

# VOLUNTARY DISCLOSURES AND EARNINGS SURPRISES: THE CASE OF HIGH-TECH FIRMS IN PERIODS OF BAD ECONOMIC NEWS

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## ABSTRACT

*In this study, I examine the voluntary disclosure behavior of high-tech firms experiencing bad economic news. I create a sample of 100 randomly-selected firm-quarters with negative returns—but not necessarily negative earnings surprises. I find that: (i) the unconditional relation between earnings surprises and voluntary disclosures is non-existent in this setting where negative stock returns are controlled for, but (ii) firms with negative earnings surprises make forward-looking statements with more negative information content—but only when conditioned on firm size or growth opportunities. Sample selection procedures can therefore affect inferences drawn from voluntary disclosure behavior documented in extant studies. Conditional analysis reveals how the earnings-disclosure relation cross-sectionally varies with firms' economic characteristics.*

**JEL:** M40, D82

**KEYWORDS:** Voluntary disclosures, earnings surprise, bad economic news, litigation risk

## INTRODUCTION

In this study, I examine the voluntary disclosure behavior of firms with bad economic news. The goal of the study is two-fold. First, I examine the relation between voluntary disclosures and earnings surprise—but do so only after explicitly controlling for negative stock returns. Controlling for negative returns is particularly important for studies that examine bad news disclosures because they are a necessary condition of Rule 10b-5 litigation. Other studies fail to control for this, and may suffer from a correlated omitted variables problem; such studies may therefore draw incorrect inferences about the earnings-disclosure relation, or find results that are inconsistent with litigation predictions. My second goal is to examine the cross-sectional determinants of the earnings-disclosure relation. That is, does the earnings-disclosure relation systematically vary across different economic settings? For instance, a firm with relatively high growth opportunities may exhibit an earnings-disclosure relation that is quite different from that of a firm with relatively low growth opportunities. This conditional analysis provides a deeper understanding to our current knowledge of how earnings surprises affect voluntary disclosure behavior, and sheds light on why prior studies may find conflicting results.

I randomly select 100 firm-quarters in high-tech industries that experience negative market-adjusted returns during the quarter. Because I do not impose requirements on earnings, the firms do not necessarily exhibit a negative earnings surprise. I collect the voluntary disclosures made during the quarter for each of these firms, and then examine the possible sources of variation in the number and information content of these disclosures. I estimate a model of voluntary disclosures regressed on earnings surprise—and interactions of the surprise with economic characteristics. I find the following results. First, I find that earnings surprises are not related to the *number of disclosures* in any meaningful manner. Second, related to the interaction terms, I find that firms with more negative earnings surprises make *forward-looking statements with more negative information content*—but only when conditioned on firm size or growth opportunities. That is, negative earnings surprises have an impact on the disclosure decision, but only for firms that are large in size or have high growth opportunities. Conversely, negative earnings surprises do not seem to affect disclosure behavior for firms that are small in size or have low growth opportunities.

Since unconditional earnings surprises are found to have no relation to information content, this result highlights the importance of the conditional analysis.

One empirical result that consistently emerges from my analysis is the absence of an unconditional relation between earnings surprise and voluntary disclosure behavior. This is most consistent with the findings of Lang and Lundholm (1993) and less consistent with the findings of, e.g., Skinner (1994) or Miller (2002). Specifically, Lang and Lundholm find a positive relation between earnings and disclosure quality, but find that this relation ceases to exist when stock returns are subsequently controlled for—perhaps because “returns capture the relevant information in earnings.” In this study, the sample requirement of negative stock returns likely has a similar effect on the unconditional earnings-disclosure relation. This highlights the importance of avoiding earnings-based metrics in the sample selection procedure, and how this issue can have a nontrivial impact on the inferences that are drawn from certain disclosure studies. It also sheds light on one possible reason why prior studies like Francis et al. (1994) and Skinner (1997) find control firms with negative earnings surprises that do not make voluntary disclosures in the manner that litigation-risk-based hypotheses would predict—the negative earnings surprises may not translate into comparable stock price declines, which is a necessary condition for Rule 10b-5 litigation. The results in this study therefore suggest that future research on the earnings-disclosure relation should control for stock returns, and explicitly consider how the earnings-disclosure relation may cross-sectionally vary across firms. Results in this study should, however, be interpreted with caution because, given the industry membership and negative stock returns requirements I impose on my sample, the disclosure behavior I document may not be generalizable to the broader universe of firms.

The paper proceeds as follows. In the next section, I review the relevant literature. Next, I discuss the sample selection process and research design. The following section presents empirical results. Lastly, I discuss conclusions and caveats.

## **LITERATURE REVIEW**

In this study, I examine the relation between voluntary disclosures and earnings surprise for firms experiencing bad economic news. A large number of studies investigate the voluntary disclosure behavior of firms that experience bad economic news (e.g., Skinner, 1994, 1997; Francis et al., 1994; Kasznik and Lev, 1995; Aboody and Kasznik, 2000). The most prominent economic force examined in extant literature is litigation risk under SEC Rule 10b-5 (e.g., Trueman, 1997; Johnson et al., 2000), which states that it is unlawful for a firm to make an “untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements [previously] made... not misleading.” Because managers have an asymmetric loss function, when they possess “sufficiently bad” news, they have an incentive to ex post voluntarily disclose the bad news in a timely manner to reduce expected litigation costs. Timely, curative disclosures (i.e., those that exhibit negative information content) reduce expected litigation costs because such disclosures counter allegations that the news was not released in a timely manner, and also reduce the class period and class size of potential lawsuits.

Anecdotal evidence suggests that many Rule 10b-5 lawsuits are triggered by negative earnings surprises, so many disclosure studies use earnings surprise as a proxy for litigation risk and examine whether such earnings surprises are related to different levels of disclosure. Most disclosure studies therefore use earnings surprise as a proxy for litigation risk and examine whether negative earnings surprises are related to higher levels of disclosure. For instance, both Skinner (1994) and Kasznik and Lev (1995) find that firms with bad earnings surprises are at least twice as likely to provide voluntary, preemptive disclosures than those with good earnings surprises. This suggests that bad earnings surprises increase expected litigation costs (relative to good earnings surprises), and that firms increase preemptive disclosures to reduce such costs. However, other studies like Francis et al. (1994) find that for the majority of 10b-5 lawsuit firms, preemptive disclosures are not the panacea for litigation, but rather, the precipitating factor

for it. Meanwhile, virtually all of the control firms in their sample (“at-risk” of litigation, but not sued) make no preemptive disclosures—though the at-risk firms exhibit a much more severe earnings decline (similarly, Skinner, 1997). Since preemptive disclosures should reduce litigation risk, not be the precipitous factor for such lawsuits, these studies are inconsistent with the notion that negative earnings surprises increase litigation risk. Moreover, there are other studies that find a positive earnings-disclosure relation because earnings surprises are considered good news (e.g., Miller, 2002) and fit into the typical motivation for the disclosure of good news (e.g., Verrecchia, 1983; Dye, 1985). And yet others find no relation (e.g., Lang and Lundholm, 1993).

One possible explanation for these conflicting results is that, because of the noise and bias in GAAP, a negative earnings surprise does not necessarily suggest a short-term price decline (e.g., Kinney et al., 2002). This is a non-trivial point when considering bad news disclosures because the short-term price decline is a necessary condition for Rule 10b-5 litigation (e.g., Jones and Weingram, 1996), which is the main motivation for bad news disclosures. Thus, if short-term price declines are not explicitly considered in research design, we may draw incorrect inferences about the relation between earnings surprises and voluntary disclosures. For instance, if firms with negative earnings surprises have *positive* market reactions, concluding that the disclosures of such firms are due to concerns of litigation risk becomes tenuous. After all, the disclosure incentives for firms with good economic news are significantly different from those with bad economic news. For instance, one first-order incentive for good-news firms to make disclosures is to reduce the cost of capital (Botosan, 1997). However, this is unlikely to be the primary incentive for bad-news firms. How might this noise and bias in earnings-based metrics affect inferences? Figure 1 presents a simple illustration.

Figure 1: Relation between Earnings Surprises and Stock Price Changes

	Stock price decline	Stock price incline
Negative earnings surprise	1	2
Positive earnings surprise	3	4

When a sample is selected based upon earnings surprise, the implicit intent is that this procedure closely matches price movements. For instance, Francis et al. (1994) construct an “at-risk” control sample of firms with earnings declines of 20% or greater; this implicitly proxies for short-term price declines (and therefore litigation risk), represented in Cell 1 of Figure 1. However, because of noise and bias in GAAP, a portion of the at-risk sample likely also belongs to Cell 2—indeed, 43% of the firms do in studies like Kinney et al. (2002). If true, then comparing the disclosures of firms subject to 10b-5 litigation (all from Cell 1) to those of at-risk firms (from both Cells 1 and 2) can be problematic. If earnings surprises do accurately proxy for price movements: Is it negative earnings surprises per se that increase expected litigation costs, or the underlying price declines that earnings merely proxy for that increase these costs? This is a critical issue because the disclosure incentives for firms with good economic news (Cell 2, typically related to first-order concerns of valuation) are significantly different from those with bad economic news (Cell 1, typically related to concerns of litigation risk). There is evidence of this issue arising in the Francis et al. study. They find that at-risk firms experience an average earnings decline 50% more severe than litigation firms—yet at-risk firms experience a price decline that is 44% less severe than litigation firms. That is, the earnings-decline screen for at-risk firms does not seem to have translated into comparable price declines. Indeed, 87% of the at-risk firms do not make preemptive disclosures, behaving as if they do not experience bad news at all. Francis et al. conclude that “conditions other than poor earnings and the way these earnings are disclosed are necessary to link adverse earnings news and litigation”. I posit that the missing link is comparable short-term price declines. It is only after short-term price declines are controlled for that we can make accurate inferences about the effect of negative (or positive) earnings surprises on voluntary disclosure behavior.

Given this discussion, one unique aspect of the current study is that I choose to define bad economic news using negative *stock returns* in lieu of negative *earnings surprise*. This difference in sample selection has important implications for how we view the bad news disclosure behavior documented in extant studies, and it creates at least four methodological advantages. First and foremost, as discussed above, choosing a sample based upon negative stock returns avoids having to choose one based upon earnings surprise—a metric that contains noise and bias and therefore distorts the measurement of economic news. Second, negative returns is a necessary condition for Rule 10b-5 litigation, which is the primary economic force behind bad news disclosures documented in prior studies. Third, it allows for within-sample variation of the earnings surprise metric, which allows for a more careful examination of the precise relation between earnings surprise and disclosures documented in prior studies. Lastly, it is a more comprehensive measure of bad economic news than accounting-based metrics.

Though the relation between earnings surprise and voluntary disclosures is a well-researched topic in accounting, understanding the precise relation is an elusive goal. Some studies find a negative relation (e.g., Skinner, 1994), while others find a positive relation (e.g., Miller, 2002), and yet others find no relation (e.g., Lang and Lundholm, 1993). These contradictory results suggest that the earnings-disclosure relation may *systematically vary* according to economic forces. For instance, a firm with relatively high litigation risk may exhibit an earnings-disclosure relation that is quite different from that of a firm with relatively low litigation risk. To examine these types of *conditional* earnings-disclosure relations, I interact earnings surprises with several firm characteristics, such as firm size, litigation risk, and growth opportunities. This conditional analysis provides a richer texture and deeper understanding to our current knowledge of how earnings surprises affect voluntary disclosure behavior. The results of my conditional analysis will reveal the specific conditions under which the earnings-disclosure relation is most likely to exist. In doing so, the analysis will provide a plausible explanation for why there are three sets of conflicting results regarding the (unconditional) earnings-disclosure relation. For instance, it is possible that the three sets of studies find conflicting results because the firms in each of the studies vary in size, growth opportunities, etc. Therefore, the results from this study may provide some guidance to future researchers about the types of firm characteristics that can affect the earnings-disclosure relation.

## **SAMPLE SELECTION**

I limit my investigation to three high-tech industries: biotechnology (SIC codes 2833-2836), computer hardware (3570-3577), and computer software (7371-7379) (e.g., Francis et al., 1994; Johnson et al., 2000). Untabulated results reveal that the litigation frequency rates for these industry populations (per Stanford Securities Class Action Clearinghouse) are 1.1%, 2.54%, and 2.44%, respectively; the frequency rate for the population of all firms is 0.82%. High-tech firms exhibit a relatively low level of financial statement informativeness (e.g., Amir and Lev, 1996). This is because high-tech firms possess a relatively high level of growth opportunities, and private information about such growth are relatively difficult to convey through the traditional financial reporting model. If managers desire to communicate this private information to market participants, to the extent that they face a decision in doing so through financial statement information versus voluntary disclosures, this lower level of financial statement informativeness creates a relatively more important role for voluntary disclosures. Moreover, high-tech firms are disproportionately accused of inadequate voluntary disclosures, as is evidenced by the relative frequency of Rule 10b-5 lawsuit filings (e.g., Grundfest and Perino, 1997).

For the 1996-2001 period, there are 21,938 firm-quarter observations with available daily CRSP and Compustat data in these industries. I define economic news with respect to stock returns. I limit the investigation to only firms experiencing bad economic news, and therefore delete quarterly observations with positive returns, as well as observations with negative returns that outperform market returns. (Quarterly returns are from the daily CRSP files and are cumulated starting  $t+3$  after prior-quarter earnings announcement to day  $t+3$  of current earnings announcement.) I delete firms larger (smaller) than

\$10 billion (\$100 million) in market capitalization, as well as firms with stock price less than \$3. This results in 5,228 observations. I randomly select 100 firm-quarter observations that have available analyst forecast data on I/B/E/S. Because I do not impose requirements on earnings, the firms do not necessarily exhibit a negative earnings surprise.

## RESEARCH DESIGN

The empirical model is designed to examine the possible sources of variation in the voluntary disclosure behavior of the high-tech, bad economic news firms of my sample. Of particular interest is how this earnings-disclosure relation systematically varies with other economic forces. To examine these types of conditional relations, I interact earnings surprises with each of the other independent variables.

$$\begin{aligned} \text{DISCLOSE} = & \alpha & + \beta_1 \text{SURPRISE}_{\text{NEG}} & + \beta_2 \text{SURPRISE}_{\text{POS}} & (1) \\ & + \beta_3 \text{LITIG} & + \beta_4 \text{SURPRISE}_{\text{NEG}} * \text{LITIG} & + \beta_5 \text{SURPRISE}_{\text{POS}} * \text{LITIG} \\ & + \beta_6 \text{SIZE} & + \beta_7 \text{SURPRISE}_{\text{NEG}} * \text{SIZE} & + \beta_8 \text{SURPRISE}_{\text{POS}} * \text{SIZE} \\ & + \beta_9 \text{GROWTH} & + \beta_{10} \text{SURPRISE}_{\text{NEG}} * \text{GROWTH} & + \beta_{11} \text{SURPRISE}_{\text{POS}} * \text{GROWTH} \\ & + \beta_{12} \text{EQUITY} & + \beta_{13} \text{SURPRISE}_{\text{NEG}} * \text{EQUITY} & + \beta_{14} \text{SURPRISE}_{\text{POS}} * \text{EQUITY} \\ & + \beta_{15} \text{STDEBT} & + \beta_{19} \text{SURPRISE}_{\text{NEG}} * \text{STDEBT} & + \beta_{20} \text{SURPRISE}_{\text{POS}} * \text{STDEBT} + \varepsilon \end{aligned}$$

Brief variable definitions follow. DISCLOSE is one of several measures of voluntary disclosures for the firm (discussed in detail below). SURPRISE is I/B/E/S analyst consensus forecast errors, scaled by prior-quarter total assets per share. NEG and POS subscripts are used to bifurcate SURPRISE; variables simply take on the value of earnings surprise when negative and positive, respectively, and zero otherwise. LITIG is the estimated probability of 10b-5 litigation, using a probit model motivated from prior studies (e.g., Jones and Weingram, 1996; Johnson et al., 2000), and litigation data culled from the Stanford Securities Class Action Clearinghouse database. SIZE is prior-quarter market value of equity. GROWTH is prior-quarter market-to-book ratio. EQUITY is the change in one-year ahead contributed capital (common stock + capital surplus), scaled by prior-quarter total assets. STDEBT is defined as prior-quarter total current liabilities scaled by prior-quarter total assets.

As mentioned above, DISCLOSE is one of several measures of voluntary disclosures that I hand-collected. For each of the 100 firm-quarter observations, I collect all voluntary disclosures made by the firm during the quarter of negative stock returns from Factiva (PR Newswire, BusinessWire, Dow Jones News Service, and Wall Street Journal). This search is not limited to preannouncements and forecasts. I assume that these press-release disclosures are representative of firms' overall disclosure policies. From these disclosures, I create two types of dependent variables: NUMBER and CAR. The NUMBER of voluntary disclosures is defined as the simple count or number of disclosures made during the quarter of negative returns. The CAR of voluntary disclosures is defined as the combined-window returns associated with all of the disclosures tabulated in NUMBER. For each of the voluntary disclosures made during the quarter, I calculate the three-day value-weight market-adjusted returns surrounding the disclosure date. I then aggregate the returns from all the disclosures into one summary statistic, CAR. Following other empirical studies (e.g., Miller, 2002), voluntary disclosures are also categorized into one of two categories: (i) earnings/sales preannouncements or forecasts, referred to as *forward-looking statements* (or *FLS*), and (ii) all other types of disclosures, broadly referred to as *other disclosures*. This process creates six variables as potential dependent variables: NUMBER<sub>TOTAL</sub>, NUMBER<sub>FLS</sub>, NUMBER<sub>OTHER</sub>, CAR<sub>TOTAL</sub>, CAR<sub>FLS</sub>, and CAR<sub>OTHER</sub>.

I briefly discuss motivations and predictions for each of the independent variables. Making ex ante predictions about the effect of earnings surprises, SURPRISE, on disclosure decisions is difficult because there are three conflicting sets of studies. First, some studies find a negative relation between earnings

surprises and disclosure behavior (e.g., Skinner, 1994; Kasznik and Lev, 1995; Grundfest and Perino, 1997). This negative relation is typically posited to exist due to litigation concerns arising from SEC Rule 10b-5: firms with negative earnings surprises face higher expected litigation costs and therefore make voluntary disclosures to reduce such costs. Other studies find a positive relation between earnings surprises and disclosure behavior. If managers prefer high current firm value, firms with relatively good economic news make more disclosures to increase firm valuation, while firms with relatively bad economic news remain silent to avoid firm devaluation (e.g., Verrecchia, 1983; Dye, 1985). Lastly, some studies find that no empirical relation exists between earnings surprises and disclosure behavior. Lang and Lundholm (1993) find preliminary evidence of a positive relation between earnings surprises and disclosure quality—however, when stock returns are subsequently controlled for, this positive relation ceases to exist. The authors conclude that this relation ceases to exist because “returns capture the relevant information in earnings.” This finding is particularly relevant in the context of the current study because my sample selection process imposes stock returns requirements on the sample.

Disclosure-related litigation risk, LITIG, is mainly determined by SEC Rule 10b-5 and the Private Securities Litigation Reform Act of 1995. Firms with higher LITIG are more likely to make voluntary disclosures to reduce expected litigation costs (e.g., Trueman, 1997; Johnson et al., 2000). For firm size, SIZE, larger (smaller) firms tend to have higher (lower) disclosure quality and make more (less) voluntary disclosures (e.g., Lang and Lundholm, 1993). Firms with relatively high levels of growth opportunities, GROWTH, face higher levels of information asymmetries with market participants (Healy and Palepu, 2001), and also find it more difficult to convey their private information through the traditional financial reporting model and therefore use voluntary disclosures. Firms that anticipate issuing additional equity, EQUITY, as a means of external financing have the incentive to make voluntary disclosures because such disclosures reduce information asymmetries between the firm and market participants, and therefore reduce the cost of capital (e.g., Myers and Majluf, 1984; Lang and Lundholm, 1993). Firms with high levels of current liabilities, STDEBT, face non-trivial liquidity concerns—and the attendant costs of renegotiating with suppliers and short-term creditors can adversely impact production and/or financing decisions (e.g., Bowen et al., 1995). To mitigate such costs, firms may make voluntary disclosures to signal to their suppliers/creditors that they are forthcoming about bad news.

## EMPIRICAL RESULTS

Table 1: Descriptive Statistics

	Mean	5%	25%	50%	75%	95%
NUMBER <sub>TOTAL</sub>	8.05	1	3	7	11	19.5
NUMBER <sub>FLS</sub>	0.62	0	0	0	1	3
NUMBER <sub>OTHER</sub>	7.43	1	3	6	11	18.5
CAR <sub>TOTAL</sub>	-0.106	-0.495	-0.226	-0.072	0.020	0.215
CAR <sub>FLS</sub>	-0.054	-0.332	-0.051	0.000	0.000	0.112
CAR <sub>OTHER</sub>	-0.048	-0.369	-0.153	-0.037	0.054	0.247
SURPRISE	-0.005	-0.076	-0.012	0.000	0.003	0.031
NI	-0.048	-0.239	-0.069	-0.011	0.018	0.047
SIZE (\$million)	616.3	122.5	210.4	379.2	757.4	2213.9
GROWTH	7.41	1.24	2.66	4.23	7.88	28.00
LITIG	0.021	0.000	0.002	0.007	0.015	0.043
EQUITY	0.274	-0.014	0.007	0.039	0.191	1.280
STDEBT	0.211	0.042	0.135	0.181	0.260	0.447

*This table presents descriptive statistics for the sample, comprised of 100 randomly selected firm-quarters in high-tech industries during the 1995-2001 period.*

Table 1 presents descriptive statistics. NUMBER<sub>TOTAL</sub> is the simple count of total disclosures made during the quarter of negative returns. Each of these variables is also disaggregated into *forward looking*

*statements* and *other disclosures*, which I denote using subscripts:  $NUMBER_{FLS}$  and  $NUMBER_{OTHER}$ . The mean (median) quarterly  $NUMBER_{TOTAL}$  for the sample is 8.1 (7.0). The mean (median)  $NUMBER_{FLS}$  for the sample is 0.6 (0.0). The mean (median)  $NUMBER_{OTHER}$  is 7.4 (6.0). These descriptive statistics highlight the unique nature of the sample and their high level of voluntary disclosures.  $CAR_{TOTAL}$  is the combined-window market-adjusted returns associated with all of the disclosures tabulated in  $NUMBER_{TOTAL}$ .  $CAR$  is similarly disaggregated into the combined-window returns for *forward looking statements* and *other disclosures*:  $CAR_{FLS}$  and  $CAR_{OTHER}$ . The mean (median)  $CAR_{TOTAL}$  for the sample is -0.106 (-0.072). The  $CAR_{TOTAL}$  for the 75<sup>th</sup> percentile firm is +0.020, which implies that the firm makes disclosures with cumulatively positive information content. Therefore, despite a negative-returns quarter overall, the firm contributed to the overall information environment by providing positive information to the market. The mean (median)  $CAR_{FLS}$  for the sample is -0.054 (0.000; because the median firm does not make an *FLS* disclosure). Because my sample selection procedure does not preclude positive earnings surprises, some firms exhibit positive  $CAR_{FLS}$  (untabulated). The mean (median)  $CAR_{OTHER}$  is -0.048 (-0.037). On average, firms' voluntary disclosures provide negative information to market participants.

The mean (median) firm size,  $SIZE$ , is \$616.3 (\$379.2) million. The mean (median) analyst following is 4 (3). So it is clear that, due to sample selection requirements, firms in the sample are relatively small. The mean (median) market-to-book ratio,  $GROWTH$ , is 7.41 (4.23). The mean (median) analyst forecast error,  $SURPRISE$ , for the sample is -0.005 (0.000). Because a negative earnings surprise requirement is not imposed on the sample, a non-trivial number of firms exhibit positive  $SURPRISE$ . The mean (median) seasonally-adjusted earnings change,  $DNI$ , is -0.030 (-0.010).

Table 2 presents Pearson and Spearman correlations (above and below the diagonal, respectively).  $NUMBER_{FLS}$  and  $NUMBER_{OTHER}$  are positively correlated ( $\rho=0.250$ ), suggesting that *forward-looking statements* and *other disclosures* are complementary mechanisms. However,  $CAR_{FLS}$  and  $CAR_{OTHER}$  are negatively correlated ( $\rho=-0.220$ ), perhaps suggesting that the information content in one does not necessarily buttress the other, but rather, attempts to counteract the other. Unlike prior studies that select their samples based upon earnings surprise,  $SURPRISE$  is not correlated with the number of disclosures that managers make, as is evident in the insignificant correlations for  $NUMBER_{FLS}$  and  $NUMBER_{OTHER}$ .  $SURPRISE$  is, of course, positively correlated with  $CAR_{FLS}$  ( $\rho=0.174$ ). However, it is not significantly correlated with  $CAR_{OTHER}$ .

Table 2: Pearson (Spearman) Correlations

	NUMBER <i>FLS</i>	NUMBER <i>OTHER</i>	NUMBER <i>TOTAL</i>	CAR <i>FLS</i>	CAR <i>OTHER</i>	CAR <i>TOTAL</i>	SURPRISE
$NUMBER_{FLS}$		<b>0.250</b>	<b>0.402</b>	<b>-0.411</b>	0.024	<b>-0.332</b>	-0.129
$NUMBER_{OTHER}$	0.182		<b>0.987</b>	-0.038	<b>-0.428</b>	<b>-0.409</b>	-0.039
$NUMBER_{TOTAL}$	<b>0.325</b>	<b>0.985</b>		-0.104	<b>-0.401</b>	<b>-0.442</b>	-0.058
$CAR_{FLS}$	<b>-0.537</b>	0.004	-0.077		<b>-0.220</b>	<b>0.582</b>	0.174
$CAR_{OTHER}$	-0.004	<b>-0.398</b>	<b>-0.385</b>	<b>-0.203</b>		<b>0.646</b>	-0.071
$CAR_{TOTAL}$	<b>-0.416</b>	<b>-0.416</b>	<b>-0.462</b>	<b>0.473</b>	<b>0.663</b>		0.070
$SURPRISE$	<b>-0.314</b>	-0.023	-0.060	<b>0.337</b>	-0.164	0.145	

*This table presents Pearson (Spearman) correlations, presented above (below) the diagonal. Bold text represents statistical significance at the 5% level.*

In Table 3, I present results for how  $NUMBER_{TOTAL}$  cross-sectionally varies. I discuss results for Model 3, which is the full model that includes interaction terms. Earnings surprises,  $SURPRISE$ , are not significantly related to  $NUMBER_{TOTAL}$ . This result is inconsistent with prior studies that typically find negative earnings surprises are related to a higher level of disclosures (e.g., Skinner, 1994). One interpretation of this null result (consistent with Lang and Lundholm, 1993) is that, once negative stock returns are controlled for, earnings surprises have no incremental impact on disclosure behavior.

Furthermore, when SURPRISE is interacted with each of the economic forces, these interaction terms are not significant either, suggesting that the relation between SURPRISE and NUMBER<sub>TOTAL</sub> does not seem to systematically vary by these other variables.

Table 3: Total Number of Voluntary Disclosures

	Model (1)			Model (2)			Model (3)		
	Parameter	t-stat		Parameter	t-stat		Parameter	t-stat	
Intercept	8.303	12.37	***	-16.15	-2.47	**	-105.9	-3.31	***
SURPRISE <sub>NEG</sub>	6.386	0.37		1.650	0.09		-776.0	-1.00	
SURPRISE <sub>POS</sub>	-17.53	-1.09		-48.87	-2.55	**	734.4	1.54	
LITIG				34.41	1.82	*	319.4	3.06	***
SIZE				2.100	3.18	***	2.091	2.38	**
GROWTH				-0.116	-1.62		-0.081	-0.47	
EQUITY				-0.119	-0.15		-0.585	-0.39	
STDEBT				9.837	2.14	**	12.37	2.12	**
SURPRISE <sub>NEG</sub> *LITIG							2256.3	1.04	
SURPRISE <sub>NEG</sub> *SIZE							13.87	0.51	
SURPRISE <sub>NEG</sub> *GROWTH							-0.230	-0.11	
SURPRISE <sub>NEG</sub> *EQUITY							64.29	0.42	
SURPRISE <sub>NEG</sub> *STDEBT							-51.15	-0.14	
SURPRISE <sub>POS</sub> *LITIG							-971.0	-1.19	
SURPRISE <sub>POS</sub> *SIZE							-72.23	-0.62	
SURPRISE <sub>POS</sub> *GROWTH							0.497	0.03	
SURPRISE <sub>POS</sub> *EQUITY							0.920	0.01	
SURPRISE <sub>POS</sub> *STDEBT							-75.43	-0.18	
Adj R <sup>2</sup>	-0.008			0.138			0.142		

This table presents results for NUMBER<sub>TOTAL</sub> (total number of disclosures) regressed on SURPRISE<sub>NEG</sub>, SURPRISE<sub>POS</sub>, and interaction terms with LITIG, SIZE, GROWTH, EQUITY, STDEBT. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5%, 10% level.

Table 4: Number of Forward-Looking Statements of Voluntary Disclosures

	Model (1)			Model (2)			Model (3)		
	Coeff	t-stat		Coeff	t-stat		Coeff	t-stat	
Intercept	0.621	5.60	***	-1.307	-1.17		-3.387	-0.60	
SURPRISE <sub>NEG</sub>	-1.841	-0.64		-3.704	-1.22		-172.4	-1.26	
SURPRISE <sub>POS</sub>	-2.839	-1.07		-3.967	-1.21		6.857	0.08	
LITIG				0.061	0.02		4.549	0.25	
SIZE				0.329	2.90	***	0.398	2.56	**
GROWTH				-0.026	-2.10	**	-0.004	-0.12	
EQUITY				-0.019	-0.14		-0.152	-0.57	
STDEBT				0.534	0.68		0.918	0.89	
SURPRISE <sub>NEG</sub> *LITIG							392.9	1.03	
SURPRISE <sub>NEG</sub> *SIZE							4.277	0.89	
SURPRISE <sub>NEG</sub> *GROWTH							0.234	0.64	
SURPRISE <sub>NEG</sub> *EQUITY							27.91	1.03	
SURPRISE <sub>NEG</sub> *STDEBT							46.88	0.74	
SURPRISE <sub>POS</sub> *LITIG							10.07	0.07	
SURPRISE <sub>POS</sub> *SIZE							1.465	0.07	
SURPRISE <sub>POS</sub> *GROWTH							-1.715	-0.65	
SURPRISE <sub>POS</sub> *EQUITY							6.538	0.41	
SURPRISE <sub>POS</sub> *STDEBT							-55.68	-0.75	
Adj R <sup>2</sup>	-0.003			0.073			0.022		

This table presents results for NUMBER<sub>FLS</sub> (number of forward-looking statements) regressed on SURPRISE<sub>NEG</sub>, SURPRISE<sub>POS</sub>, and interaction terms with LITIG, SIZE, GROWTH, EQUITY, STDEBT. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5%, 10% level.



There is evidence that LITIG is positively related to NUMBER<sub>TOTAL</sub> (319.4, t=3.06). Firms with higher levels of litigation risk may make more voluntary disclosures to reduce the expected costs of litigation. Also, SIZE is positively related to NUMBER<sub>TOTAL</sub> (2.091, t=2.38). Larger firms may make more disclosures because it is less costly for them to do so, and may further reduce expected litigation costs (related to firm size). Lastly, STDEBT is positively related to NUMBER<sub>TOTAL</sub> (12.37, t=2.12). One interpretation of this result is that firms with high short-term debt or current liabilities may make more preemptive, voluntary disclosures to appease the concerns of suppliers/creditors.

Table 5: Number of Other Voluntary Disclosures

	Model (1)			Model (2)			Model (3)		
	Coeff	t-stat		Coeff	t-stat		Coeff	t-stat	
Intercept	7.682	12.09	***	-14.84	-2.37	**	-102.5	-3.34	***
SURPRISE <sub>NEG</sub>	8.227	0.50		5.354	0.32		-603.6	-0.81	
SURPRISE <sub>POS</sub>	-14.69	-0.97		-44.91	-2.44	**	727.6	1.60	
LITIG				34.35	1.89	*	314.8	3.15	***
SIZE				1.771	2.80	***	1.692	2.01	**
GROWTH				-0.090	-1.31		-0.077	-0.47	
EQUITY				-0.100	-0.13		-0.433	-0.30	
STDEBT				9.303	2.11	**	11.46	2.05	**
SURPRISE <sub>NEG</sub> *LITIG							1863.4	0.90	
SURPRISE <sub>NEG</sub> *SIZE							9.592	0.37	
SURPRISE <sub>NEG</sub> *GROWTH							-0.464	-0.23	
SURPRISE <sub>NEG</sub> *EQUITY							36.38	0.25	
SURPRISE <sub>NEG</sub> *STDEBT							-98.03	-0.28	
SURPRISE <sub>POS</sub> *LITIG							-981.1	-1.25	
SURPRISE <sub>POS</sub> *SIZE							-73.70	-0.66	
SURPRISE <sub>POS</sub> *GROWTH							2.212	0.15	
SURPRISE <sub>POS</sub> *EQUITY							-5.618	-0.06	
SURPRISE <sub>POS</sub> *STDEBT							-19.76	-0.05	
Adj R <sup>2</sup>	-0.009			0.113			0.120		

*This table presents results for NUMBER<sub>OTHER</sub> (number of other disclosures) regressed on SURPRISE<sub>NEG</sub>, SURPRISE<sub>POS</sub>, and interaction terms with LITIG, SIZE, GROWTH, EQUITY, STDEBT. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5%, 10% level.*

Table 4 presents results for when the dependent variable is NUMBER<sub>FLS</sub>. Table 5 presents results when the dependent variable is NUMBER<sub>OTHER</sub>. Results suggest that the positive relations between LITIG, SIZE, and STDEBT and disclosures documented in Table 3 mainly stem from their relation with NUMBER<sub>OTHER</sub>.

In Tables 6 through 8, I present results for the CAR of disclosures. The NUMBER of disclosures is arguably meaningless if such disclosures do not provide any information content to market participants. Table 6 presents results for CAR<sub>TOTAL</sub>, the cumulative information content of all voluntary disclosures tabulated in NUMBER<sub>TOTAL</sub>. I discuss results for Model 3, which is the full model that includes interaction terms. Much like the results for NUMBER in Table 3, unconditional SURPRISE is not significantly related to CAR<sub>TOTAL</sub>. This result is inconsistent with the prediction that firms with negative earnings surprises make “curative” disclosures with negative information to mitigate expected litigation costs. Similar to Lang and Lundholm (1993) perhaps (unconditional) earnings surprises have no incremental impact on disclosure behavior once negative stock returns are controlled for.

Several interesting results emerge, however, when SURPRISE is interacted with other firm characteristics. Specifically, although unconditional SURPRISE is not related to disclosures, when conditioned on certain firm characteristics, it is related to disclosures. First, the positive coefficient for the SIZE\*SURPRISE<sub>NEG</sub> interaction term (1.843, t=2.29) suggests that larger firms with more SURPRISE<sub>NEG</sub> make disclosures with more negative information content. This is consistent with SIZE being a proxy for

additional expected litigation costs. Perhaps larger firms with more negative earnings surprises make more negative-content disclosures to reduce such costs (though similar results do not seem to hold for the LITIG interaction term).

Table 6: Abnormal Returns for All Voluntary Disclosures

	Model (1)			Model (2)			Model (3)		
	Parameter	t-stat		Parameter	t-stat		Parameter	t-stat	
Intercept	-0.096	-4.32	***	0.621	2.81	***	4.140	4.35	***
SURPRISE <sub>NEG</sub>	0.643	1.11		0.549	0.91		35.84	1.56	
SURPRISE <sub>POS</sub>	-0.074	-0.14		0.851	1.31		-29.40	-1.08	
LITIG				-1.004	-1.56		-12.41	-4.00	***
SIZE				-0.059	-2.65	***	-0.024	-0.92	
GROWTH				0.001	0.46		-0.019	-3.63	***
EQUITY				0.019	0.70		0.155	3.47	***
STDEBT				-0.316	-2.03	**	-0.589	-3.41	***
SURPRISE <sub>NEG</sub> *LITIG							-130.5	-1.03	
SURPRISE <sub>NEG</sub> *SIZE							1.843	2.29	**
SURPRISE <sub>NEG</sub> *GROWTH							-0.254	-4.12	***
SURPRISE <sub>NEG</sub> *EQUITY							1.109	0.24	
SURPRISE <sub>NEG</sub> *STDEBT							-9.374	-0.88	
SURPRISE <sub>POS</sub> *LITIG							10.20	0.42	
SURPRISE <sub>POS</sub> *SIZE							2.718	0.79	
SURPRISE <sub>POS</sub> *GROWTH							0.986	2.22	**
SURPRISE <sub>POS</sub> *EQUITY							-4.049	-1.50	
SURPRISE <sub>POS</sub> *STDEBT							27.91	1.23	
Adj R <sup>2</sup>	-0.008			0.095			0.310		

This table presents results for  $CAR_{TOTAL}$  (abnormal returns for all disclosures) regressed on  $SURPRISE_{NEG}$ ,  $SURPRISE_{POS}$ , and interaction terms with  $LITIG$ ,  $SIZE$ ,  $GROWTH$ ,  $EQUITY$ ,  $STDEBT$ . \*\*\*, \*\*, \* represents statistical significance at the 1%, 5%, 10% level.

Table 7: Abnormal Returns for All Forward-Looking Statements of Voluntary Disclosures

	Model (1)			Model (2)			Model (3)		
	Parameter	t-stat		Parameter	t-stat		Parameter	t-stat	
Intercept	-0.046	-2.78	***	0.093	0.53		0.695	0.82	
SURPRISE <sub>NEG</sub>	0.761	1.77	*	0.869	1.84	*	27.01	1.32	
SURPRISE <sub>POS</sub>	0.244	0.62		0.521	1.02		6.898	0.55	
LITIG				-0.252	-0.50		-2.378	-0.86	
SIZE				-0.006	-0.36		0.017	0.74	
GROWTH				0.002	1.04		-0.011	-2.34	**
EQUITY				0.004	0.18		0.092	2.31	**
STDEBT				-0.176	-1.43		-0.235	-1.53	
SURPRISE <sub>NEG</sub> *LITIG							-93.33	-1.63	
SURPRISE <sub>NEG</sub> *SIZE							1.129	1.58	
SURPRISE <sub>NEG</sub> *GROWTH							-0.174	-3.18	***
SURPRISE <sub>NEG</sub> *EQUITY							-0.852	-0.21	
SURPRISE <sub>NEG</sub> *STDEBT							-4.481	-0.47	
SURPRISE <sub>POS</sub> *LITIG							-1.540	-0.07	
SURPRISE <sub>POS</sub> *SIZE							-2.071	-0.68	
SURPRISE <sub>POS</sub> *GROWTH							0.711	1.81	*
SURPRISE <sub>POS</sub> *EQUITY							-4.288	-1.78	*
SURPRISE <sub>POS</sub> *STDEBT							18.22	1.64	
Adj R <sup>2</sup>	0.018			0.009			0.041		

This table presents results for  $CAR_{FLS}$  (abnormal returns for all forward-looking statements) regressed on  $SURPRISE_{NEG}$ ,  $SURPRISE_{POS}$ , and interaction terms with  $LITIG$ ,  $SIZE$ ,  $GROWTH$ ,  $EQUITY$ ,  $STDEBT$ . \*\*\*, \*\*, \* represents statistical significance at the 1%, 5%, 10% level.

Second, the negative coefficient for the  $GROWTH * SURPRISE_{NEG}$  interaction term (-0.254,  $t=4.12$ ) suggests that *higher-growth firms* with more  $SURPRISE_{NEG}$  make disclosures with more *positive* information content. One interpretation of this result is that, because high-growth firms in the high-tech industry have more complex business processes and higher information asymmetries, managers may expend more effort at providing elaboration and explanation to clarify possible concerns, which the market then interprets positively. Moreover, results in Table 7 suggest that this result arises from  $CAR_{FLS}$ , the information content of *forward-looking statements*. Also, the positive coefficient for  $GROWTH * SURPRISE_{POS}$  (0.986,  $t=2.22$ ) in Table 6 suggests that higher-growth firms with more *positive* earnings surprises *also* make disclosures with more positive information content. Thus, higher-growth firms seem to expend efforts at providing positive information content as their earnings surprises become more significant—regardless of the direction of the surprise. Note that the unconditional  $GROWTH$  variable is significantly negative, which counteracts the effect of the two interaction terms discussed above.

Table 8: Abnormal Returns for All Other Voluntary Disclosures

	Model (1)		Model (2)		Model (3)	
	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat
Intercept	-0.047	-2.30 **	0.547	2.68 ***	3.338	3.56 ***
$SURPRISE_{NEG}$	-0.116	-0.22	-0.332	-0.60	3.870	0.17
$SURPRISE_{POS}$	-0.340	-0.70	0.294	0.49	-35.55	-1.55
LITIG			-0.711	-1.20	-9.647	-3.15 ***
SIZE			-0.057	-2.77 ***	-0.041	-1.61
GROWTH			-0.001	-0.45	-0.009	-1.85 *
EQUITY			0.015	0.59	0.072	1.63
STDEBT			-0.147	-1.02	-0.366	-2.15 **
$SURPRISE_{NEG} * LITIG$					-27.36	-0.43
$SURPRISE_{NEG} * SIZE$					1.017	1.28
$SURPRISE_{NEG} * GROWTH$					-0.096	-1.59
$SURPRISE_{NEG} * EQUITY$					2.724	0.61
$SURPRISE_{NEG} * STDEBT$					-4.369	-0.41
$SURPRISE_{POS} * LITIG$					7.869	0.33
$SURPRISE_{POS} * SIZE$					4.716	1.39
$SURPRISE_{POS} * GROWTH$					0.369	0.84
$SURPRISE_{POS} * EQUITY$					-0.181	-0.07
$SURPRISE_{POS} * STDEBT$					12.16	0.99
Adj R <sup>2</sup>	-0.015		0.070		0.184	

This table presents results for  $CAR_{OTHER}$  (abnormal returns for all other disclosures) regressed on  $SURPRISE_{NEG}$ ,  $SURPRISE_{POS}$ , and interaction terms with LITIG, SIZE, GROWTH, EQUITY, STDEBT. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5%, 10% level.

Regarding the standalone firm characteristics in Table 6, both LITIG and STDEBT are significantly negative. Firms with higher levels of litigation risk may make disclosures with more negative information content to reduce expected costs of litigation. Firms with higher levels of current liabilities make disclosures with more negative information content, perhaps to appease the concerns of short-term creditors and thus reduce the costs of renegotiating with suppliers. Table 8 suggests that both are achieved through *other disclosures*. Lastly, EQUITY is significantly positive, suggesting that firms with imminent equity issuances provide disclosures with positive information content, perhaps to lower the cost of capital; Table 7 suggests that this is achieved through *forward-looking statements*.

Several other untabulated robustness tests are performed to provide further context to the main results. These other tests do not qualitatively change the empirical results discussed above. First, I use seasonally-adjusted earnings changes as an alternative measure for earnings SURPRISE. Results are qualitatively unchanged (though a bit weaker in statistical significance). Second, I include several additional control variables to the main model. I include QTRRET (contemporaneous quarterly market-adjusted stock

returns; for the NUMBER test only) and CORR (correlation of earnings with returns in the past five years); results are qualitatively unchanged. CORR is marginally negative in the CAR tests (-0.198,  $p=0.076$ ), suggesting that voluntary disclosures and (the informativeness of) earnings serve complementary roles. I also include ANALYST (number of analyst following), LTD (prior-quarter long-term debt), and OPTIONS (dummy variable for option grants to the CEO during the negative-returns quarter or up to ten days after the quarter). Results are qualitatively unchanged.

## SUMMARY AND CONCLUSIONS

In this study, I examine the relation between earnings surprises and voluntary disclosures for a sample of firms that experience bad economic news. For my sample of 100 randomly-selected high-tech firm-quarters with negative returns, I find that: (i) earnings surprises are not related to the number of disclosures in any manner, (ii) firms with negative earnings surprises make *forward-looking statements with more negative information content*—but only when conditioned on firm size or growth opportunities, and (iii) the unconditional relation between earnings surprise and voluntary disclosure behavior is non-existent in this setting where negative stock returns are controlled for.

I make two contributions to the literature. First, the results highlight the importance of avoiding earnings-based metrics in the sample selection procedure. Selecting a sample based upon negative returns in lieu of negative earnings has important implications on the inferences that are drawn from prior disclosure behavior studies. Second, the results highlight the importance of how a conditional analysis provides us with a deeper understanding of how the earnings-disclosure relation exists under certain economic scenarios (e.g., firms with high growth opportunities), while it does not exist for others. The results also provide a plausible explanation for why there are three sets of conflicting results regarding the earnings-disclosure relation (some finding a positive relation, others a negative relation, and yet others no relation at all). However, because of the small sample size, caution is warranted in generalizing the results to the broader universe of firms.

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