the proposed initiatives and investments can successfully alleviate competitive pressures. In a survey on sell-side analysts, Brown et al. (2015) find industry knowledge is the most useful input for earnings forecasts and stock recommendations, and it is closely related to their performance and career success. Surveys by *Institutional Investor* magazine also support this view and rank industry knowledge as the most important analyst trait. Providing high-quality analysis on competitive dynamics would be a crucial component of analysts' industry expertise. This paper aims to shed light on whether analysts conduct competition analysis and its usefulness to investors and other stakeholders, including management.

While the above arguments indicate that analysts have both the ability and incentives to provide valuable discussions about firm

suggesting the prevalence of competition information in equity research. There is a dramatic increase in the

for characteristics for firms, analysts and reports. The results indicate that competition analysis boosts the information content of their forecast signals.

In the

disclosure quality. I extend their research in several important dimensions. First, I investigate analysts' responses to product market competition and document that analysts produce more competition-related content in their reports when market competition intensifies. Second, I find that such competition-focused discussions enhance analysts' research quality indicated by earnings forecast accuracy and market reaction to their forecast signals, with this effect being more pronounced in highly competitive contexts.

Financial analysts are employed by security firms and they are vital to the functioning of capital markets. They collect and analyze information to assess a firm's recent performance, strategic initiatives, competitive landscape

While analysts have the incentives to analyze competition landscapes for covered firms,

difficulties of valuation. Moreover, Mattei and Platikanova (2017) find that product market competition can negatively affect analysts' forecast precision, casting doubt on analysts' ability to effectively deal with competition risk issues. Piotroski and Roulstone (2004) also find that in less concentrated industries, stock return synchronicity within the industry decreases, suggesting that the economic scale effect of providing industry-level information, such as competition-related analysis, is weaker in these environments.

Thus, to test the informativeness of competition discussion, the first hypothesis is as follows:

H1: Ceteris paribus, competition discussion is associate with greater market reaction to analyst revisions.

Previous literature shows forecast accuracy has an important impact on analysts' reputations and career success (Stickel 1992; Sinha et al. 1997). On the one hand, if revealing competition risk in their reports reflects that analysts have better information and industry expertise to deal with competition in equity valuation, then its appearance should be associated with more accurate earnings forecasts. On the other hand, analysts may only mention competition when discussing risks to avoid litigation risk to themselves, and therefore do not incorporate competition risk in the valuation model. Alternatively, analysts may be aware of competition risk but cannot incorporate it in earnings forecasts accurately due to the complexity. Eventually, I would not find association between earnings forecast precisions and competition risk information. Thus, the second hypothesis is as follows:

H2: Ceteris paribus, earnings forecasts with more competition discussion are more accurate.

bigrams. I then validated these terms by extracting 100 sample sentences for each from analyst reports, manually verifying their relevance to the competition. Since my purpose is to examine the informativeness of competition risk discussion, I count the frequency for all the “competition” or “competitive” keywords and do not exclude the count even if there is a “less” before the “competition”. Therefore, this measurement does not necessarily indicate the competition level as it does in Li et al. (2013). Instead, I hypothesize that analysts include competition keywords because it is value-relevant and it will add uncertainty for future firm strategies and stock prices because of competition. The measure of competition discussion is

$$\frac{\text{Competition words}}{\text{Total words}}$$

where Competition words is the occurrences of competition words and Total words is the total number of words in a report. I additionally create a dummy variable (COMP_HIGH) to measure the competition discussion, which equals to 1 if the competition keywords in a report is larger than 2 and P

and Platikanova (2017) argue that intense product market competition can deteriorate the information environment, and reducing forecast precision. To examine the relationship between product market competition and analysts' discussions, I control for a firm-specific measure of market threats (*fluidity*) and interact it with the competition risk measurement.

[Table 5]

Table 5 presents the results. In Column (1), I find a significantly positive association between *COMP_PCT* and analysts' forecast accuracy (*Accuracy*), suggesting that analysts who demonstrate a stronger understanding of competition risk in their reports tend to issue more accurate earnings forecasts. The significantly negative coefficient for *Fluidity* aligns with Mattei and Platikanova (2017), indicating that higher levels of competition reduce analysts' accuracy. The result is robust with the alternative competition discussion measurement *COMP_HIGH*, as shown in Column (2). In Columns (3) and (4), I find a significantly positive coefficient for the interaction between competition-related discussions and *Fluidity*. These results suggest that while high competition generally hinders forecast accuracy, anlaysis of competition can mitigate this negative impact of *Fluidity.*

To address potential self-selection bias in analysts' decisions to discuss competition in their reports, I implement a Heckman two-stage procedure, as presented in Table 6. In the first stage, I estimate a probit model where the dependent variable is a binary indicator, COMP_HIGH. Independent variables include all control variables listed in Table 5. Using this model, I calculate the inverse Mills ratio (IMR) and include it as a correction factor in the second-stage regression. Results in Column 2 indicate that the coefficients for COMP_PCT and COMP_HIGH remain positive and statistically significant at the 1% level, supporting the robustness of the findings.

[Table 6]

Overall, these findings indicate that competition related discussions not only reflect analysts' industry knowledge but also enhance their ability to navigate the complexities of competitive markets, ultimately improving forecast accuracy. This underscores the importance of competition risk analysis as a key component of valuation.

& R P S H WG L WL WL FR XQ DV QL GR PD U N H W U H D F W L R Q

In this section, I examine how investors respond to competition information. Given that competition introduces uncertainty to a firm's future strategies and performance, I hypothesize that competition analysis provides meaningful insights and improves the credibility of analysts' output, leading to a stronger market reaction to those forecasts. *CAR3* is the dependent variable, represents market-adjusted cumulative abnormal return starting from one day before to three days after the report date. I examine three different analysts' outputs, including earnings forecast revisions (*epschg*), recommendation changes (*recchg*) and target price revisions (*tpchg*). To assess whether competition risk discussions influence market reactions to changes in earnings forecasts, I interact them with COMP_PCT and COMP_HIGH.

[Table 7]

Table 7 presents the results. For all the Columns, the estimate coefficients on the interaction terms are significantly positive except for *COMP_PCT*tpchg*. These results indicate that the competition analysis can lead to stronger market reactions on analyst revisions. Overall, the results support that investors find analyst reports are more informative when providing more competition risk discussions.

$ G G L WL RQ DO LQ VL JK WV RQ DQ DO \VW U H S R U

There is a large strand of literature that examines the real effects of analyst coverage on firm decisions (Yu 2008; Derrien and Kecskes 2013; He and Tian 2013; Chen et al. 2015; Li and

focus more on competition topics make more accurate earnings forecasts. Further analysis shows that this effect is stronger when product market competition is more intense. I also show that reports incorporating competition

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Panel B

Table 4. Competition risk and volatility. This table reports the results of the relationship between competition risk discussions and stock return volatility. The independent variable is number of words from the competition dictionary and the dependent variable is future one-year stock return volatility. The variables are winsorized at the 1% and 99% levels if continuous. Standard errors are clustered at the analyst and firm levels. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	(1)	(2)
	volatility365	volatility365
COMP_PCT	0.001***	
	(2.81)	
COMP_High		0.036***
		(4.92)
volatility365_past	0.425***	0.425***
	(15.32)	(15.32)
Size	-0.186***	-0.187***
	(-16.97)	(-16.98)
MTB	0.006***	0.006***
	(5.90)	(5.88)
AnalystFollow	0.020***	0.020***
	(2.74)	(2.76)
intangible	-0.194***	-0.194***
	(-5.02)	(-5.02)
leverage	0.106***	0.107***
	(3.05)	(3.06)
Turnover	-0.066***	-0.066***
	(-3.01)	(-3.01)
Arpre12	-0.004***	-0.004***
	(-16.65)	(-16.65)
firmex	-0.006***	-0.006***
	(-5.22)	(-5.17)
genex	0.001	0.001
	(1.06)(0)-5(0)-5(1)]TJETQ258.2S[	

Table 5. Competition discussion and forecast accuracy. This table reports the results of the relationship between competition risk discussions and earnings forecast accuracy. The independent variable is number of words from the competition dictionary and the dependent variable is the

Year FE	Yes	Yes	Yes
Observations	782,244	782,244	782,244
Pseudo R-sq	0.192		
R-sq		0.193	0.193

Table 7. The informativeness of Competition risk. This table reports the results of usefulness of competition risk information. The

Table 8. Competition analysis and investment efficiency. This table reports the relationship between analyst coverage and firm investment efficiency. The independent variable is investment efficiency, calculated as the residual from a regression on investment in year t on sales growth between year t-2 and t-1, multiplied by minus 1. The variables are winsorized at the 1% and 99% levels if continuous. Standard errors are clustered at the analyst and firm levels. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	(1)	(2)
	Investment efficiency	Investment efficiency
Analyst_N	0.015***	
	(3.73)	
Analyst_PCT		0.010**
		(2.12)
Loss	-0.019***	-0.018***
	(-3.37)	(-3.14)
Tangibility	0.047***	0.046***
	(4.98)	(4.86)
Leverage	-0.063***	-0.062***
	(-5.98)	(-5.96)
Size	-0.006**	-0.003*
	(-2.68)	(-1.81)
MTB	0.000	0.000
	(0.59)	(0.55)
Constant	-0.146***	-0.158***
	(-8.80)	(-10.79)
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	18,657	18,657
R-sq	0.032	0.031

)LJXUH HUFHQWDJH $QDO\VW 5HSRUW 'LVFXVVLQJ &RPSHWLWL

Appendix A
Variable definitions

Variables	Definition
Independent Variables	
COMP_HIGH	The percentage of competition key words in a report.
COMP_High	An indicator variable that is 1 if a report mentions competition key words at least 3 times, and 0 otherwise.
Analyst_N	The natural logarithm of the number of unique financial analysts who issued one *COMP_High* report for forecasting target fiscal year t in the first quarter of year t.
Analyst_PCT	Analyst_N divided by the number of analysts who issued at least one report for forecasting target fiscal year t in the first quarter of year t.
Dependent Variables	
Accuracy	Absolute forecast error, scaled by the last closing price in previous month, multiplied by minus 1.
Car3	Ratio of words from industry word list to total words in the report, multiplied by 100.
Volatility365	The standard deviation of daily stock returns in future 365 days from report date.
Investment	The sum of capital expenditures (CAPX), research and development expenditures (XRD), and acquisitions (AQC), less cash receipts from sales of property, plant, and equipment (SPPE), scaled by lagged total assets (AT) and multiplied by 100.
Investment efficiency	

Appendix C. Frequency for the top 40 competition keywords

Phrase	Frequency
competition	1,886,180
competitive	1,779,359
competitor	1,110,842
penetration	776,235
entry	421,379
differentiat	327,474
compete	322,016
dominant	188,755