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Typhoon strikes, distracted analyst and forecast accuracy: Evidence from China

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ABSTRACT

This paper investigates the effect of typhoon strikes on analysts' forecast accuracy in the context of China. We find that analysts' exposure to typhoon strikes results in decline in their forecast quality. We attribute this to analysts' limited attention by providing evidence that: (1) analysts strategically allocate their attention to firms with more extensive institutional ownership; (2) analysts experiencing repeated typhoons would be less affected by the strikes; (3) analysts' forecasts on firms shocked by typhoons document a greater decline of quality. Our finding provides a plausibly causal effect of climate disaster on analyst forecast accuracy with the staggered strikes of the typhoon.

1. Introduction

There is a growing literature studying the role of climate change on information production in the capital market (e.g., Han et al., 2020; Gao et al., 2021), especially the forecasts of sell-side analysts, which could directly affect stock prices and corporate decisions (Hirshleifer et al., 2019). In this paper, we extend the literature by exploring the impact of typhoon strikes on analyst forecast accuracy in the context of China. We base our study on China and choose typhoon as the typical climate disaster because: (1) the information role of analysts is indispensable in emerging markets, such as China, where the information environment is poor; (2) moreover, on average, seven typhoon strikes happen to the east coast of China every year.

Theoretically, the effect of typhoon strikes on analyst forecast accuracy is left unclear. On the one hand, typhoon strikes could hinder the information production of analysts through two possible channels. First, typhoons, one of the most destructive natural disasters, could cause significant infrastructural damage; the strong wind and heavy rain along with typhoon strike also prevent people in the affected regions from traveling or doing other outdoor activities. While site visits or conference calls are essential in analysts' information production, we could expect a decline in forecast accuracy among analysts affected by typhoons. Second, with the actual physical damages, there would be numerous news of safety concerns, economic losses, and responses to the aftermath, which may

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draw analysts' attention from devoting all their energy to work. Attention is a limited resource (Han et al., 2020), especially for brain workers like analysts. When attention is distracted by the typhoon strikes, we posit that analysts could be less likely to fulfill their job, and thus the quality of their workout decreases.

On the other hand, the effect of typhoon strikes on analyst forecasting work might be mitigated, even eliminated, given that: (1) analysts are professionals and experts in collecting and processing information; (2) there must be solutions provided by brokers to deal with typhoons due to the frequency and regularity of this kind of disasters; (3) the well-constructed infrastructures and the increasingly common way of online communication could reduce the effect of typhoon strikes. Therefore, whether typhoon affects analysts' forecast accuracy is an empirical question.

In our empirical tests, we find evidence supporting the negative effect of typhoon strikes on analysts' forecast accuracy. Moreover, we verify the channel of typhoon distracting analysts' attention by showing that: (1) analysts strategically allocate their attention to firms with more extensive institutional ownership; (2) analysts experiencing repeated typhoons would be less affected by the strikes; (3) analysts' forecasts on firms shocked by typhoons and thus displaying higher uncertainty document more significant decline of quality; (4) analysts' forecast frequency and dispersion from consensus decrease after typhoon strikes.

This paper contributes to two strands of literature. First, we add to the literature explaining the determinants of analysts' information production (Cuculiza et al., 2021; Xu et al., 2021; Ngo et al., 2021; Iqbal and Bilal, 2021; Liang et al., 2022; Xue, 2022; Zheng et al., 2022). Our conclusion supports the opinion that analysts are subject to cognitive limits during their production of information. More importantly, we use the staggered strikes of the typhoon to get a plausibly causal effect of adverse events on distracting analysts' attention and thus lowering their forecasting quality. Second, this study contributes to the dramatically growing literature exploring the impact of climate change on the capital market (Han et al., 2020; Kong et al., 2021; Chen, 2021; Awawdeh et al., 2021; Gao et al., 2022). Specially, we supplement empirical evidence supporting typhoon strikes' impact from the analyst forecast accuracy perspective. Moreover, while our research question is close to Gao et al. (2021) and Han et al. (2020), our work differs from theirs by providing evidence from an emerging market with a poor information environment, China, and exploring a typical type of climate disaster, typhoons.

2. Data and empirical design

2.1. Data and sample

We obtain the basic information of brokers and sell-side analysts, as long as the earnings forecasts issued by analysts from the China Stock Market & Accounting Research (CSMAR), a widely used database in studies of China. To identify the locations of analysts, we follow Jiang et al. (2016) and use the provinces where analysts' branch offices locate as their locations. The typhoon data is from the Shanghai Typhoon Institute of the China Meteorological Administration, which provides a dataset of tropical cyclone paths in the northwest Pacific Ocean and includes the location, intensity, and central pressure of all tropical cyclones in the Pacific Northwest every six hours.

We construct a sample with an analyst-firm-month structure covering all calendar months from 2007 to 2020. We kept only cities ever shocked by typhoons. And we exclude firms with less than three analysts following. We then kept a window of six months before and six months after each typhoon strike. Finally, we get 64,322 analyst-firm-month observations for the following empirical tests.

2.2. Model and variables

We construct the following DID model to test the effect of typhoon strikes on analyst forecast accuracy.

$$Accuracy_{k,i,t} = \beta_0 + \beta_1 Typhoon + \beta X + \alpha_k + \eta_i + \delta_t + \varepsilon_{kit} \quad (1)$$

where *k, i,* and *t* indexes analyst, firm, and year, respectively. The dependent variable, *Accuracy*, is the standardized difference between an analyst's earnings forecast and actual earnings. We first calculate the absolute forecast error for each analyst, which is the absolute value of the difference between an analyst's forecast on a target firm and the target's actual earnings. Then we standardize the absolute forecast error using the difference between absolute forecast error and the mean absolute forecast error among all analysts covering the same target in the same month, divided by the latter. The independent variable, *Typhoon*, is an indicator variable that equals one for months after a city is shocked by a typhoon strike and zero otherwise. In other words, *Typhoon* is the interaction item of treatment and timing variable.

X is a vector of control variables. Following Lin et al. (2022a, 2022b, 2022c), Pan et al. (2022a, 2022b), Kong et al. (2020), and Chen et al. (2020), we include the following variables in the regression model: (1) *Horizon*, which is the difference between the forecast month and the ending month of forecasting period, plus one; (2) *TargetYears*, which is the number of years that an analyst followed a target firm; (3) *FollowComs*, measured as natural logarithm of the, number of target firms an analyst following in a year; (4) *FollowIndus*, measured as natural logarithm of the number of target industries an analyst following in a year; (5) *GeneralYears*, which is natural logarithm of an analyst's working experience (year); (6) *AllStar*, measured as a dummy that equals one if an analyst is ranked as first to fifth in the institutional investors' ranking, and zero otherwise; (7) *BrokerSize*, which is measured with natural logarithm of the number of active analysts for a broker in a year.

α_k, η_i, and δ_t are analyst, firm, and year indicator variables. All standard errors are adjusted for arbitrary heteroskedasticity and clustered by the analyst for error correlations. We winsorize all continuous variables at 1% and 99% to mitigate the influences of

Table 1
Descriptive statistics.

Variable	Mean	SD	Min	P25	P50	P75	Max	Obs
Accuracy	1.200	3.288	-3.365	0.085	0.293	1.000	23.333	157,088
Typhoon	0.521	0.500	0.000	0.000	1.000	1.000	1.000	157,088
Horizon	6.327	3.059	1.000	3.000	6.000	9.000	12.000	157,088
TargetYears	2.215	1.711	1.000	1.000	2.000	3.000	9.000	157,088
FollowComs	2.416	1.096	0.000	1.792	2.565	3.178	4.543	157,088
FollowIndus	2.057	0.732	0.000	1.609	2.079	2.565	3.689	157,088
GeneralYears	2.733	0.713	0.658	2.332	2.817	3.241	4.038	157,088
AllStar	0.053	0.224	0.000	0.000	0.000	0.000	1.000	157,088
BrokerSize	3.816	0.582	1.946	3.497	4.007	4.220	4.787	157,088

Table 2
The basic results.

Dependent Variable:	*Accuracy* (1) Coefficient t-Statistic	 (2) Coefficient t-Statistic	 (3) Coefficient t-Statistic
Typhoon	-0.257***	-0.182***	-0.088***
	(-14.54)	(-5.62)	(-2.80)
Horizon		0.014***	0.054***
		(2.60)	(10.32)
TargetYears		-0.069***	0.013
		(-6.98)	(1.28)
FollowComs		0.005	-0.035
		(0.21)	(-1.17)
FollowIndus		-0.130***	-0.141*
		(-3.99)	(-1.79)
GeneralYears		0.459***	1.790***
		(15.04)	(24.04)
AllStar		-0.053	-0.174
		(-0.60)	(-1.63)
BrokerSize		0.127***	0.191
		(4.29)	(1.50)
Firm Fixed Effects	Control	Control	Control
Year Fixed Effects	Control	Control	Control
Analyst Fixed Effects	No	No	Control
Adj. R^2	0.198	0.205	0.241
Observations	157088	157088	157088

outliers. Table 1 summarizes the descriptive statistics.

3. Empirical results

3.1. The basic results

Table 2 presents the results from estimating Eq. (1). Column 1 includes the dependent variable, independent variable, and firm- and year-fixed effects. Column 2 adds analysts' and brokers' characteristics. Column 3 includes analyst indicator variables based on Column 2. All coefficients of *Typhoon* are significantly negative in Columns 1 to 3. Specifically, Column 3 indicates that *Typhoon* is negatively correlated with *Accuracy*, with the coefficient estimated at -0.088, significant at the 1% level. The result is consistent with the hypothesis that typhoon strikes negatively affect analysts' forecast accuracy. In economic terms, Column 3 indicates that the pandemic leads to a 7.33% decrease in analysts' forecast accuracy.

In terms of control variables, we find that the working experience of an analyst is positively correlated with forecast accuracy. However, the more industries an analyst follows, the less accuracy his forecasts have.

3.2. Mechanism tests: channel of distracted attention

As discussed earlier, the negative effect of a typhoon on analysts' forecast accuracy may result from distracting attention or limiting access to information. In this section, we test the possibility of typhoon strikes diverting analysts' attention.

First, if a typhoon distracts analysts, we expect that the limited attention would be allocated to target firms that are important to analysts (Harford et al., 2019). Given the customers of analyst reports are institutional investors, we utilize the institution ownership to test the inference. Specifically, we construct two new variables, *%Institution* and *#Institution*. The former measures the total

Table 3
Channel of distracted attention I.

Dependent Variable:	*Accuracy*		*Accuracy*		*Accuracy*	
	(1)	(2)	(3)	(4)	(5)	(6)
Moderator	*%Institution*	*#Institution*	*#Typhoon*	*D_Typhoon*	*Firm_city*	*Firm_prov*
Typhoon	-0.339***	-0.192***	-0.367**	-0.342**	-0.068**	-0.079**
	(-6.67)	(-5.43)	(-2.23)	(-2.09)	(-2.13)	(-2.50)
Moderator	-0.012***	-0.001***	-0.226	-0.981	-0.142***	-0.101***
	(-5.14)	(-6.00)	(-1.25)	(-1.32)	(-7.13)	(-5.25)
Typhoon × *Moderator*	0.005***	0.001***	0.051*	0.300*	-0.248***	-0.203***
	(6.94)	(9.46)	(1.79)	(1.93)	(-8.17)	(-9.22)
Horizon	0.053***	0.054***	0.057***	0.060***	0.055***	0.054***
	(10.18)	(10.29)	(3.24)	(3.50)	(10.34)	(10.18)
TargetYears	0.011	0.013	0.021	0.021	0.014	0.014
	(1.12)	(1.24)	(0.86)	(0.85)	(1.43)	(1.41)
FollowComs	-0.034	-0.034	-0.135	-0.138	-0.037	-0.036
	(-1.17)	(-1.16)	(-1.35)	(-1.40)	(-1.25)	(-1.22)
FollowIndus	-0.146*	-0.146*	-0.571*	-0.587*	-0.150*	-0.151*
	(-1.88)	(-1.85)	(-1.91)	(-1.93)	(-1.89)	(-1.91)
GeneralYears	1.794***	1.789***	2.186***	2.196***	1.818***	1.807***
	(24.13)	(24.04)	(14.41)	(14.59)	(24.19)	(24.10)
AllStar	-0.173	-0.173	-0.116	-0.116	-0.175*	-0.170
	(-1.62)	(-1.62)	(-0.54)	(-0.54)	(-1.66)	(-1.60)
BrokerSize	0.189	0.196	0.284	0.290	0.193	0.191
	(1.48)	(1.53)	(1.19)	(1.17)	(1.47)	(1.46)
Firm Fixed Effects	Control	Control	Control	Control	Control	Control
Year Fixed Effects	Control	Control	Control	Control	Control	Control
Analyst Fixed Effects	Control	Control	Control	Control	Control	Control
Adj. R^2	0.241	0.241	0.091	0.091	0.247	0.244
Observations	157088	157088	157088	157088	157088	157088

Table 4
Channel of distracted attentions II.

Dependent Variable:	*Forecast Frequency*			*Forecast Dispersion*		
	(1)	(2)	(3)	(1)	(2)	(3)
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
	t-Statistic	*t*-Statistic	*t*-Statistic	*t*-Statistic	*t*-Statistic	*t*-Statistic
Typhoon	-0.029***	-0.056***	-0.056***	-0.002**	-0.010***	-0.010***
	(-5.13)	(-5.73)	(-6.50)	(-2.01)	(-5.42)	(-5.57)
Horizon		-0.004***	-0.005***		-0.001***	-0.002***
		(-3.19)	(-4.41)		(-4.09)	(-4.70)
TargetYears		0.001	0.001		-0.000	-0.001**
		(0.56)	(0.66)		(-0.20)	(-2.46)
FollowComs		-0.016***	-0.002		-0.000	0.006***
		(-4.94)	(-0.81)		(-0.28)	(3.18)
FollowIndus		-0.118***	-0.094***		-0.005**	-0.003
		(-12.17)	(-9.25)		(-2.23)	(-0.83)
GeneralYears		-0.011**	-0.013***		-0.002	0.009***
		(-2.40)	(-3.73)		(-1.39)	(3.24)
AllStar		-0.007	-0.003		0.001	0.004
		(-0.58)	(-0.47)		(0.12)	(0.48)
BrokerSize		0.004	0.002		0.004**	0.020***
		(0.57)	(0.27)		(2.07)	(3.67)
Firm Fixed Effects	Control	Control	Control	Control	Control	Control
Year Fixed Effects	Control	Control	Control	Control	Control	Control
Analyst Fixed Effects	No	No	Control	No	No	Control
Adj. R^2	0.209	0.372	0.557	0.173	0.174	0.219
Observations	157088	157088	157088	157088	157088	157088

shareholding of institutional investors in the target firm, and the latter is the number of institutional investors in a firm. We modify Eq. (1) by including the interactions between these two new variables and *Typhoon*. The results are presented in Columns 1 and 2 of Table 3. Both coefficients of the interaction items are significantly positive, opposite to *Typhoon*'s coefficients. The results suggest that high ownership of institutional investors could mitigate the negative effect of typhoon strikes on analysts' forecast quality.

Second, the literature documents that individuals experiencing a disaster for the first time would feel a higher sense of unpredictability. However, individuals experiencing repeated disasters react less (Han et al., 2020). Therefore, we predict that analysts with

Table 5
Channel of resource constraint.

Dependent Variable:	*Accuracy* (1) Coefficient *t*-Statistic	(2) Coefficient *t*-Statistic	(3) Coefficient *t*-Statistic
Typhoon	-0.096***	-0.088***	-0.104***
	(-2.93)	(-2.65)	(-2.62)
Broker_Capital	-0.143		
	(-0.61)		
Typhoon × *Broker_Capital*	0.051		
	(1.11)		
Broker_StarAnalysts		-0.075	
		(-0.39)	
Typhoon × *Broker_StarAnalysts*		0.001	
		(0.03)	
Broker_ReportNum			-0.212
			(-1.38)
Typhoon × *Broker_ReportNum*			0.025
			(0.66)
Horizon	0.054***	0.054***	0.054***
	(10.37)	(10.34)	(10.29)
TargetYears	0.013	0.013	0.013
	(1.26)	(1.27)	(1.25)
FollowComs	-0.035	-0.035	-0.036
	(-1.18)	(-1.17)	(-1.20)
FollowIndus	-0.143*	-0.145*	-0.149*
	(-1.81)	(-1.81)	(-1.89)
GeneralYears	1.789***	1.789***	1.786***
	(24.03)	(24.02)	(23.91)
AllStar	-0.174	-0.174	-0.173
	(-1.64)	(-1.63)	(-1.62)
BrokerSize	0.199	0.197	0.211
	(1.50)	(1.49)	(1.57)
Firm Fixed Effects	Control	Control	Control
Year Fixed Effects	Control	Control	Control
Analyst Fixed Effects	Control	Control	Control
Adj. R^2	0.241	0.241	0.241
Observations	157088	157088	157088

repeated experience with typhoons can learn to mitigate the effect of a typhoon on their work. We construct two new variables: (1) *#Typhoon*, which is the number of typhoons an analyst has experienced since he began to work, and (2) *D_Typhoon*, which is an indicator equaling one for analysts experiencing more than the median number of typhoons in our sample. We modify Eq. (1) by including the interactions between these two new variables and *Typhoon*. The results are presented in Columns 3 and 4 of Table 3. Both coefficients of the interaction items are significantly positive, opposite to *Typhoon*'s coefficients. The results suggest that analysts experiencing repeated typhoons can learn to weaken the impact of typhoons on their work.

Third, if a firm is located in the city (province) shocked by a typhoon, the forecast of its future earnings would be much more difficult for analysts due to the uncertainty brought by typhoons. It is more salient for analysts whose attention is distracted by typhoons. To verify this expectation, we construct two variables: (1) *Firm_city*, an indicator equaling one for firms whose locations (cities) are shocked by typhoons, and (2) *Firm_prov*, an indicator equaling one for firms whose located provinces are shocked by typhoons. We modify Eq. (1) by including the interactions between these two variables and *Typhoon*. The results are presented in Columns 5 and 6 of Table 3. Both coefficients of the interaction items are significantly negative, the same as *Typhoon*'s coefficients. The results suggest that the effect of a typhoon on analysts' forecast accuracy is more pronounced for firms with higher uncertainty due to the shock of a typhoon, which is consistent with our inference.

Fourth, we test the effect of typhoon strikes on analysts' forecast frequency and dispersion. If the channel of distracted attention works, we expect that typhoons would reduce the frequency of analysts' forecasts and the dispersion of their forecast to the consensus. In Table 4, *Forecast Frequency* measures the number of forecasts by an analyst in a calendar month (taking a log). *Forecast Dispersion* is the absolute value of the difference between an analyst's earnings per share forecast on a target firm with the consensus forecast. The consensus forecast is the average value of the latest earnings forecasts issued by all analysts towards the same target firm within the same calendar month. The results show that all coefficients of *Typhoon* in Columns 1 to 3 (Columns 4 to 6), where the dependent variable is *Forecast Frequency* (*Forecast Dispersion*), are significantly negative, supporting our expectation.

3.3. Exclude alternative explanation of limited access to information

In this section, we test and exclude the alternative explanation of limited access to information. The underlying logic we utilize to test the channel is that if a typhoon damages analysts' forecast accuracy by limiting their access to firms' knowledge, the impact of the

Table 6
Robustness tests.

Dep. Var.	*Accuracy2* (1) Coefficient *t*-Statistic	*Accuracy3* (2) Coefficient *t*-Statistic	*Accuracy* (3) Coefficient *t*-Statistic	(4) Coefficient *t*-Statistic	(5) Coefficient *t*-Statistic	(6) Coefficient *t*-Statistic	(7) Coefficient *t*-Statistic	(8) Coefficient *t*-Statistic	(9) Coefficient *t*-Statistic
Typhoon	-0.080***	-0.101***		-0.020**	-0.030**	-0.106***	-0.088***	-0.190**	-0.165***
	(-2.85)	(-2.93)		(-2.45)	(-2.48)	(-5.40)	(-2.97)	(-2.01)	(-5.99)
Typhoon2			-0.030**						
			(-2.35)						
Horizon	0.047***	0.059***	0.066***	0.093***		0.041***	0.053***	0.002	0.057***
	(10.05)	(10.29)	(19.49)	(7.53)		(10.24)	(10.36)	(0.05)	(24.41)
TargetYears	0.013	0.018*	0.016	0.016	0.016*	-0.013**	0.011	-0.015	0.021**
	(1.52)	(1.67)	(1.60)	(1.29)	(1.67)	(-2.15)	(1.27)	(-0.67)	(2.17)
FollowComs	-0.035	-0.052	-0.043	-0.059*	-0.042	-0.064**	-0.048	-0.087*	-0.155***
	(-1.30)	(-1.58)	(-1.44)	(-1.75)	(-1.41)	(-2.08)	(-1.62)	(-1.68)	(-7.60)
FollowIndus	-0.120*	-0.148*	-0.132*	-0.130	-0.140*	-0.168***	-0.147***	-0.062	-0.126***
	(-1.72)	(-1.70)	(-1.68)	(-1.36)	(-1.81)	(-3.61)	(-2.64)	(-0.46)	(-3.65)
GeneralYears	1.533***	1.950***	1.745***	1.783***	1.726***	1.829***	1.773***	1.392***	1.922***
	(23.05)	(23.68)	(23.37)	(20.80)	(23.19)	(23.06)	(23.95)	(13.37)	(37.31)
AllStar	-0.155	-0.189	-0.172	-0.059	-0.174	-0.185*	-0.184*	-0.339	-0.228***
	(-1.60)	(-1.62)	(-1.62)	(-0.48)	(-1.64)	(-1.72)	(-1.74)	(-1.50)	(-2.77)
BrokerSize	0.119	0.143	0.131	0.128	0.135	0.157	0.144	0.175	0.265***
	(1.04)	(0.97)	(1.00)	(0.89)	(1.04)	(1.01)	(1.06)	(1.07)	(4.21)
Firm FEs	Control	Control	Control	Control	Control		Control	Control	Control
Year FEs	Control	Control	Control	Control				Control	Control
Analyst FEs	Control	Control	Control	Control	Control	Control	Control	Control	Control
Year×Month FEs					Control				
Firm×Year FEs						Control			
Industry×Year FEs							Control		
Adj. R^2	0.235	0.245	0.240	0.253	0.242	0.374	0.254	0.234	0.210
Observations	157088	157088	157088	88918	157088	157088	157088	15108	622871

typhoon would be minimized in brokers with larger scales and greater investments. We measure the budget or ability of a broker related to analysts' work with three variables: (1) *Broker_Capital*, an indicator equaling one for brokers with net capital greater than the sample median; (2) *Broker_StarAnalysts*, an indicator equaling one for brokers with star analysts more than the sample median in the observed year; (3) *Broker_ReportNum*, an indicator equaling one for brokers with forecast reports greater than the sample median. We modify Eq. (1) by including the interactions between these three variables and *Typhoon*. The results are presented in Table 5. All coefficients of the interaction items are statistically insignificant, providing evidence to exclude the alternative channel.

3.4. Robustness tests

We conduct a series of tests to verify the robustness of our conclusion. First, we replace the dependent variable with two new measurements, *Accuracy2* and *Accuracy3* (Han et al., 2020). The results are reported in Columns 1 and 2 of Table 6. Second, we replace the independent variable with *Typhoon2*, measured by the days shocked by a typhoon in a specific month. Column 3 of Table 6 presents the result.

Third, we narrow the event window to three months before and three months after the typhoon shock and report the result in Column 4. Fourth, we use different fixed effects structures in Columns 5 to 7. We add year×month indicators (firm×month indicators; industry×year indicators) in Column 5 (Column 6; Column 7). Sixth, to address the concern that a higher weight would be assigned to analysts issuing more forecasts, we keep one forecast before and one after the typhoon, both the closest to the strike, and rerun the regression. The result is presented in Column 8. Seventh, we keep all observations in the province with at least one typhoon rather than keeping only the cities with typhoons. The result is reported in Column 9. In Table 6, all coefficients of *Typhoon* (*Typhoon2*) are significantly negative, which is consistent with our conclusion. Finally, we conduct the dynamic analyses of the baseline regression. The untabulated result supports the validity of DID model.

4. Conclusion

The theoretical prediction of climate disaster on analyst forecast behavior is left to an empirical question. In this paper, we investigate the effect of typhoon strikes on analysts' forecast accuracy in the context of China. We find that analysts' exposure to typhoon strikes results in decline in their forecast quality. We attribute this to analysts' limited attention by providing evidence that: (1) analysts strategically allocate their attention to firms with more extensive institutional ownership; (2) analysts experiencing repeated typhoons would be less affected by the strikes; (3) analysts' forecasts on firms shocked by typhoons document a greater decline of quality. Our finding provides a plausibly causal effect of climate disaster on analyst forecast with the staggered strikes of the typhoon.

Author statement

All the authors declare that the work described was original research that has not been published previously, and not under consideration for publication elsewhere, in whole or in part. There is no conflict of interest within our paper submission. And the manuscript is approved by all authors for publication.

Data availability

Data will be made available on request.

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