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Corporate risk-taking, firm value and high levels of managerial earnings forecasts☆

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ABSTRACT

We examine the impact of high levels of managerial earnings forecasts, an important form of voluntary disclosure, on corporate risk-taking and firm value. Theory and anecdotal evidence suggest that a policy of high disclosure may reduce managers' willingness to invest in higher-risk, higher-return projects. We first verify, as in prior research, that corporate risk-taking is associated with higher future firm value. We then document a negative relation between firms with high levels of forecasting and corporate risk-taking. Finally, we provide evidence suggesting that high levels of managerial earnings forecasts reduce the positive association between corporate risk-taking and future firm value. Our results are robust to alternative measures of corporate risk-taking and future firm value, and alternative definitions of high levels of managerial earnings forecasts. Our results may be of importance to varying interests as they highlight the potential for high levels of earnings forecasts to inhibit corporate risk-taking and lower firm value.

1. Introduction

Theory suggests that disclosure may increase managers' chances of being fired or reprimanded for poor decision-making (Hermalin & Weisbach, 2012; Trueman, 1986). Consequently, in firms committed to high levels of voluntary disclosure, managers may be less willing to invest in riskier, yet potentially profitable projects. Following this reasoning, we examine whether high levels of managerial earnings forecasts, an important form of voluntary disclosure, are associated with lower corporate risk-taking. Because risk-taking should have a positive impact on shareholder wealth (e.g., Fisher & Hall, 1969; Merton, 1974; Shin & Stulz, 2000), we further examine whether, through a reduction in corporate risk-taking, high levels of managerial earnings forecasts are associated with lower firm value.[2]

To test our predictions, we first confirm, as in prior research, that future firm value is increasing in corporate risk-taking, defined as the degree of uncertainty in a company's income stream (Merton, 1974; Shin & Stulz, 2000; Wright, Ferris, Sarin, & Awasthi, 1996). We then show that corporate risk-taking is decreasing in high levels of managerial earnings forecasts. Given this result, we estimate a series of interaction models to examine the impact of high levels of managerial earnings forecasts on future firm value. Our results suggest that in firms already committed to high levels of managerial earnings forecasts, incremental forecasts may significantly weaken the normally positive association between corporate risk-taking and future firm value.

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[2] This logic does not run counter to theoretical and empirical disclosure research suggesting that voluntary disclosure improves a firm's information environment (e.g., Beyer et al., 2010; Healy & Palepu, 2001), nor to research suggesting that there may be governance benefits of voluntary disclosure (e.g., Bushman & Smith, 2001). We argue that in firms committed to already high levels of earnings guidance there is likely to be a negative relation between earnings forecasts and corporate risk-taking. It is in such firms that theory suggests that managers' career concerns will be most sensitive to increases in disclosure (Hermalin & Weisbach, 2012). Therefore, we focus our empirical tests on high forecasting firms.

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Our findings contribute to research examining the consequences of voluntary disclosure and specifically managerial earnings forecasts. Disclosure theory focuses primarily on how voluntary disclosure impacts a firm's information environment (Beyer, Cohen, Lys, & Walther, 2010; Core, 2001). Yet a handful of analytical studies consider how voluntary disclosure affects managers' career concerns (Hermalin & Weisbach, 2012; Trueman, 1986) and managers' investment decisions (e.g., Bertomeu, Beyer, & Dye, 2011; Kanodia, Singh, & Spero, 2005). Our study provides empirical evidence that the provision of managerial earnings forecasts may affect managers' decision-making with regards to firm investment.

Additionally, we contribute to the literature examining the determinants and consequences of corporate risk-taking. Wright et al. (1996) find that both institutional ownership and insider ownership are associated with greater corporate risk-taking, while Bargeron, Lehn, and Zutter (2010) show that the Sarbanes–Oxley Act is associated with a decrease in corporate risk-taking. Our study shows that disclosure in the form of managerial earnings forecasts may also be a determinant of corporate risk-taking, at least in firms committed to high levels of forecasts. Furthermore, Wright et al. (1996) note that "corporate risk-taking behavior is critical to firm performance." We extend prior studies that examine whether and when firm investment impacts firm performance/value by providing firm-level evidence of a positive association between corporate risk-taking and future firm value.[3]

The remainder of the paper is organized as follows: In the next section we discuss relevant literature and develop testable hypotheses. In Section 3 we outline our empirical models and in Section 4 we discuss our sample, present descriptive statistics and report and discuss our main empirical results. In Section 5 we conclude the paper.

2. Relevant literature and testable hypotheses

Information theories such as *signaling theory* (e.g. Spence, 1973) and *agency cost theory* (e.g., Jensen & Meckling, 1976; Myers & Majluf, 1984) recognize that outside investors face information related risks due to the separation of ownership and control in the corporate setting. These risks relate to information asymmetries between managers and investors as well as information asymmetries between groups of investors (i.e., informed vs. uninformed). Disclosure theory and empirical evidence suggest that managers can reduce these risks through voluntary disclosure (Botosan, 1997; Dye, 1990; Jorgensen & Kirschenheiter, 2003; Lang & Lundholm, 1996; Welker, 1995).

While most studies consider the goal of disclosure to be a spreading of information risk across the economy, some theoretical models indicate that disclosure can influence management's investment decisions. For instance, Trueman (1986) suggests that voluntary disclosure improves shareholder monitoring and argues that a manager's incentive to disclose stems from a desire to signal his/her ability to observe changes in the firm's economic environment and adjust production accordingly. Thus a firm's voluntary disclosure policy will be linked to managers' operating decisions by both shareholder monitoring and managers' desire to signal their quality.[4] Subsequent research recognizes the monitoring benefits of voluntary disclosure but contends that too much disclosure can actually harm the firm. Kanodia et al. (2005) argue that there is an optimal degree of imprecision in investor knowledge about a firm's true value and growth opportunities which allows managers to focus on long-term performance, rather than on short-term expectations, and is therefore good for both current and future investors. Their models suggest that high levels of disclosure have the potential to lead to myopic and potentially value-destroying corporate investment in the short-run, likely because improved shareholder monitoring may threaten managers' self-preservation. This conclusion is analogous to Core (2001) who points out that "…too much disclosure can be as costly as too little disclosure" (p. 446). Hermalin and Weisbach (2012) also argue that increases in disclosure may increase career risks to managers, resulting in lower risk-taking if managers are not adequately compensated.

Based on these theories, we investigate whether high levels of managerial earnings forecasts are associated with lower corporate risk-taking and ultimately firm value. Before doing so, we consider the question of why managers would agree to provide voluntary disclosure if it increases their own career risks. The answer can be found in Verrecchia (2001) who argues that it is the commitment to voluntary disclosure, and not necessarily the form of voluntary disclosure, that will impact managers' operating decisions. When firms commit ex-ante to providing disclosure, bad news is likely to be revealed along with good news. Consequently, the anticipation of investor response to voluntary disclosure as well as improved shareholder monitoring may force managers to hone their project selection skills. Building on Verrecchia's argument, we propose that in the context of Trueman (1986); and Kanodia et al.'s (2005) models, it is the policy of disclosure (committed or not), rather than the form of disclosure, that is likely to impact managers' investment decisions.[5] For this reason we focus on a policy of managerial earnings forecasts over a three-year period and investigate whether firms that provide relatively high levels of forecasts take fewer corporate risks, relative to all other firms.

To investigate the impact of high levels of managerial earnings forecasts on corporate risk-taking, we first consider the relation between corporate risk-taking and firm value. Theory suggests that corporate risk-taking, defined as the selection of projects that have varying uncertainties associated with their expected future cash flows (Wright et al., 1996), on average increases firm value (e.g., Fisher & Hall, 1969; Jensen & Meckling, 1976; Merton, 1974; Shin & Stulz, 2000). Empirical studies support this conjecture (e.g., Baugess, Slovin, & Sushka, 2012; Houston, Lin, Lin, & Ma, 2010; John, Litov, & Yeung, 2008). In untabulated tests, we find that for our full sample of firms (i.e., both high disclosers and control firms) there is a positive relation between corporate risk-taking and firm value.

After establishing a positive link between risk-taking and firm value, we then examine whether firms providing high levels of managerial earnings forecasts exhibit lower corporate risk-taking. We predict they do because in these firms, managers' career concerns will be most sensitive to incremental forecasting. Stated formally and in the alternative form, we predict:

H1. High levels of managerial earnings forecasts are negatively related to corporate risk-taking.

After establishing a generally negative link between high levels of managerial earnings forecasts and corporate risk-taking, we assess the impact on shareholder value of reduced corporate risk-taking in high forecasting firms. Based on H1 we predict that high levels of managerial earnings forecasts will be associated with a weaker positive relation between corporate risk-taking and future firm value. Stated formally and in the alternative form:

H2. In high forecasting firms, managerial earnings forecasts are associated with a weaker positive relation between corporate risk-taking and future firm value.

[3] See McConnell and Muscarella (1985); Chung, Wright, and Charoenwong (1998); Dehning, Richardson, and Stratopoulos (2005).

[4] This is similar to the labor market scenario described by Spence (1973), where jobseekers can signal their own quality with a college education, differentiating their productivity potential from the rest of the workforce.

[5] We also note that though voluntary disclosure is generally at the discretion of managers, managers may have less of a choice about whether or not to *voluntarily* disclose than one would surmise. Cheng, Luo, and Yue (2013) point out that "…managers [often] have greater discretion over the precision of their earnings forecasts than over whether to provide forecasts in the first place" (Cheng et al., 2013, pg. 1576). Additionally, anecdotal evidence suggests that managers often feel pressured to disclose (Brav, Graham, Harvey, & Michaely, 2005; McCarthy, 2008) from a firm's Board of Directors, activist shareholders, regulators, analysts and/or other influential stakeholders.

3. Research design

3.1. Empirical models

To test whether high levels of managerial earnings forecasts impact future firm value through lower corporate risk-taking, we first confirm in our sample that firm value is an increasing function of corporate risk-taking. To do so we estimate a series of regressions using the following model for our full sample of firms, expecting β_1 to be positive.

$$VALUE_{t+1} = \beta_0 + \beta_1 RISK + \beta_2 ln\_MKT + \beta_3 ROA + \beta_4 OCF + \beta_5 MTB + \beta_6 LEVERAGE + \beta_7 PAYOUT + \beta_8 ANNRET + \beta_9 INV + \beta_{10} ACCR\_Q + \beta_{11} INSTL\_HOLD + FIRM\_FE + YEAR\_FE + \varepsilon \quad (1)$$

In Eq. (1) we use two measures for future firm value ($VALUE_{it+1}$); one year ahead stock returns (*LEAD_RET*) and the market value of equity at the end of year $t + 1$ (*LEAD_MKT*). Our measures of corporate risk-taking (*RISK*) are described in detail in Section 3.2. If firms successfully undertake higher risk projects that generate greater accounting income and/or cash flows, investors will react favorably, generating higher returns and increased market value. For parsimony, we do not tabulate the results from Eq. (1), but note that they are in line with prior research, i.e., we document a positive association between corporate risk-taking and firm value with all measures of both variables. These results provide the baseline for our first hypothesis, which predicts that high levels of managerial earnings forecasts will be associated with lower corporate risk-taking. We test H1 by estimating a second series of regressions, using the following model. Based on H1 we expect that β_1 in Eq. (2) will be negative, indicating that high forecasting is associated with lower corporate risk-taking.

$$RISK_t = \beta_0 + \beta_1 HIGH\_MEF + \beta_2 ln\_MKT + \beta_3 MTB + \beta_4 LEVERAGE + \beta_5 INV + \beta_6 PAYOUT + \beta_7 ANNRET + \beta_8 OCF + \beta_9 ln\_COMP + \beta_{10} CEO\_CHAIR + \beta_{11} CEO\_AGE + \beta_{12} AVG\_HORIZON + \beta_{13} AFTER\_QE + FIRM\_FE + YEAR\_FE + \varepsilon \quad (2)$$

In a final series of tests we link the results of our untabulated tests in Eq. (1) with the results from H1 to investigate whether the impact of high disclosure on corporate risk-taking affects firm value (H2). H2 predicts that high levels of managerial earnings forecasts will be associated with incrementally lower future firm value because of lower corporate risk-taking. To test H2 we estimate Eq. (3) below, focusing only on our subsample of high disclosers. This is an expanded form of Eq. (1) with additional terms for voluntary disclosure (*ln_MEF*) and the interaction between *ln_MEF* and our three measures of corporate risk-taking, as follows:

$$VALUE_{t+1} = \beta_0 + \beta_1 RISK + \beta_2 ln\_MEF + \beta_3 RISK * ln\_MEF + \beta_4 ln\_MKT + \beta_5 ROA + \beta_6 OCF + \beta_7 MTB + \beta_8 LEVERAGE + \beta_9 PAYOUT + \beta_{10} ANNRET + \beta_{11} INV + \beta_{12} ACCR\_Q + \beta_{13} INSTL\_HOLD + FIRM\_FE + YEAR\_FE + \varepsilon \quad (3)$$

Our primary focus in Eq. (3) is on the interaction term coefficient, β_3. We expect that β_3 will be negative, indicating that the normally positive relation between corporate risk-taking and future firm value is incrementally less for firms considered high disclosers. In Eq. (3) future firm value is defined as above, and we discuss our measures of corporate risk-taking, voluntary disclosure, and control variables below.

3.2. Measures of corporate risk-taking ($RISK_t$)

We separately estimate all equations with three different measures of corporate risk-taking ($RISK_t$). Our first measure is the annual standard deviation of daily stock returns (*SD_RET*). The higher the dispersion of returns, the higher the uncertainty of the underlying income streams, and therefore the higher the risk associated with the firm (Markowitz, 1952).[6] To be included in the final sample, we require that a firm have returns for at least 250 days each year. For our second measure we use research and development expenses (*RD*). Returns to R&D expenditures are uncertain (Bargeron et al., 2010; Gormley et al., 2012). As a result, there is increasing firm risk as scaled R&D increases (Coles, Daniel, & Naveen, 2006). We calculate *RD* as Compustat variable XRD scaled by total assets (AT) and set *RD* equal to zero when missing; though results are unchanged if we instead delete observations with missing values.

Our third and final measure of corporate risk is the standard deviation of operating cash flows for the three-year period $t - 1$ to $t + 1$ (*SD_OCF*, Compustat variable OANCF deflated by total assets) (Rajgopal & Shevlin, 2002). The higher the variance of operating cash flows the higher the uncertainty in the expected cash flows associated with prior investments and the greater the corporate risk. All three measures are positively correlated (all with p-values <0.001, Table 3) suggesting that they capture a similar construct, but are not so highly correlated as to be redundant individually.

3.3. Measure of high (managerial) earnings forecasters

Managerial earnings forecasts are considered a truly voluntary type of disclosure that transfers value-relevant information from firm insiders to outsiders (e.g., Beyer et al., 2010; Dhaliwal, Khurana, & Pereira, 2011; Frankel, McNichols, & Wilson, 1995; Hutton, Miller, & Skinner, 2003; Radhakrishnan et al., 2012). Following prior research we construct our measure of voluntary disclosure based on the combined frequency and precision of management earnings forecasts over the prior twelve quarters (Baginski, Conrad, & Hassell, 1993; Baginski & Hassell, 1997; Dhaliwal et al., 2011). Focusing on the prior twelve quarters, rather than any three quarters, helps us to better capture differences in commitment to providing managerial forecasts across firms and helps us to identify those firms that could be considered high forecasters. We measure forecast frequency (*FREQ*) as the number of quarterly management earnings forecasts (MEFs) issued in the previous twelve quarters, and measure forecast precision (*PREC*) by scoring MEFs based on their format. Specifically, we assign a score of one to MEFs that are qualitative only, a score of two to MEFS that are based on a range of values, and a score of three to MEFs that are point estimates. Our final measure (*MEF*) is calculated as the product of both components: $MEF = FREQ * PREC$. *MEF* has a non-normal distribution (mean 9.88, median 4.00) so we use the natural logarithm of one plus *MEF* in our empirical models (*ln_MEF*).

For Eq. (2), we define high forecasting (*HIGH_MEF*) in two ways. First, we estimate a yearly predicted measure of management earnings forecasts and compare a firm's actual level of forecasting to its predicted value. If a firm forecasts more than is predicted, we consider it to be a high forecaster. Second, we compare a firm's actual level of earnings forecasts to the industry-year median. As with the predicted measure, if a firm forecasts more than the industry-year median, we consider it to be a high forecaster. Each approach is detailed in Appendix 1.

3.4. Control variables for Eqs. (1) and (3)

For Eqs. (1) and (3) we control for additional factors that may affect firm value (controls are the same for both equations). Larger firms may

[6] Many prior studies use the standard deviation of a firm's returns as a proxy for corporate risk-taking (e.g. Bargeron et al., 2010; Bartram, Brown, & Conrad, 2011; Coles et al., 2006; Faccio, Marchica, & Mura, 2011; Gormley et al., 2012; Low, 2009).

have lower growth opportunities and be more visible to investors, making it difficult for managers to invest in inefficient projects (Kaplan & Zingales, 1997; Lang & Lundholm, 1996), so we control for firm size as the natural logarithm of market value of equity (*ln_MKT*). Profitable firms are likely to have higher returns and greater market value in the following year, so we include return on assets (*ROA*), operating cash flows (*OCF*) and annual return in year *t* (*ANNRET*).[7]

We also control for a firm's payout ratio (*PAYOUT*), as dividend policy may signal governance, with higher payout indirectly leading to better investment decisions and increased returns and firm value (LaPorta, Lopez-de-Silanes, Shleifer, & Vishny, 2000). In addition, we control for a firm's debt to equity ratio (*LEVERAGE*) but make no prediction regarding the impact of leverage on firm value (Biddle, Hilary, & Verdi, 2009). Investment opportunities may also be an important determinant of corporate risk-taking, so we control for a firm's beginning of the year market-to-book ratio (*MTB*) and capital investments (*INV*) (Myers & Majluf, 1984; Richardson, 2006).

We control for financial reporting quality ("FRQ"), as Biddle et al. (2009) provide evidence that higher FRQ leads to greater investment efficiency. We follow McNichols (2002); and Dechow and Dichev (2002) to proxy for FRQ based on the extent to which accruals map into cash flows. To do so we first capture the residuals from the following OLS equation, estimated for all available firm-year observations from Compustat, by year and two-digit SIC code, and require a minimum of ten observations for each industry-year:

$$TCA = \alpha + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \beta_4 \Delta REV + \beta_5 PPE + \varepsilon \quad (4)$$

where:

TCA	total current accruals (equal to one-year change in current assets [ACT] minus one-year change in current liabilities [LCT] minus one-year change in cash [*CHE*] plus one-year change in short term debt [DLC]),
CFO	cash flows from operations in year $t-1$, t, or $t+1$ (Compustat OANCF),
ΔREV	change in revenue from prior year [SALE],
PPE	gross property, plant, and equipment [PPEGT].

From Eq. (4) we use the standard deviation of the residuals over the period $t-3$ to $t-1$ as our proxy for FRQ (*ACCR_Q*). By definition, higher values of *ACCR_Q* indicate lower financial reporting quality, thus in our empirical tests we multiply *ACCR_Q* by negative one for a more intuitive interpretation of the measure.[8] Our final control is for institutional shareholders (*INSTL_HOLD*), to capture the benefits of better governance (Biddle et al., 2009).[9]

To reduce potential correlated omitted variable bias in our OLS coefficients we include firm and year fixed-effects (dummy variables for each) in all models.[10] In addition, we estimate robust standard errors clustered by firm to correct for heteroscedasticity and potential serial dependence in our error terms (Petersen, 2009).

3.5. Additional control variables for Eq. (2)

In addition to the controls listed in the prior section, we include controls in Eq. (2) for other firm factors that may affect corporate risk-taking. Hermalin and Weisbach (2012) argue that increases in executive compensation may partially offset the personal costs to managers of an expanded voluntary disclosure policy. We control for managerial compensation with the natural logarithm of total annual CEO compensation (*ln_COMP*; TDC2 from Execucomp). Ferreira and Laux (2007) suggest a negative relationship between corporate governance and firm risk, so we control for whether a firm's CEO is also the Chair of the Board (*CEO_CHAIR*; from RiskMetrics). In addition, following Coles et al. (2006) we include CEO age (*CEO_AGE*; AGE from Execucomp). Finally, to control for timing issues surrounding the release of management earnings forecasts (Hirst, Koonce, & Venkataraman, 2008), we include a variable for the average number of days between earnings forecasts and earnings announcements (*AVG_HORIZON*) as well as a dummy variable equal to one if a firm issues a forecast after the end of the accounting period but before the actual release of earnings (*AFTER_QE*).[11]

4. Results

4.1. Sample selection and univariate results

As noted in Section 3, management earnings forecasts are obtained from the Thomson First Call database. As comprehensive coverage by First Call is not available until 1996 and we require two lag years for our earnings forecast measure, our final sample period covers years 1998 to 2008. We exclude financials (SIC 6000–6999) and utilities (SIC 4900–4949) as these firms are highly regulated and have incentives that differ considerably from other firms. The resulting final sample consists of 13,171 firm-year observations covering 2107 firms through the years 1998 to 2008.[12] To moderate the effects of outliers, all continuous variables are winsorized above and below the 99th and 1st percentiles. Table 1 reports our sample selection process and Table 2 provides descriptive statistics for our final sample.

For our measures of corporate risk-taking, the mean (median) standard deviation of annual stock returns is 0.028 (0.024) while the mean (median) value of scaled research and development expenditures is 0.039 (0.000). The standard deviation of operating cash flows has a mean (median) value of 0.065 (0.042). All three measures are consistent with prior research (e.g., Bargeron et al., 2010; Coles et al., 2006).

The percent of firms in our sample that issued at least one quarterly earnings forecast in the period covering the current year and the prior two years (not shown) is 66.9, and our composite disclosure metric (*MEF*) is right-hand skewed with a mean of 9.88 and a median of 4.0, similar to prior studies (e.g., Baginski and Rakow, 2012). Our firm-

[7] *ROA* and *OCF* have a Pearson correlation of 0.74 and thus there is a potential bias due to multicollinearity. Variance inflation factors of our estimation of Eq. (1) are all less than 2.6, suggesting that multicollinearity is not a problem. In addition, replacing *ROA* and *OCF* with either control individually does not change our results.

[8] In addition to accruals-based earnings management, managers engage in real earnings management by altering operational decisions, including changes to R&D (Roychowdhury, 2006). Such manipulations may confound our measures of risk and bias our findings. In a series of tests (untabulated) we add additional controls to all of our models for real earnings management. Following Cohen and Zarowin (2010); and Roychowdhury (2006) we construct proxies for real earnings management based on the difference between normal and unexpected values of: the timing of sales, changes in cost of goods, and decreases in discretionary expenses such as R&D and SG&A. Adding the controls individually or all together in our regressions does not affect our results. We thank an anonymous reviewer for this suggestion.

[9] Institutional holdings data is from Thompson Reuters Institutional (13-F) quarterly filings.

[10] Litigation risk may affect managerial behavior. To the extent that litigation risk is similar across time for a firm, firm fixed effects should correct for any potential bias. But in a series of additional tests (not reported) we replace firm dummies with a dummy for whether a firm is in a high litigation industry or not (Baginski & Rakow, 2012). Our results are unchanged. Our results may also be affected by the implementation of the Sarbanes–Oxley Act (Bargeron et al., 2010). To mitigate the impact we 1) estimate our models without year fixed effects, but include a pre-post dummy for SOX implementation, and 2) estimate our models excluding pre-SOX data. All of our results, while weaker in the second scenario, hold. We thank an anonymous reviewer for these suggestions.

[11] Earnings forecast dates are from First Call. Actual earnings announcement dates are from Compustat Quarterly.

[12] The sample is reduced to 11,475 firm-year observations for our tests of the effects of corporate risk on firm value due to data requirements for calculating accruals quality (*ACCR_Q*).

Table 1
Sample construction.

Compustat observations with nonzero or non-missing Total Assets (1998–2008).	97,673
Less:	
Financial and utilities firms	−33,106
	64,567
Missing Compustat data for construction of control variables	−18,896
	45,671
Missing stock returns data from CRSP	−6030
	39,641
Missing analyst forecast data from I/B/E/S	−13,451
	26,190
Missing institutional holdings data from Thompson Reuters	−4961
	21,229
Other missing required variables (CEO data from RiskMetrics, earnings forecasts data from FristCall, actual earnings release dates from Compustat Quarterly)	−8058
	13,171
Final sample for tests of H2	
Less data required to calculate Dechow–Dichev accruals	−1696
Final sample for tests of H1.	11,475

Our sample is based on available management earnings forecast data from FirstCall (1995–2008). However, data for 1995 is not complete, thus our initial sample starts with 1996. As we require three years of data for the construction of our forecasting measure, our first year of test data is 1998. For some of our tests, we require one year ahead performance data. In those cases we obtain data from 2009 for our final sample year (i.e., 2008), but do not lose any observations as a result.

Table 2
Descriptive statistics of firm characteristics (1998–2008).

	N	Mean	Median	Std dev	Q1	Q3
SD_RET	13,171	0.028	0.024	0.013	0.018	0.033
RD	13,171	0.039	0.000	0.077	0.000	0.049
SD_OCF	13,171	0.065	0.042	0.091	0.021	0.084
MEF	13,171	9.879	4.000	14.259	0.000	14.000
HIGH_FIRM	13,171	0.052	−0.049	1.050	−0.474	0.386
HIGH_IND	13,171	0.751	0.232	1.436	−0.189	1.260
MKT	13,171	7034.2	1400.3	2,4805.1	572.5	4208.5
ROA	13,171	0.115	0.108	0.137	0.060	0.171
OCF	13,171	0.119	0.111	0.121	0.064	0.171
ANNRET	13,171	0.193	0.104	0.612	−0.135	0.373
PAYOUT	13,171	0.012	0.001	0.024	0.000	0.016
LEVERAGE	13,171	0.218	0.209	0.181	0.050	0.338
MTB	13,171	3.542	2.472	5.384	1.639	4.050
INV	13,171	0.105	0.076	0.104	0.042	0.135
ACCR_Q	11,475	0.044	0.032	0.044	0.019	0.054
INSTL_HOLD	13,171	0.707	0.735	0.193	0.581	0.865
ln_COMP	13,171	7.647	7.575	1.341	6.803	8.464
CEO_CHAIR	13,171	0.680	1.000	0.466	0.000	1.000
CEO_AGE	13,171	55.367	55.000	7.233	51.000	60.000
AVG_HORIZON	13,171	34.655	0.000	51.620	0.000	75.000
AFTER_QE	13,171	0.197	0.000	0.398	0.000	0.000

SD_RET is the annual standard deviation of daily stock returns while *RD* is research and development expenses scaled by lagged total assets, and set to zero if missing. *SD_OCF* is defined as the standard deviation of operating cash flows (deflated by total assets) for the three year period $t-1$ to $t+1$. *MEF* is the product of the number of quarterly management earnings forecast over the period $t-2$ to t and the average precision of those forecasts, as described in the text. *HIGH_FIRM* and *HIGH_IND* are measures of high forecasting derived by comparing actual forecasting to that predicted either on the firm (*HIGH_FIRM*) or the 2 digit SIC industry (*HIGH_IND*) level. *MKT* is the market value of equity (in millions), *ROA* is return on assets, calculated as net income divided by beginning of period assets, and *OCF* is operating cash flows deflated by beginning of period assets. *ANNRET* is the annual stock return for a firm. *PAYOUT* is cash dividends paid divided by sales and *LEVERAGE* is firm leverage, calculated as total long term debt divided by total assets. *MTB* is the market value divided by the book value of equity and *INV* is a firm's capital expenditure minus sales of property, plant, and equipment, deflated by total assets. *ACCR_Q* is a measure of accounting quality based on 3-year average working capital accruals (Dechow & Dichev, 2002). *INSTL_HOLD* is the ratio of institutional holdings to total common shares outstanding, *ln_COMP* is the natural logarithm of total CEO annual compensation (cash plus options), *CEO_CHAIR* is a dichotomous variable equal to 1 if the CEO is also the Board Chair, and 0 otherwise, and *CEO_AGE* is the age of the CEO. *AVG_HORIZON* is the average number of days between quarterly management earnings forecasts and the end of the quarter over the period $t-2$ to t, while *AFTER_QE* is a dichotomous variable equal to 1 if a firm issues a forecast for a quarter after the quarter-end, but before earnings are actually released, and 0 otherwise. and. Data are from 2107 unique firms from 1998 to 2008.

and industry-level measures of high disclosure have mean (median) values of 0.052 (−0.049) and 0.751 (0.232), respectively.

Table 2 also lists descriptive statistics for our control variables. Firms in our sample tend to be large with a mean (median) market value of $7.03 ($1.40) billion. The average market-to-book ratio is 3.54 (2.47), leverage is 21.8% (20.9%) of total assets, capital expenditures are 6.6% (4.6) of assets, firms pay out 1.2% (0.1%) of total sales as dividends, and annual returns average 19.3% (10.4%). On average, CEO's in our sample are 55 years old and the CEO is also the Board Chair in 68% of our sample firms. All values are similar to previous studies (Bargeron et al., 2010; Coles et al., 2006).

Table 3 presents Pearson correlations between all of our variables. In Panel A we report the correlations for our three measures of corporate risk-taking and our measures of future firm value. All three of our risk measures are positively correlated with firm value when our measure is *LEAD_RET*, but negatively correlated with *LEAD_MKT*. These results provide mixed support for our first hypotheses and underscore the importance of multivariate analysis.

In Table 3, Panel B we present the correlations between our measures of corporate risk, earnings forecasts, and controls for our regression models. Both of our measures of high forecasting are negatively correlated with all three measures of risk, providing univariate evidence in support of our second hypothesis; high levels of earnings forecasts reduce managers' willingness to invest in high-risk, potentially high-return projects. The correlations between other variables in our empirical tests are generally as expected and consistent with prior literature (e.g. Bargeron et al., 2010). Larger firms tend to provide more forecasts, have lower variance of annual returns, higher leverage, and distribute a greater percentage of sales as dividends. Larger firms also tend to have older CEOs and provide greater CEO compensation. Finally, with the exception of the relationship between *ROA* and *OCF* discussed in FN 21, the correlations between the independent variables from our multivariate models never exceeds (the absolute value of) 0.61 and variance inflation factors for our risk and valuation models do not exceed 2.6, indicating that multicollinearity is likely not an issue in our multivariate tests.

4.2. Multivariate results

We estimate Eq. (1) separately with each of our three measures of risk, and then include all three measures in one equation. For parsimony we do not tabulate the results but note that they are in line with prior research. In all four specifications our measures of corporate risk-taking are positively and significantly associated with one-year ahead stock returns, while two of three measures are positively associated with one one-year ahead market value. In both estimations controls, where significant, are generally as expected.

Having confirmed a positive association between corporate risk-taking and firm value, we then test H1, which predicts that higher levels of earnings forecasts will be associated with lower corporate risk-taking. We examine this by estimating Eq. (2), and present the results in Table 4.

Models are all significant at $p < 0.01$ and adjusted R-squares range from 0.22 to 0.80. In all six scenarios high forecasting is negatively and significantly associated with corporate risk-taking ($p < 0.01$ for both measures of high forecasting with *SD_RET*; $p < 0.05$ for both measures of high forecasting with *RD*; and $p < 0.01$ for both measures of high forecasting with *SD_OCF*). Controls, where significant, are somewhat mixed but generally as predicted.[13]

[13] The mean values of control variables for Eq. (2) are significantly different for high disclosers compared to other firms. To provide some assurance our results are not being driven by the difference, we split the sample into two subsamples based on whether firms are considered high disclosers or not. We then estimate a modified Eq. (2) separately on each subsample. In that series of tests we substitute a comprehensive measure of overall voluntary disclosure (*ln_MEF*) for *HIGH_MEF*, and find that the effects of voluntary disclosure for corporate risk-taking are only observed in the partition of high disclosers (untabulated).

Table 3
Correlation Matrices.

Panel A. Pearson correlation matrix for measures of corporate risk-taking and future firm value

		1.	2.	3.	4.
1.	*LEAD_RET*				
2.	*LEAD_MKT*	0.154			
3.	*SD_RET*	0.096	−0.359		
4.	*RD*	0.046	−0.024	0.353	
5.	*SD_OCF*	0.047	−0.166	0.369	0.319

All correlations are significant using two-tailed t-tests at $p < 0.01$.
LEAD_RET is one year ahead stock returns, while *LEAD_MKT* is market value of equity at the end of year $t + 1$. *SD_RET* is the annual standard deviation of daily stock returns while *RD* is research and development expenses scaled by lagged total assets, and set to zero if missing. *VAR_OCF* is defined as the standard deviation of operating cash flows (deflated by total assets) for the three year period $t - 1$ to $t + 1$. Sample period is 1997–2008. Variables are as defined in Table 1.

Panel B. Pearson correlation matrix for measures of corporate risk-taking, earnings forecasts, and controls for multivariate models

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
1.	*SD_RET*																				
2.	*RD*	**0.353**																			
3.	*VAR_OCF*	**0.369**	**0.319**																		
4.	*HIGH_FIRM*	**0.037**	**−0.026**	−0.010																	
5.	*HIGH_IND*	0.003	**−0.026**	**−0.033**	**0.649**																
6.	*ln_MEF*	**0.033**	0.002	**−0.024**	**0.953**	**0.608**															
7.	*MKT*	**−0.135**	**0.035**	**−0.065**	**−0.035**	−0.011	**0.044**														
8.	*ROA*	**−0.238**	**−0.238**	**−0.234**	**−0.018**	0.002	**0.020**	**0.098**													
9.	*OCF*	**−0.148**	**−0.137**	**−0.121**	0.001	**0.025**	**0.044**	**0.103**	**0.741**												
10.	*ANNRET*	**0.044**	**0.110**	**0.061**	**−0.074**	**−0.036**	**−0.069**	**0.022**	**0.151**	**0.147**											
11.	*PAYOUT*	**−0.308**	**−0.113**	**−0.130**	**−0.099**	**−0.034**	**−0.093**	**0.216**	**0.085**	**0.055**	**−0.057**										
12.	*LEVERAGE*	**−0.140**	**−0.221**	**−0.118**	**−0.033**	**−0.024**	**−0.058**	−0.011	**−0.132**	**−0.184**	**−0.030**	**0.089**									
13.	*MTB*	**0.114**	**0.184**	**0.139**	**−0.022**	−0.009	0.004	**0.126**	**0.120**	**0.170**	**−0.052**	**0.068**	**−0.103**								
14.	*INV*	**0.062**	**−0.026**	**0.059**	**−0.061**	0.014	**−0.094**	−0.003	**0.159**	**0.302**	**0.060**	**−0.050**	**−0.055**	**0.087**							
15.	*ACCR_Q*	**0.265**	0.197	**0.224**	−0.008	0.005	**−0.027**	**−0.058**	**−0.021**	−0.015	**0.045**	**−0.137**	**−0.140**	**0.056**	**0.026**						
16.	*INSTL_HOLD*	−0.017	−0.009	−0.009	0.013	0.002	**0.017**	−0.010	0.005	0.007	0.004	−0.014	−0.009	−0.006	−0.009	0.000					
17.	*ln_COMP*	**−0.259**	**−0.055**	**−0.089**	**0.034**	0.018	**0.093**	**0.265**	**0.195**	**0.161**	**0.090**	**0.104**	**0.054**	**0.085**	−0.007	**−0.141**	**0.020**				
18.	*CEO_CHAIR*	**−0.146**	**−0.115**	**−0.102**	**0.045**	**0.046**	**0.061**	**0.058**	0.014	−0.003	**−0.075**	**0.100**	**0.095**	−0.010	**−0.037**	**−0.058**	0.012	**0.147**			
19.	*CEO_AGE*	**−0.159**	**−0.106**	**−0.081**	**−0.059**	**−0.047**	**−0.047**	**0.019**	**0.019**	−0.017	**−0.021**	**0.072**	**0.065**	**−0.059**	**−0.032**	**−0.081**	−0.016	**0.066**	**0.225**		
20.	*AVG_HORIZON*	0.008	**0.018**	−0.009	**0.581**	**0.425**	**0.606**	**0.038**	**0.055**	**0.067**	**−0.055**	**−0.067**	**−0.059**	**0.031**	**−0.038**	−0.011	0.009	**0.071**	**0.021**	**−0.068**	
21.	*AFTER_QE*	**0.098**	−0.008	**0.029**	**0.327**	**0.210**	**0.335**	−0.016	0.002	0.006	**−0.051**	**−0.058**	**−0.039**	−0.014	**0.017**	**0.029**	−0.001	**−0.033**	**0.033**	−0.010	**0.122**

Bold indicates significance at $p < 0.05$ with two-tailed t-tests. Sample period is 1997–2008. Variables are as defined in Table 1.

Table 4
Analysis of the effects of high levels of earnings forecasts on corporate risk-taking.

D.V.	*SD_RET*		*RD*		*SD_OCF*	
	(1)	(2)	(3)	(4)	(5)	(6)
HIGH_FIRM	−0.0008***		−0.0006**		−0.0028***	
	(−5.47)		(−2.10)		(−3.00)	
HIGH_IND		−0.0008***		−0.0022**		−0.0064***
		(−5.76)		(−2.11)		(−6.63)
ln_MKT	−0.0061***	−0.0060***	−0.0018	−0.0018**	0.0056***	0.0072***
	(−16.84)	(−15.7)	(−1.53)	(−2.25)	(2.67)	(3.29)
OCF	−0.0003	−0.0003	−0.0009	−0.0009	0.0070***	0.0076***
	(−1.38)	(−1.14)	(−1.12)	(−0.97)	(3.13)	(3.06)
ANNRET	0.0015	0.0015***	0.0081***	0.0081***	0.0049**	0.0043*
	(6.70)	(6.49)	(3.71)	(13.16)	(2.26)	(1.92)
PAYOUT	−0.0382	−0.0376***	−0.0194	−0.0194	0.1121*	0.1073*
	(−5.25)	(−5.18)	(−0.74)	(−0.85)	(1.87)	(1.78)
LEVERAGE	0.0048	0.0051***	−0.0368***	−0.0367***	−0.0162	−0.0160
	(2.59)	(2.65)	(−4.37)	(−9.85)	(−1.39)	(−1.34)
MTB	0.0003	0.0003***	0.0008**	0.0008***	0.0006**	0.0006**
	(6.41)	(6.35)	(2.30)	(11.63)	(2.08)	(2.19)
INV	0.0236***	0.0227***	0.0955**	0.0959***	0.2115***	0.2007***
	(8.22)	(7.74)	(2.38)	(12.72)	(6.05)	(5.6)
ln_COMP	−0.0003*	−0.0003*	0.0005	0.0005	0.0017	0.0020*
	(−1.85)	(−1.84)	(1.12)	(1.27)	(1.63)	(1.82)
CEO_CHAIR	0.0014***	0.0014***	−0.0004	−0.0004	−0.0060**	−0.0057**
	(3.56)	(3.41)	(−0.34)	(−0.46)	(−2.27)	(−2.07)
CEO_AGE	−0.0001	−0.0001***	−0.0002***	−0.0002***	0.0001	0.0001
	(−3.61)	(−3.78)	(−2.67)	(−3.31)	(0.43)	(0.24)
AVG_HORIZON	0.0000	0.0000**	0.0000	0.0000	0.0000***	0.0000
	(2.43)	(2.38)	(−0.16)	(−0.29)	(−3.15)	(−0.66)
AFTER_QE	0.0022	0.0307	0.0005	0.0005	−0.0019	−0.0003
	(7.82)	(1.35)	(0.7)	(0.57)	(−0.82)	(−0.11)
INTERCEPT	2.2277	0.0023***	0.06***	0.06***	−0.0033	−0.0120
	(10.04)	(7.76)	(6.23)	(8.69)	(−0.17)	(−0.59)
Firm & Year	Y	Y	Y	Y	Y	Y
Model F-test	72.5***	70.8***	19.8***	39.3***	10.2***	12.2***
Adj R-Square	0.560	0.560	0.796	0.797	0.224	0.228
N	13,171	13,171	13,171	13,171	13,171	13,171

Results in Table 5 are from OLS estimation of Eq. (2). The symbols ***, **, and * denote two-sided significance at the 1%, 5%, and 10% level, respectively and t-statistics in brackets are based on robust standard errors clustered by firm. The dependent variable is either the annual standard deviation of daily stock returns (*SD_RET*, columns 1 and 2), research and development expenses scaled by lagged total assets, (*RD*, columns 3 and 4; set to zero if missing), or the standard deviation of operating cash flows (deflated by total assets) for the three year period $t-1$ to $t+1$ (*VAR_OCF*, columns 5 and 6). *HIGH_FIRM* and *HIGH_IND* are measures of high levels of earnings forecasting derived by comparing actual forcasting to that predicted either on the firm (*HIGH_FIRM*) or the 2 digit SIC industry (*HIGH_IND*) level. All other variables are as defined in Table 1. The sample is from 1998 to 2008 and consists of observations from 2107 unique firms.

To sum, the results from estimating Eq. (2) presented in Table 4 support H1; high levels of managerial earnings forecasts are negatively associated with corporate risk-taking. The results are robust to alternative measures of corporate risk-taking and both firm- and industry-year measures of high forecasting. Our second hypothesis predicts that high levels of managerial earnings forecasts will reduce the positive association between corporate risk-taking and future firm value.

In Table 5 we report the results of testing H2. We expect that the coefficient on the interaction term *RISK * ln_MEF* will be negative and significant. Since theory suggests that the negative effect of voluntary disclosure on corporate risk-taking will be evident only in firms with substantial disclosure policies, we estimate our regressions only on firms that provide relatively high levels of managerial earnings forecast, as defined in Appendix 1.

In Table 5, Panel A, the dependent variable is one-year ahead stock returns (*LEAD_RET*), while in Panel B the dependent variable is the market value of equity at the end of year $t+1$ (*LEAD_MKT*). All eight models are significant (all with $p < 0.01$) and adjusted R-squares are similar to Table 4. Control variables are generally as predicted and across all columns in both panels, F-tests for the total effect of our measures of corporate risk and earnings forecasting are significant, consistent with estimation results for Eq. (1).

Regarding our variable of interest, the interaction term is negative and significant for each measure of corporate risk taking (*SD_RET*ln_MEF*, $p < 0.01$; *RD*ln_MEF*, $p < 0.01$; *SD_OCF*ln_MEF*, $p < 0.05$; consistent for both panels). In our combined model (column 4 in both panels) the interaction terms are all negative, though coefficients are slightly less significant. Overall the results in Table 5 support H2. For high forecasting firms, managerial earnings forecasts reduce the positive relation between corporate risk-taking and future firm value. We interpret this result as evidence that high levels of earnings forecasting can reduce managers' willingness to invest in higher-risk projects, which negatively impacts firm value.

5. Conclusion

We examine the impact of high levels of managerial earnings forecasts, an important form of voluntary disclosure, on corporate risk-taking and firm value. We first verify, as in prior research, that corporate risk-taking is associated with higher future firm value. We then document a negative relation between high levels of forecasting and corporate risk-taking. Finally, we provide evidence suggesting that high levels of managerial earnings forecasts reduce the positive association between corporate risk-taking and future firm value. Our results are robust to alternative measures of corporate risk-taking, alternative definitions of high levels of managerial earnings forecasts and future firm value, as well as alternative specifications of our empirical models.

We note that our findings should be interpreted with caution as there are limitations to our study. First, while earnings forecasts are used extensively as a proxy for voluntary disclosure, forecasts are just one component of a firm's voluntary release of private information. Thus we are only capturing one aspect of firm voluntary disclosure

Table 5
Analysis of the incremental effects of providing earnings forecasts on corporate risk-taking and firm value for high forecasting firms.

Panel A. Dependent variable is one-year ahead stock returns				
SD_RET	3.4474***			2.7705***
	(4.05)			(3.24)
*SD_RET * ln_MEF*	−0.1205***			−0.0709*
	(−3.00)			(−1.73)
RD		1.5406***		1.5204***
		(6.90)		(6.830)
*RD * ln_MEF*		−0.0577***		−0.0512***
		(−6.18)		(−5.41)
SD_OCF			0.5075***	0.3046**
			(3.61)	(2.13)
*SD_OCF * ln_MEF*			−0.1512**	−0.0537
			(−1.97)	(−0.68)
MEF	0.0013	−0.0003	−0.0012*	0.0014
	(1.12)	(−0.51)	(−1.88)	(1.26)
ln_MKT	−0.6578***	−0.6584***	−0.6671***	−0.6612***
	(−44.07)	(−44.37)	(−44.85)	(−44.43)
ROA	0.6075***	0.6729***	0.6379***	0.7077***
	(6.60)	(7.29)	(6.89)	(7.63)
OCF	0.0108	0.0179	−0.0221	0.0034
	(0.13)	(0.22)	(−0.28)	(0.04)
ANNRET	−0.0062	−0.0147	−0.0044	−0.0161*
	(−0.65)	(−1.54)	(−0.47)	(−1.70)
PAYOUT	−0.4896	−0.5392	−0.5680	−0.5085
	(−1.05)	(−1.16)	(−1.22)	(−1.10)
LEVERAGE	−0.0165	−0.0099	−0.0528	−0.0550
	(−0.26)	(−0.16)	(−0.83)	(−0.87)
MTB	−0.0014	−0.0015	−0.0009	−0.0020*
	(−1.17)	(−1.31)	(−0.78)	(−1.68)
INV	0.4378***	−0.0676	0.4517***	−0.1206
	(4.50)	(−0.50)	(4.68)	(−0.90)
ACCR_Q	−0.4186**	−0.3820**	−0.3938**	−0.3715**
	(−2.54)	(−2.33)	(−2.39)	(−2.27)
INSTL_HOLD	−0.3264***	−0.3475***	−0.3535***	−0.3254***
	(−4.91)	(−5.27)	(−5.33)	(−4.90)
INTERCEPT	4.9650***	5.0704***	5.1264***	5.0021***
	(45.35)	(48.94)	(49.50)	(45.98)
Firm & Year FE	Y	Y	Y	Y
Model F-test	165.4***	169.1***	168.5***	146.0***
Adj R-Square	0.273	0.278	0.279	0.286
N	4361	4361	4361	4361
Panel B. Dependent variable is market value of equity at the end of $t + 1$				
SD_RET	2.2295***			1.4943*
	(3.04)			(1.96)
*SD_RET * ln_MEF*	−0.8026***			−0.4549*
				(−1.81)
RD		0.9509***		0.9133***
		(5.28)		(5.06)
*RD * ln_MEF*		−0.0331***		−0.0273***
		(−4.39)		(−3.54)
SD_OCF			0.3817***	0.2107*
			(3.36)	(1.72)
*SD_OCF * ln_MEF*			−0.1405**	−0.0394
			(−2.27)	(−0.56)
MEF	−0.0004	−0.0009*	−0.0012**	−0.0002
	(−0.75)	(−1.67)	(−2.29)	(−0.33)
ln_MKT	0.4074***	0.4081***	0.4004***	0.4030***
	(33.9)	(34.1)	(33.34)	(33.46)
ROA	0.5798***	0.6434***	0.6307***	0.6628***
	(7.79)	(8.65)	(8.440)	(8.79)
OCF	0.0066	0.0082	−0.0233	−0.0049
	(0.10)	(0.13)	(−0.36)	(−0.07)
MTB	−0.0005	−0.0007	−0.0004	−0.0010
	(−0.56)	(−0.74)	(−0.47)	(−1.02)
LEVERAGE	0.0052	0.0094	−0.0235	−0.0252
	(0.10)	(0.19)	(−0.46)	(−0.49)
PAYOUT	−0.4232	−0.4311	−0.4492	−0.4333
	(−1.12)	(−1.15)	(−1.20)	(−1.16)
ANNRET	0.0266***	0.0228***	0.0296***	0.0222***
	(3.47)	(2.96)	(3.89)	(2.89)
INV	0.2369***	−0.0816	0.2368***	−0.1080
	(3.03)	(−0.75)	(3.04)	(−1.00)
ACCR_Q	−0.2480*	−0.2232*	−0.2075	−0.1985
	(−1.87)	(−1.69)	(−1.56)	(−1.50)

(continued on next page)

Table 5 *(continued)*

Panel B. Dependent variable is market value of equity at the end of $t + 1$				
INSTL_HOLD	−0.1750***	−0.1815***	−0.1719***	−0.1619
	(−3.27)	(−3.41)	(−3.21)	(−3.02)
INTERCEPT	4.3069***	4.3413***	4.3844***	4.3389***
	(48.96)	(51.94)	(52.43)	(49.38)
Firm & Year FE	Y	Y	Y	Y
Model F-test	250.4***	252.3***	251.8***	213.4***
Adj R-Square	0.935	0.935	0.935	0.936
N	4361	4361	4361	4361

Results in Table 5 are from OLS estimation of Eq. (3). The symbols ***, **, and * denote two-sided significance at the 1%, 5%, and 10% level, respectively and t-statistics in brackets are based on robust standard errors clustered by firm. The sample contains only those firms considered to be high disclosers (i.e., HIGH_ FIRM > 0). The dependent variable in Panel A is on year ahead stock returns, while in Panel B it is the market value of equity at the end of $t + 1$. *SD_RET* is the annual standard deviation of daily stock returns while *RD* is research and development expenses scaled by lagged total assets, and set to zero if missing. *SD_OCF* is defined as the standard deviation of operating cash flows (deflated by total assets) for the three year period $t - 1$ to $t + 1$. *ln_MEF* is 1 plus the natural logarithm of a comprehensive measure of the quantity and quality of a firm's release of management earnings forecasts (*MEF*) (see Table 1).

policy, though our use of managerial earnings forecasts at least partially heeds the call by Beyer et al. (2010) for researchers to disentangle the consequences of voluntary disclosure from the consequences of mandatory disclosure. Second, providing forecasts is a choice made by firms and thus subject to endogeneity concerns. While the inclusion of firm fixed effects in all of our models limits the concern, and we use a predictive model for a portion of our tests, it may still be the case that our findings are biased. Finally, due to limited coverage by the FirstCall database, our sample is predominately composed of large, profitable firms, somewhat limiting the generalizability of our findings.

Nonetheless our results may be of importance to varying interests by highlighting the potential for high levels of earnings forecasts to negatively affect firm value through a reduction in corporate risk-taking. Regulators, in the interests of users of financial information, are concerned with the full disclosure of firm activities. The SEC and PCAOB, for example, are consistently changing rules and standards to increase disclosure, and our findings may be useful in that regard. The Board of Directors and others that dictate company disclosure policy may find interest in our results, in allowing managers a certain amount of autonomy with regard to some level of private information, as we find that it may actually benefit shareholder value. Finally, investors can potentially use our findings in evaluating managers.

Appendix 1. Measuring high forecasting from a predicted value (two-stage model)

For our first approach we estimate an OLS model (sample is from 1998 to 2008) where forecasting is a function of firm-level determinants (Baginski & Rakow, 2012):

$$ln\_MEF = \beta_0 + \beta_1 ln\_MKT + \beta_2 + \beta_3 SGR + \beta_4 SignROA + \beta_5 CSHR + \beta_6 CAP\_INTENSITY + \beta_7 OFFER + \beta_8 AGE + \beta_9 AFE + \beta_{10} STD\_AF + INDUSTRY\_FE + YEAR\_FE + \varepsilon \quad (5)$$

Our measure of forecasting, *ln_MEF*, is a three-year measure as discussed in Section 3.3, thus we use three-year averages of all explanatory variables. Diamond (1985) notes that disclosure benefits larger firms because it is less costly, so we control for firm size; the natural logarithm of market value (*ln_MKT*). For growing firms, additional disclosure may allow firms to more easily obtain capital (Durnev & Kim, 2004), so we include year-to-year sales growth (*SGR*). Firm performance may also impact a manager's decision to disclose (Miller, 2002). Because of this, we include a dichotomous variable equal to 1 if return on assets is positive (*SignROA*). We follow Bushee, Matsumoto, and Miller (2003) and control for information demand by including the natural logarithm of the number of shareholders (*CSHR*). Capital intensity and equity issuances affect investment decisions (Frankel et al., 1995; Gatchev, Spindt, & Tarhan, 2009), so we include total assets – current assets deflated by total assets (*CAP_INTENSITY*) and the percentage change in common shares (*OFFER*). There is greater demand for information on newer firms (Barton & Waymire, 2004) so we include firm age (*AGE*). Analysts demand information, so we include analyst forecast error (*AFE*) and forecast dispersion (*STD_AF*) (Soffer, Thiagarajan, & Walther, 2000). Finally, we include dummy variables for two-digit SIC codes and year as industry and year fixed effects.

We capture the predicted value of forecasting from Eq. (5) and then estimate high forecasting as the difference between the actual and predicted value, at both the firm- and industry-level. For the firm-level measure (*PRED_FIRM*) we use firm-level observations of all variables and estimate our model by industry and year. This approach provides a unique predicted value of forecasting for each firm-year in our sample. For the industry-level measure (*PRED_IND*) we estimate our model using two-digit SIC industry averages for *ln_MEF* and each of our controls, for each year. This approach provides us with a predicted value of earnings forecasts for each firm in a given industry, each year. We then subtract these predicted values from actual values of *ln_MEF*.

$$HIGH\_FIRM = ln\_MEF - PRED\_FIRM \quad (a)$$

$$HIGH\_IND = ln\_MEF - PRED\_IND \quad (b)$$

Alternatively we compare a firm's actual value for forecasting to the industry-year median value, based on two-digit sic codes. Firms above the median are considered *above-average* forecasters. Our results and corresponding interpretations are not altered if we employ the measure of *above-average* forecasting (untabulated).

References

Baginski, S., Conrad, E., & Hassell, J. (1993). The effects of management forecast precision on equity pricing and on the assessment of earnings uncertainty. *The Accounting Review*, *68*, 313–327.

Baginski, S., & Hassell, J. (1997). Determinants of management forecast precision. *The Accounting Review*, *72*, 303–312.

Baginski, S., & Rakow, K. (2012). Management earnings forecast disclosure policy and the cost of equity capital. *Review of Accounting Studies*, *17*, 279–321.

Bargeron, L., Lehn, K., & Zutter, C. (2010). Sarbanes–Oxley and corporate risk-taking. *Journal of Accounting and Economics*, *49*, 34–52.

Barton, J., & Waymire, G. (2004). Investor protection under unregulated financial reporting. *Journal of Accounting and Economics*, *38*, 65–116.

Bartram, S., Brown, G., & Conrad, J. (2011). The effects of derivatives on firm risk and value. *Journal of Financial and Quantitative Analysis*, *46*(4), 967–999.

Baugess, S., Slovin, M., & Sushka, M. (2012). Large shareholder diversification, corporate risk taking, and the benefits of changing to differential voting rights. *Journal of Banking & Finance*, *36*, 1244–1253.

Bertomeu, J., Beyer, A., & Dye, R. (2011). Capital structure, cost of capital and voluntary disclosures. *The Accounting Review*, *86*, 857–886.

Beyer, A., Cohen, D., Lys, T., & Walther, B. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics*, *50*, 296–343.

Biddle, G., Hilary, G., & Verdi, G. (2009). How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics*, *48*, 112–131.

Botosan, C. (1997). Disclosure level and the cost of equity capital. *The Accounting Review*, *72*, 323–349.

Brav, A., Graham, J., Harvey, C., & Michaely, R. (2005). Payout policy in the 21st century. *Journal of Financial Economics*, *77*, 483–527.
Bushee, B., Matsumoto, D., & Miller, G. (2003). Open versus closed conference calls: The determinants and effects of broadening access to disclosure. *Journal of Accounting and Economics*, *34*, 149–180.
Bushman, R., & Smith, A. (2001). Financial accounting information and corporate governance. *Journal of Accounting and Economics*, *31*, 237–333.
Cheng, Q., Luo, T., & Yue, H. (2013). Managerial incentives and management forecast precision. *The Accounting Review*, *88*, 1575–1602.
Chung, K., Wright, P., & Charoenwong, C. (1998). Investment opportunities and market reaction to capital expenditure decisions. *Journal of Banking & Finance*, *22*, 41–60.
Cohen, D., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics*, *50*, 2–19.
Coles, J., Daniel, N., & Naveen, L. (2006). Managerial incentives and risk-taking. *Journal of Financial Economics*, *79*, 431–468.
Core, J. (2001). A review of the empirical disclosure literature: Discussion. *Journal of Accounting and Economics*, *31*(1–3), 441–456.
Dechow, P., & Dichev, I. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review*, *77*, 35–59.
Dehning, B., Richardson, V., & Stratopoulos, T. (2005). Information technology investments and firm value. *Information & Management*, *42*, 989–1008.
Dhaliwal, D., Khurana, I., & Pereira, R. (2011). Firm disclosure policy and the choice between private and public debt. *Contemporary Accounting Research*, *28*, 293–330.
Diamond, D. (1985). Optimal release of information by firms. *Journal of Finance*, *40*, 1071–1094.
Durnev, A., & Kim, E.H. (2004). To steal or not to steal: Firm attributes, legal environment and valuation. *Journal of Finance*, *60*, 1461–1493.
Dye, R. (1990). Mandatory versus voluntary disclosures: The cases of financial and real externalities. *The Accounting Review*, *65*(1), 1–24.
Faccio, M., Marchica, M. -T., & Mura, R. (2011). Large shareholder diversification and corporate risk-taking. *Review of Financial Studies*, *21*, 3601–3641.
Ferreira, M., & Laux, P. (2007). Corporate governance, idiosyncratic risk, and information flow. *Journal of Finance*, *62*, 951–989.
Fisher, I., & Hall, G. (1969). Risk and corporate rates of return. *Quarterly Journal of Economics*, *83*, 79–92.
Frankel, R., McNichols, M., & Wilson, G.P. (1995). Discretionary disclosure and external financing. *The Accounting Review*, *70*, 135–150.
Gatchev, V., Spindt, P., & Tarhan, V. (2009). How do firms finance their investments? The relative importance of equity issuance and debt contracting. *Journal of Corporate Finance*, *15*, 179–195.
Gormley, T., Matsa, D., & Millbourn, T. (2012). *CEO compensation and corporate risk-taking: Evidence from a natural experiment*. University of Pennsylvania unpublished manuscript. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1718125.
Healy, P., & Palepu, K. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, *31*, 405–440.
Hermalin, B., & Weisbach, M. (2012). Information disclosure and corporate governance. *The Journal of Finance*, *67*(1), 195–233.
Hirst, D., Koonce, L., & Venkataraman, S. (2008). Management earnings forecasts: A review and framework. *Accounting Horizons*, *22*, 315–338.
Houston, J., Lin, C., Lin, P., & Ma, Y. (2010). Creditor rights, information sharing, and bank risk-taking. *Journal of Financial Economics*, *96*, 485–512.
Hutton, A., Miller, G., & Skinner, D. (2003). The role of supplementary statements with management earnings forecasts. *Journal of Accounting Research*, *41*, 867–890.
Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360.
John, K., Litov, K., & Yeung, B. (2008). Corporate governance and risk-taking. *Journal of Finance*, *63*, 1679–1728.
Jorgensen, B., & Kirschenheiter, M. (2003). Discretionary risk disclosures. *The Accounting Review*, *78*, 449–469.
Kanodia, C., Singh, R., & Spero, A. (2005). Imprecision in accounting measurement: Can it be value enhancing? *Journal of Accounting Research*, *43*(3), 487–519.
Kaplan, S., & Zingales, L. (1997). Do investment–cash flow sensitivities provide useful measures of financing constraints? *The Quarterly Journal of Economics*, *112*, 169–215.
Lang, M., & Lundholm, R. (1996). Corporate disclosure policy and analyst behavior. *The Accounting Review*, *71*, 467–492.
LaPorta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Agency problems and dividend policies around the world. *Journal of Finance*, *55*, 1–33.
Low, A. (2009). Managerial risk-taking behavior and equity-based compensation. *Journal of Financial Economics*, *92*, 470–490.
Markowitz, H. (1952). Portfolio selection. *Journal of Finance*, *7*, 77–91.
McCarthy, M. (2008). Disclosure committee: Untapped insight. *Directorship*, *72*.
McConnell, J., & Muscarella, C. (1985). Corporate capital expenditure decisions and the market value of the firm. *Journal of Financial Economics*, *14*, 399–422.
McNichols, M. (2002). Discussion of the quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review*, *77*, 61–69.
Merton, R. (1974). On the pricing of corporate debt: The risk structure of interest rates. *Journal of Finance*, *29*, 449–470.
Miller, G. (2002). Earnings performance and discretionary disclosure. *Journal of Accounting Research*, *40*, 173–204.
Myers, S., & Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*, 187–221.
Petersen, M. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies*, *22*, 435–480.
Radhakrishnan, S., Tsang, A. & Yang, Y. (2012). Management forecasts around the world. The University of Texas-Dallas and The Chinese University of Hong Kong unpublished manuscript.
Rajgopal, S., & Shevlin, T. (2002). Empirical evidence on the relation between stock option compensation and risk taking. *Journal of Accounting and Economics*, *33*, 145–171.
Richardson, S. (2006). Over-investment of free cash flow. *Review of Accounting Studies*, *11*, 159–189.
Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, *42*, 335–370.
Shin, H., & Stulz, S. (2000). *Shareholder wealth and firm risk*. The Ohio State University unpublished manuscript. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=254271.
Soffer, L., Thiagarajan, R., & Walther, B. (2000). Earnings preannouncement strategies. *The Review of Accounting Studies*, *5*, 5–26.
Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, *87*(3), 355–374.
Trueman, B. (1986). Why do managers voluntarily release earnings forecasts. *Journal of Accounting and Economics*, *8*, 53–71.
Verrecchia, R. (2001). Essays on disclosure. *Journal of Accounting and Economics*, *32*, 97–180.
Welker, M. (1995). Disclosure policy, information asymmetry, and liquidity in equity markets. *Contemporary Accounting Research*, *11*, 801–827.
Wright, P., Ferris, S., Sarin, A., & Awasthi, V. (1996). Impact of corporate insider, blockholder, and institutional equity ownership on firm risk taking. *The Academy of Management Journal*, *39*(2), 441–463.