(1-\gamma_1)}$ when the earnings are low. Using the results from Lemma 1, substitute the updated belief γ_2, and realized x_1 into the function, we get

$$V_a^2 = \{ \begin{array}{ll} x_1 + \bar{x} - \frac{l-\pi}{2} + A_1\gamma_2, & if\ \gamma_2 > \bar{\gamma} \\ x_1 + \bar{x} + A_2\gamma_2, & if\ \gamma_2 < \bar{\gamma} \end{array} .$$

Since the prior market belief γ_1 is publicly known and the investment decision is observable, the firm chooses the optimal investment decision, which is $I_H^{\theta_1}$ if $\gamma_2 > \bar{\gamma}$, and $I_L^{\theta_1}$ if $\gamma_2 < \bar{\gamma}$. ■

Proof. (of Lemma 2) Given the results from Theorem 1, if $D(\gamma_1) > \bar{\gamma}$, the market updated belief γ_2 is always higher than $\bar{\gamma}$, and the expected earnings are still

$$E[E(x_2|\gamma_2)|\gamma_1] = \bar{x} - \frac{l-\pi}{2} + A_1\gamma_1$$

Similarly if $U(\gamma_1) < \bar{\gamma}$, the updated belief γ_2 is always lower than $\bar{\gamma}$, and the expected earnings are still $\bar{x} + A_2\gamma_1$. If $D(\gamma_1) < \bar{\gamma} < U(\gamma_1)$, the market updated belief γ_2 could be higher or lower than $\bar{\gamma}$, and the expected earnings are

$$\begin{aligned} E[E(x_2|\gamma_2)|\gamma_1] &= [p\gamma_1 + 0.5(1-\gamma_1)][\bar{x} - \frac{l-\pi}{2} + A_1U(\gamma_1)] \\ &\quad +[(1-p)\gamma_1 + 0.5(1-\gamma_1)][\bar{x} + A_2D(\gamma_1)] \\ &= \bar{x} - \frac{l-\pi}{4} + [A_1p + A_2(1-p) - (2p-1)\frac{l-\pi}{4}]\gamma_1 \end{aligned}$$

■

Proof. (of Theorem 2 and Lemma 3) Assuming the earnings guidance is truthfully issued by the firm, the probability structure is summarized in the table followed:

$g_1\&x_1$	$Pr(\text{type-}A) = \gamma_1$	$Pr(\text{type-}B) = 1-\gamma_1$
G, H	p	0.25
G, L	0	0.25
B, H	0	0.25
B, L	$1-p$	0.25

where G (B) denotes the earnings guidance is good (bad), i.e., $g_1 = G$ ($g_1 = B$). Given above probability structure, the updated probability of informed firm is $U^+(\gamma_1) = \frac{p\gamma_1}{p\gamma_1+0.25(1-\gamma_1)}$ in the case of $\{G, H\}$, $D^+(\gamma_1) = \frac{(1-p)\gamma_1}{(1-p)\gamma_1+0.25(1-\gamma_1)}$ in the case of $\{B, L\}$, and zero in any other cases. For Lemma 3, given above analysis of Theorem 2, if $D^+(\gamma_1) > \bar{\gamma}$, the market updated belief γ_2 is higher than $\bar{\gamma}$ once the guidance is accurate, and the expected future

earnings are

$$\begin{aligned} E[E(x_2|\gamma_2)|\gamma_1] &= [p\gamma_1 + 0.25(1-\gamma_1)][\bar{x} - \frac{l-\pi}{2} + A_1 U^+(\gamma_1)] \\ &\quad +[(1-p)\gamma_1 + 0.25(1-\gamma_1)][\bar{x} - \frac{l-\pi}{2} + A_1 D^+(\gamma_1)] + 0.5(1-\gamma_1)\bar{x} \\ &= \bar{x} - \frac{l-\pi}{4} + [A_1 - \frac{l-\pi}{4}]\gamma_1 \end{aligned}$$

Similarly, if $D^+(\gamma_1) < \bar{\gamma} < U^+(\gamma_1)$, the expected future earnings are

$$\begin{aligned} E[E(x_2|\gamma_2)|\gamma_1] &= [p\gamma_1 + 0.25(1-\gamma_1)][\bar{x} - \frac{l-\pi}{2} + A_1 U^+(\gamma_1)] \\ &\quad +[(1-p)\gamma_1 + 0.25(1-\gamma_1)][\bar{x} + A_2 D^+(\gamma_1)] + 0.5(1-\gamma_1)\bar{x} \\ &= \bar{x} - \frac{l-\pi}{8} + [A_1 p + A_2(1-p) - (4p-1)\frac{l-\pi}{8}]\gamma_1 \end{aligned}$$

If $\bar{\gamma} > U^+(\gamma_1)$, the updated belief γ_2 is always lower than $\bar{\gamma}$, and the expected earnings are still $\bar{x} + A_2\gamma_1$. ■

Proof. (of Theorem 3 and Lemma 4) The ex ante firm value is $V_a^1 = E[x_1 + E(x_2|\gamma_2)|\gamma_1]$. As discusses above, x_1 is not related with earnings guidance, and earnings guidance only helps to improve the expected second period earnings $E[E(x_2|\gamma_2)|\gamma_1]$. Lemma 2 shows the expected earnings without guidance and Lemma 3 shows the expected earnings with truthful earnings guidance. Using both results, we can find how much truthful guidance improves the expected second period earnings.

If $D(\gamma_1) > \bar{\gamma}$, the market updated belief γ_2 is always higher than $\bar{\gamma}$ without guidance, so from Lemma 2, without guidance, the expected earnings are $E[E(x_2|\gamma_2)|\gamma_1, D(\gamma_1) > \bar{\gamma}] = \bar{x} - \frac{l-\pi}{2} + A_1\gamma_1$. From Lemma 3, with truthful guidance, γ_2 is higher than $\bar{\gamma}$ when guidance is accurate, which is $D^+(\gamma_1) > \bar{\gamma}$, and the expected earnings are $E[E(x_2|\gamma_2)|\gamma_1, D^+(\gamma_1) > \bar{\gamma}] = \bar{x} - \frac{(1+\gamma_1)(l-\pi)}{4} + A_1\gamma_1$. Then it is easy to find the earnings improvement (denoted by V_{TG}) is

$$V_{TG} = \bar{x} - \frac{(1+\gamma_1)(l-\pi)}{4} + A_1\gamma_1 - (\bar{x} - \frac{l-\pi}{2} + A_1\gamma_1) = \frac{(1-\gamma_1)(l-\pi)}{4}.$$

Using the same way, we find the earnings improvement in other ranges. If $U^+(\gamma_1) < \bar{\gamma}$, the expected earnings are always $E[E(x_2|\gamma_2)|\gamma_1, U^+(\gamma_1) < \bar{\gamma}] = \bar{x} + A_2\gamma_1$ with or without guidance, thus no earnings improvement.

For part (i) of Lemma 4, when π approaches l, the threshold level $\bar{\gamma} = 0$, then no matter how much the prior belief γ_1 is, the updated belief γ_2 under all circumstances ($U^+(\gamma_1), U(\gamma_1), D^+(\gamma_1)$ and $D(\gamma_1)$) is always positive and higher than $\bar{\gamma}$, that is $D(\gamma_1) > \bar{\gamma}$. From the results in Theorem 3, if $D(\gamma_1) > \bar{\gamma}$, the earnings improvement $V_{TG} = \frac{(1-\gamma_1)(l-\pi)}{4}$ must also equal to zero.

For part (ii) of Lemma 4, when π approaches δ and $\bar{\gamma} = 1$, for all $\gamma \in (0, 1)$, the updated belief γ_2 can never be higher than one and it is always true that $U^+(\gamma_1) < \bar{\gamma} = 1$. From the results in Theorem 3, if $U^+(\gamma_1) < \bar{\gamma}$, the earnings improvement is always zero, i.e., $V_{TG} = 0$. ■

Proof. (of Theorem 4) First, we suppose that the market believes that all firms truthfully issue the guidance. When the firm observes $\theta_2 = \theta_1$, from the results in Theorem 2, by truthfully issuing good guidance, the firm's expected payoff is

$$E(V_a^2) = \frac{p\gamma_1 + 0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} V_a^2(\gamma_2 = U^+(\gamma_1)) + \frac{0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} V_a^2(\gamma_2 = 0) \tag{14}$$

And by misguiding the market and issuing bad guidance, the firm's expected payoff is

$$E(V_a^2) = \frac{p\gamma_1 + 0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} V_a^2(\gamma_2 = 0) + \frac{0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} V_a^2(\gamma_2 = D^+(\gamma_1)) \tag{15}$$

One can easily see that (14) is always strictly higher than (15) for any prior belief γ_1. So in this case, there exists a truth-telling equilibrium. Similarly, when the firm observes $\theta_2 \neq \theta_1$, from the results in Theorem 2, by truthfully issuing bad guidance, the firm's expected payoff is

$$E(V_a^2) = \frac{p\gamma_1 + 0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} V_a^2(\gamma_2 = D^+(\gamma_1)) + \frac{0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} V_a^2(\gamma_2 = 0) \tag{16}$$

And by misguiding the market and issuing good guidance, the firm's expected payoff is

$$E(V_a^2) = \frac{p\gamma_1 + 0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} V_a^2(\gamma_2 = 0) + \frac{0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} V_a^2(\gamma_2 = U^+(\gamma_1)) \tag{17}$$

Comparing (16) with (17), we can find that once the prior belief γ_1 is high enough, i.e., $\gamma_1 > \gamma^{**}$ ($\gamma^{**} = \frac{pA_1 - (1-p)[p\pi - (1-p)l]}{pA_1 + (4p-1)(1-p)[p\pi - (1-p)l]}$), the firm is always better off to issue truthfully guidance. However,when γ_1 is slightly lower than γ^{**}, the firm would like to misguide the market. Suppose in the mixed guidance strategy, m is the probability of truthful guidance, and the market is rational. The probability structure is summarized in the table followed:

$g_1 \& x_1$	$Pr(\text{type-}A) = \gamma_1$	$Pr(\text{type-}B) = 1 - \gamma_1$
G, H	p	$0.25(2-m)$
G, L	$(1-p)(1-m)$	$0.25(2-m)$
B, H	0	$0.25m$
B, L	$(1-p)m$	$0.25m$

The updated belief γ_2, if the guidance is accurate ($U^m = \frac{p\gamma_1}{p\gamma_1 + 0.25(1-\gamma_1)(2-m)}$ or $D^m = \frac{(1-m)(1-p)\gamma_1}{(1-m)(1-p)\gamma_1 + 0.25(1-\gamma_1)(2-m)}$), is increasing in m, that is, lower m alleviates the incentive of

misguiding. From continuity, there always exists such a m where the firm is indifferent between truth-telling and misguiding. And when the prior belief γ_1 is sufficiently low ($\gamma_1 < \gamma^*$), there exists such a equilibrium where $m = 0$, which is all firms choose to misguide the market by issuing good guidance. ■

Proof. (of Theorem 5 and Lemma 5) In the equilibrium described by Theorem 4, when $\gamma_1 > \gamma^{**}$, the firm always truthfully issues guidance, and the ex ante firm value is higher than that without guidance (from Theorem 3). When $\gamma_1 < \gamma^*$, the firm always issues the high guidance ($g_1 = G$) regardless its private signal, and the ex ante firm value equals to that without guidance. When $\gamma^* < \gamma_1 < \gamma^{**}$, the firm chooses a mixed guidance strategy if $\theta_1 \neq \theta_2$. From Theorem 4, suppose m is probability of truthful guidance in the mixed strategy, the expected earnings of second period would be

$$\begin{aligned} E[E(x_2|\gamma_2)|\gamma_1] &= [p\gamma_1 + 0.25(1-\gamma_1)(2-m)]V_a^2(\gamma_2 = U^m(\gamma_1)) + \\ &\quad [(1-m)(1-p)\gamma_1 + 0.25(1-\gamma_1)(2-m)]V_a^2(\gamma_2 = D^m(\gamma_1)) + \\ &\quad m[(1-p)\gamma_1 + 0.25(1-\gamma_1)]V_a^2(\gamma_2 = D^+(\gamma_1)) + 0.25m(1-\gamma_1)\bar{x} \end{aligned} \tag{18}$$

Without guidance, from Theorem 1, the expected earnings of second period are

$$\begin{aligned} E[E(x_2|\gamma_2)|\gamma_1] &= [p\gamma_1 + 0.5(1-\gamma_1)]V_a^2(\gamma_2 = U(\gamma_1)) + \\ &\quad [(1-p)\gamma_1 + 0.5(1-\gamma_1)]V_a^2(\gamma_2 = D(\gamma_1)) \end{aligned} \tag{19}$$

With truthful guidance, from Theorem 2, the expected earnings of second period are

$$\begin{aligned} E[E(x_2|\gamma_2)|\gamma_1] &= [p\gamma_1 + 0.25(1-\gamma_1)]V_a^2(\gamma_2 = U^+(\gamma_1)) + \\ &\quad [(1-p)\gamma_1 + 0.25(1-\gamma_1)]V_a^2(\gamma_2 = D^+(\gamma_1)) + 0.5(1-\gamma_1)\bar{x} \end{aligned} \tag{20}$$

So the efficiency difference between the setting with mixed strategy and the setting with truthful guidance would be (20)-(18), which is denoted by V_m, so we have

$$\begin{aligned} V_m &= [p\gamma_1 + 0.25(1-\gamma_1)]V_a^2(\gamma_2 = U^+(\gamma_1)) - [p\gamma_1 + 0.25(1-\gamma_1)(2-m)]V_a^2(\gamma_2 = U^m(\gamma_1)) + \\ &\quad (1-m)[(1-p)\gamma_1 + 0.25(1-\gamma_1)]V_a^2(\gamma_2 = D^+(\gamma_1)) - \\ &\quad [(1-m)(1-p)\gamma_1 + 0.25(1-\gamma_1)(2-m)]V_a^2(\gamma_2 = D^m(\gamma_1)) + 0.25(2-m)(1-\gamma_1)\bar{x} \end{aligned}$$

Then substitute the second period expected earnings function we have from Lemma 2, and reorganize the formula, we will have

$$\begin{aligned} V_m &= (A_1 - A_2)[\frac{p\gamma_1}{U^+(\gamma_1)}(\max\{U^+(\gamma_1), \bar{\gamma}\} - \bar{\gamma}) \\ &\quad + \frac{(1-m)(1-p)\gamma_1}{D^+(\gamma_1)}(\max\{D^+(\gamma_1), \bar{\gamma}\} - \bar{\gamma}) \\ &\quad - \frac{p\gamma_1}{U^m(\gamma_1)}(\max\{U^m(\gamma_1), \bar{\gamma}\} - \bar{\gamma}) - \frac{(1-m)(1-p)\gamma_1}{D^m(\gamma_1)}(\max\{D^m(\gamma_1), \bar{\gamma}\} - \bar{\gamma})] \end{aligned}$$

To prove Lemma 5, from above equation, $(A_1 - A_2)$ must be positive and as long as $m < 1$, the first item in the bracket ($\frac{p\gamma_1}{U^+(\gamma_1)}(\max\{U^+(\gamma_1), \bar{\gamma}\} - \bar{\gamma})$) is always weakly higher than the third item ($\frac{p\gamma_1}{U^m(\gamma_1)}(\max\{U^m(\gamma_1), \bar{\gamma}\} - \bar{\gamma})$). Similarly, the second item is always weakly higher than the fourth item. So V_m is always positive, that is, truthful guidance induces more efficiency than cheap-talk guidance, and the verification of guidance is of value.

For Theorem 5, the efficiency difference between the setting with mixed strategy and the setting without guidance would be (18)-(19). In the similar way, we can show that with mixed strategy, unverified guidance also improves efficiency compared with the setting without guidance. ■

Proof. (of Lemma 6) Before guidance is issued, the ex ante market expected first period earnings are

$$\begin{aligned} E[x_1|\gamma_1] &= [p\gamma_1 + 0.5(1-\gamma_1)](H-L) + L, \\ \text{where } H &= \bar{x} + \pi.\ L = \bar{x} + \delta \text{ if } \gamma_1 < \bar{\gamma} \\ H &= \bar{x} - l.\ L = \bar{x} - \delta \text{ if } \gamma_1 > \bar{\gamma}. \end{aligned}$$

In the equilibrium with truthful guidance, when the market observes a good guidance, the market updated expectation of first period earnings is $E[x_1|\gamma_1, g_1 = G] = \frac{p\gamma_1 + 0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)}(H - L) + L$. The current effect upon good earnings guidance is

$$E[x_1|\gamma_1, g_1 = G] - E[x_1|\gamma_1] = [\frac{p\gamma_1 + 0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} - [p\gamma_1 + 0.5(1-\gamma_1)]](H-L) \qquad (21)$$

One can easily see that for all $\gamma_1 \in (0,1)$, (21) is always positive. Similarly, if the market observes a bad guidance, the expectation revision is always negative. In particular, we take the derivative of (21) with respect to γ_1, then we have:

$$\frac{(p-0.25)[p\gamma_1 + 0.5(1-\gamma_1)] - (p-0.5)[p\gamma_1 + 0.25(1-\gamma_1)]}{[p\gamma_1 + 0.5(1-\gamma_1)]^2} - (p-0.5)](H-L).$$

This derivative is positive (negative) when $\gamma_1 < \frac{\sqrt{p/(4p-2)}-0.5}{p-0.5}$ ($\gamma_1 > \frac{\sqrt{p/(4p-2)}-0.5}{p-0.5}$). Since $\gamma_1 < 1$, so $\gamma_1 > \frac{\sqrt{p/(4p-2)}-0.5}{p-0.5}$ is only possible when $\frac{\sqrt{p/(4p-2)}-0.5}{p-0.5} < 1$, which is $p > 0.81$. The current effect of good guidance increases in γ_1 for low p. It decreases in γ_1 only if both γ_1 and p are high. ■

Proof. (of Lemma 7): Before guidance is issued, the ex ante market expectation on second period earnings is $E[E(x_2|\gamma_2)|\gamma_1]$ as described in Lemma 3. After a good guidance is

issued, the market's updated expectation on the second period earnings, is

$$E[E(x_2|\gamma_2)|\gamma_1, g = G] = \{ \begin{array}{ll} \bar{x} - \frac{l-\pi}{2}[\frac{p\gamma_1+0.25(1-\gamma_1}{p\gamma_1+0.5(1-\gamma_1}] + A_1\frac{p\gamma_1}{p\gamma_1+0.5(1-\gamma_1)} & \text{if } U^+(\gamma_1) > \bar{\gamma} \\ \bar{x} + A_2\frac{p\gamma_1}{p\gamma_1+0.5(1-\gamma_1)}, & \text{if } U^+(\gamma_1) < \bar{\gamma} \end{array} .$$

It is easy to see that the updated expectation upon good guidance is higher than the ex ante expectation, i.e., $[E[E(x_2|\gamma_2)|\gamma_1, g = G] > E[E(x_2|\gamma_2)|\gamma_1]$. More specifically, if $U^+(\gamma_1) < \bar{\gamma}$, the expectation revision $([E[E(x_2|\gamma_2)|\gamma_1, g = G] - E[E(x_2|\gamma_2)|\gamma_1])$ is

$$\bar{x} + A_2\frac{p\gamma_1}{p\gamma_1 + 0.5(1-\gamma_1)} - [\bar{x} + A_2\gamma_1] = \frac{A_2\gamma_1(p-0.5)(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} \tag{22}$$

One can easily see that when $\gamma_1 = 0$, (22) is also zero. Take the derivative of (22) with respect to γ_1, we have

$$\frac{A_2(p-0.5)[0.5(1-2\gamma_1) - (p-0.5){\gamma_1}^2]}{[p\gamma_1 + 0.5(1-\gamma_1)]^2}$$

If $U^+(\gamma_1) < \bar{\gamma}$, with γ_1 in the low end, the derivative is positive, which means that the market revision is increasing in γ_1. Similarly, if $D^+(\gamma_1) > \bar{\gamma}$, with γ_1 in the high end, the expectation revision is

$$\bar{x} - \frac{l-\pi}{2}[\frac{p\gamma_1 + 0.25(1-\gamma_1}{p\gamma_1 + 0.5(1-\gamma_1}] + A_1\frac{p\gamma_1}{p\gamma_1 + 0.5(1-\gamma_1)}$$

$$-[\bar{x} - \frac{l-\pi}{4} + (A_1 - \frac{l-\pi}{4})\gamma_1] = (A_1 - \frac{l-\pi}{4})\frac{\gamma_1(p-0.5)(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)} \tag{23}$$

One can easily see that when $\gamma_1 = 1$, (23) is zero and take the derivative of (23) with respect to γ_1, we have

$$(A_1 - \frac{l-\pi}{4})\frac{0.5(1-2\gamma_1) - (p-0.5){\gamma_1}^2}{[p\gamma_1 + 0.5(1-\gamma_1)]^2}$$

If $D^+(\gamma_1) > \bar{\gamma}$, in the high end, the derivative is negative, which means that the market revision is decreasing in γ_1. In the same way, we could have the results upon bad guidance. ■

Proof. (of Lemma 8) From above analysis of Lemma 6 and Lemma 7 about market revision upon earnings guidance, suppose the guidance is good, the market value after the good guidance and before the actual earnings announcement is

$$\begin{aligned} V_b^1(g_1 = G) &= E[x_1|\gamma_1, g_1 = G] + E[E(x_2|\gamma_2)|\gamma_1, g_1 = G] \\ \text{where} E[x_1|\gamma_1, g_1 = G] &= \frac{p\gamma_1 + 0.25(1-\gamma_1)}{p\gamma_1 + 0.5(1-\gamma_1)}(H-L) + L, \\ E[\gamma_2|\gamma_1, g_1 = G] &= \frac{p\gamma_1}{p\gamma_1 + 0.5(1-\gamma_1)} \end{aligned}$$

If the actual earnings are really high, then the ex post market price is

$$V_a^2(x_1 \in H, g_1 = G) = H + E(x_2|\gamma_2 = U^+(\gamma_1))$$

It is obvious that $H > E[x_1|\gamma_1, g_1 = G]$ and $U^+(\gamma_1) > E[\gamma_2|\gamma_1, g_1 = G]$. So the market value increases since the market adjusts upwards both the current earnings and the expected future earnings. In the same way, one can show that if the actual earnings are low, the market value decreases. And the market value revision is always more than the current earnings surprise, so the earnings response coefficient is higher than one, i.e., $\frac{V_a^2(x_1, g_1=G) - V_b^1(g_1=G)}{x_1 - E[x_1|g_1=G]} > 1$.

Now suppose the guidance is bad, the market value after the bad guidance and before the actual earnings announcement is

$$\begin{aligned} V_b^1(g_1 = B) &= E[x_1|\gamma_1, g_1 = B] + E[x_2|\gamma_1, g_1 = B] \\ \text{where} E[x_1|\gamma_1, g_1 = B] &= \frac{0.25(1-\gamma_1)}{(1-p)\gamma_1 + 0.5(1-\gamma_1)}(H - L) + L, \\ E[x_2|\gamma_1, g_1 = B] &= \begin{cases} \bar{x} - \frac{l-\pi}{2}\frac{(1-p)\gamma_1 + 0.25(1-\gamma_1)}{(1-p)\gamma_1 + 0.5(1-\gamma_1)} + A_1\frac{(1-p)}{(1-p)\gamma_1 + 0.5(1-\gamma_1)}\gamma_1, & \text{if } D^+(\gamma_1) > \bar{\gamma} \\ \bar{x} + A_2\frac{(1-p)}{(1-p)\gamma_1 + 0.5(1-\gamma_1)}\gamma_1 & \text{if } D^+(\gamma_1) < \bar{\gamma} \end{cases}. \end{aligned}$$

Since here we assume $\gamma_1 > \bar{\gamma}$, the H in above equation is $\bar{x} + \pi$ and $L = \bar{x} - l$. If the actual earnings are high, then the ex post market value is

$$V_a^2(x_1 \in H, g_1 = B) = H + E(x_2|\gamma_2 = 0) = 2\bar{x} + \pi$$

To find out the total market revision, which is to compare $V_a^2(x_1 \in H, g_1 = B)$ with $V_b^1(g_1 = B)$, we analyze three cases separately. First, if $\gamma_1 > D^+(\gamma_1) > \bar{\gamma}$, the market value before the actual earnings announcement is

$$\begin{aligned} V_b^1(g_1 = B) = \frac{0.25(1-\gamma_1)}{(1-p)\gamma_1 + 0.5(1-\gamma_1)}(\pi + l) + 2\bar{x} - l + \\ \frac{l-\pi}{2}\frac{(1-p)\gamma_1 + 0.25(1-\gamma_1)}{(1-p)\gamma_1 + 0.5(1-\gamma_1)} + A_1\frac{(1-p)}{(1-p)\gamma_1 + 0.5(1-\gamma_1)}\gamma_1 \end{aligned}$$

After simple algebra, it is easy to show that $V_a^2(x_1 \in H, g_1 = B) > V_b^1(g_1 = B)$, which is the market value increases upon high actual earnings. Second, if $\gamma_1 > \bar{\gamma} > D^+(\gamma_1)$, the market value before the actual earnings announcement is

$$V_b^1(g_1 = B) = \frac{0.25(1-\gamma_1)}{(1-p)\gamma_1 + 0.5(1-\gamma_1)}(\pi + l) + 2\bar{x} - l + A_2\frac{(1-p)}{(1-p)\gamma_1 + 0.5(1-\gamma_1)}\gamma_1$$

Still, we have the result that $V_a^2(x_1 \in H, g_1 = B) > V_b^1(g_1 = B)$. Third, if $D^+(\gamma_1) > \gamma_1 > \bar{\gamma}$, the market value before the actual earnings announcement is the same as in the case of $\gamma_1 > D^+(\gamma_1) > \bar{\gamma}$. Thus, the market value also increases. Similarly, if the actual earnings are low, the market value always decreases. In this case, the market reaction is always less than the earnings surprise, so the earnings response coefficient is less than one, i.e., $\frac{V_a^2(x_1, g_1=B) - V_b^1(g_1=B)}{x_1 - E[x_1|g_1=B]} < 1$. ■

9 References

ABOODY, D.; AND R. KASZNIK. "CEO stock option awards and the timing of voluntary corporate disclosures."*Journal of Accounting and Economics* 29 (2000): 73–100.

ALI, A.; AND S. KALLAPUR. "Securities Price Consequences of the Private Securities Litigation Reform Act of 1995 and Related Events."*The Accounting Review* 76 (2001): 431-60.

BARTOV, E.; D. GIVOLY; AND C. HAYN. "The rewards to meeting or beating earnings expectations."*Journal of Accounting and Economics* 33 (2002): 173–204.

BROWN, LAWRENCE D. "Small negative surprises: frequency and consequence."*International Journal of Forecasting* 19 (2003): 149-59.

BURGSTAHLER, E.; M. EAMES. "Management of earnings and analysts' forecasts to achieve zero and small positive earnings surprises"*Journal of Business Finance and Accounting* 33 (2006): 633-52.

CED, Committee for Economic Development. "Built to Last: Focusing Corporations on Long-term Performance"2007.

CHEN, S; D. MATSUMOTO; AND S. RAJGOPAL. "Is Silence Golden? An Empirical Analysis of Firms that Stop Giving Quarterly Earnings Guidance"Working paper, University of Washington. (2006). Available at SSRN: http://ssrn.com/abstract=820644

CHEVIS, G; S. DAS; AND S. SIVARAMAKRISHNAN. "Does it Pay to Consistently Meet Analysts' Earnings Expectations?"Working paper, Baylor University, University of Illinois, University of Houston, 2007.

COTTER, J.; I. TUNA; AND P. WYSOCKI. "Expectations management and beatable targets: How do analysts react to public earnings guidance?"*Contemporary Accounting Research* 23 (2006): 593–624.

DAS, S.; K. KIM; AND P. SUKESH. "An Analysis of Managerial Use and Market Consequences of Earnings Management and Expectation Management." Working paper. University of Illinois. (2008a).

DAS, S.; K. KIM; AND P. SUKESH. "Investor Conservatism and the Long Term Price Response to Management Earnings Forecasts." Working Paper, University of Illinois. (2008b)

DELOITTE ; AND FERF, "Earnings Guidance: The Current State of Play", June 2009.

Economist.com, "The Decline of Earnings Guidance"April 2006.

DYE, R. "Earnings management in an overlapping generations model."*Journal of Accounting Research* 26 (1988): 195–235.

FRANCIS, J.; D. PHILBRICK; AND K. SCHIPPER. "Shareholder litigation and corporate disclosures."*Journal of Accounting Research* 32 (1994): 137–64.

HIRST, E.; L. KOONCE; AND S. VENKATARAMAN. "Management Earnings Forecasts: A Review and Framework."*Accounting Horizons* 22 (2008): 315-38.

HOUSTON, J F.; B. LEV; AND J. TUCKER. "To Guide Or Not to Guide? Causes and Consequences of Stopping Quarterly Earnings Guidance"Working paper. (2008). Available at SSRN: http://ssrn.com/abstract=875184

HUTTON, A., AND P. STOCKEN. "Effect of reputation on the credibility of management forecasts."Working paper. Boston College and Dartmouth College. (2007)

JENNING, R. "Unsystematic security price movements, management earnings forecasts, and revisions in consensus analyst earnings forecasts."*Journal of Accounting Research* 25 (1987): 90–110.

JOHNSON, M.; R. KASZNIK; AND K. NELSON. "The Impact of Securities Litigation Reform on the Disclosure of Forward-Looking Information by High Technology Firms."*Journal of Accounting Research* 39 (2001): 297-327.

KASZNIK, R., AND B. LEV. "To warn or not to warn: Management disclosures in the face of an earnings surprise"*The Accounting Review* 70 (1995): 113–34.

KASZNIK, R.; AND F.M. MCNICHOLS. "Does Meeting Earnings Expectations Matter? Evidence from Analyst Forecast Revisions and Share Prices." *Journal of Accounting Research* 40 (2002): 727-59.

LANG, M. H., AND R. J. LUNDHOLM. "Voluntary disclosure and equity offerings: Reducing information asymmetry or hyping the stock?"*Contemporary Accounting Research* 17 (2000): 623–63.

LANGBERG, N., AND K. SIVARAMAKRISHNAN. "Voluntary disclosures and Analyst Feedback"Forthcoming in *Journal of Accounting Research*.

LEUZ, C., AND R. VERRECCHIA. "The economic consequences of increased disclosure."*Journal of Accounting Research* 38 (2000): 91-124.

MATSUMOTO, D. "Management's incentives to avoid negative earnings surprises."*The Accounting Review* 77 (2002): 483-514.

NIRI: National Investor Relations Institute. "Public Company Forward-Looking Guid-

ance Practices in 2009"Executive Alert May 18, 2009.

SKINNER, D. "Earnings Disclosures and Stockholder Lawsuits." *Journal of Accounting and Economics* 23 (1997): 249–82.

SOFFER, L.C.; S.R. THIAGARAJAN; AND B.R. WALTHER. "Earnings preannouncement strategies."*Review of Accounting Studies* 5 (2000): 5-26.

STOCKEN, P.C. "Credibility of Voluntary Disclosure"*RAND Journal of Economics* 31 (2000): 359-74.

THOMPSON, L. "What You Should Know About Earnings Guidance"Genesis Inc., May 2007.

THOMSON FINANCIAL, "Trends in Earnings Guidance"April 2006.

TRUEMAN, B. "Why Do Managers Voluntarily Release Earnings Forecasts?"*Journal of Accounting and Economics* 8 (1986): 53-71.

WAYMIRE, G. "Additional evidence on the accuracy of analyst forecasts before and after voluntary management earnings forecasts."*The Accounting Review* 61 (1986): 129–42.