Managerial Learning from Analyst Feedback to Voluntary Capex Guidance, Investment Efficiency, and Firm Performance

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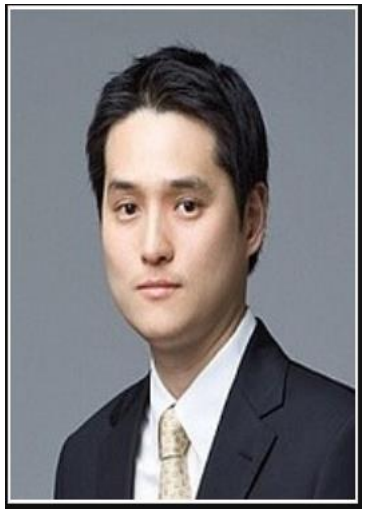

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Publications:

- Bae, J., & Joo, J. H. (2021). CEO turnover, leadership vacuum, and stock market reactions. Applied Economics, 53(58), 6752-6769.

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- University of Melbourne
- **Research Interests**:
- Value Creation;
- Boards of Directors

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Publications:

- Does a liability of foreignness in liquidity apply to US IPOs?
- Further Analyses and Robustness Checks Addendum to: “Accounting Conservatism and Bankruptcy Risk”

1.Introduction

To help explain why managers make voluntary disclosures when doing so exposes them to monitoring,analysis, and potentially negative short-run shareprice reactions, Langberg and Sivaramakrishnan (2010)model a two-way flow of information where in voluntary disclosures by managers attract analyst feedback that informs more efficient investments that increase firm value.

- Prior studies show that voluntary management disclosures can convey value-relevant information to capital markets (e.g., Healy and Palepu 2001) and that share price reactions to these disclosures can inform managers (e.g., Luo 2005, Chenet al . 2007, Bakke and Whited 2010, Jayaraman and Wu 2020).

- Studies by Hutton et al. (2012), Kadan et al. (2012), and Choi et al. (2020) argue that analysts' experience and expertise in assessing industry-level and macroeconomic factors may give them informational advantages over managers. Other studies argue that analysts merely transmit information from managers to markets.

- Further, largely unaddressed is whether managers learn from analyst feedback regarding capex guidance,as Langberg and Sivaramakrishnan (2010) propose .

- Thus, we treat managerial learning from voluntary disclosure feedback and learning-related effects on investment efficiency and firm performance as open empirical questions to address.

2.Prior Studies

Voluntary managerial disclosure

Prior studies of voluntary forward-looking managerial disclosures have focused primarily on earnings or earning components guidance (Healy and Palepu.2001, Beyer et al. 2010), providing clear evidence that such guidance is reflected in contemporaneous share price reactions. Unclear is that this finding extends to capex guidance.

Although earnings and capex guidance can both be argued to enhance transparency, timeliness, and monitoring by enabling ex post comparisons with actual realizations, they differ in several important respects.

- Capex is not implicitly directional like earnings in its firm value implications.
- Capex provides considerable discretion for managerial adjustment based on analyst feedback, whereas earnings, although to a degree discretionary.
- Capex amounts and components are less readily observable than earnings

and earnings components, some of which are separately forecasted by analysts .

This discretion and opacity inherent in managerial capex decisions provide incentives for managers to create value by voluntarily issuing capex guidance and attracting analyst forecasts, analyses, and feedback. This feedback can, in turn, inform managers' capex decisions (Langberg and Sivaramakrishnan 2010).

Capital investment efficiency

It is enhanced by higher-quality financial reporting(e.g., Biddle and Hilary 2006, Biddle et al. 2009), management forecast quality (e.g.,Goodman et al. 2014), and accounting conservatism(e.g., Lara et al. 2016),analyst coverage and expertise.

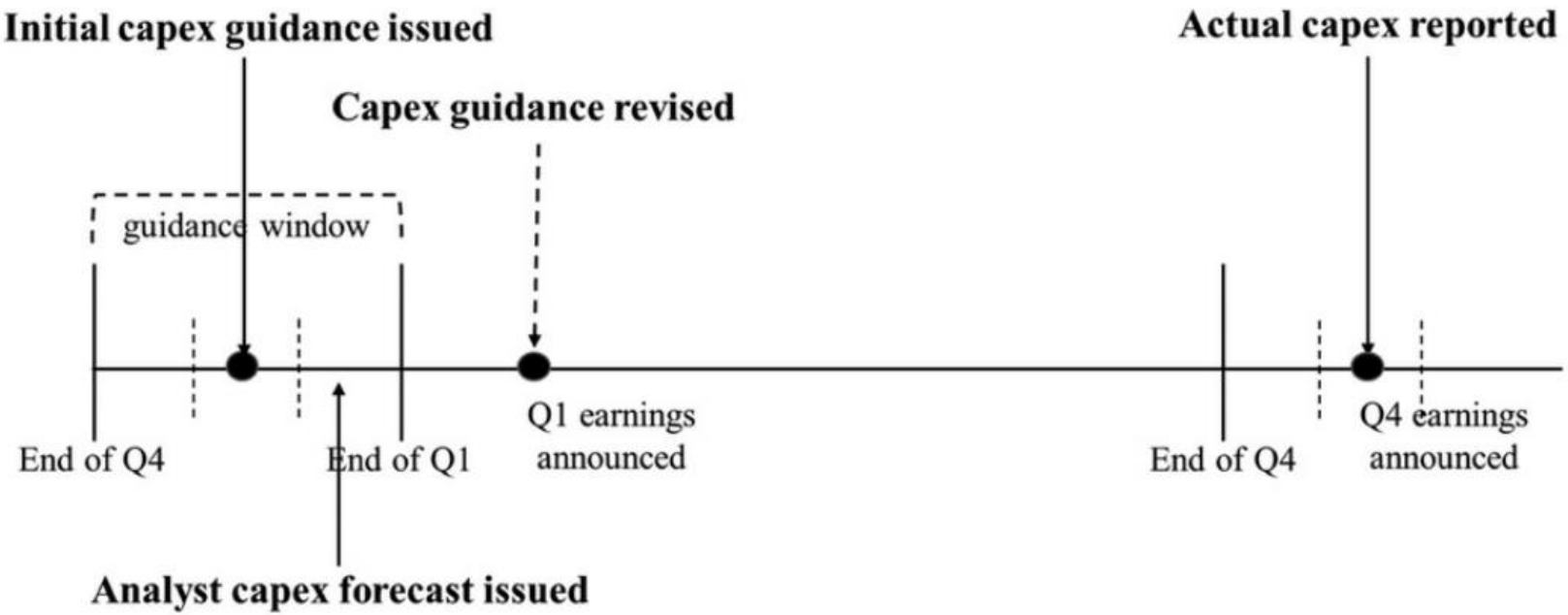
Although these studies are suggestive of conditions conducive to managerial learning from analyst feedback, none directly test for investment efficiency-enhancing managerial learning from analyst feedback to voluntary guidance issuance as predicted by Langberg and Sivaramakrishnan (2010).

Analyst feedback

Choi et al.(2020) show that analyst capex forecasts contain information that can help facilitate more efficient capital investments, there by countervailing other evidence that analysts are informationally disadvantaged relative to managers.Their findings that analyst capex forecast informativeness relates to analyst abilities and that the presence of capex forecasts helps mitigate both over and under investment are consistent with the potential for managerial learning from analyst feedback to capex guidance, which is our focus.

3. Research Design

Time Line

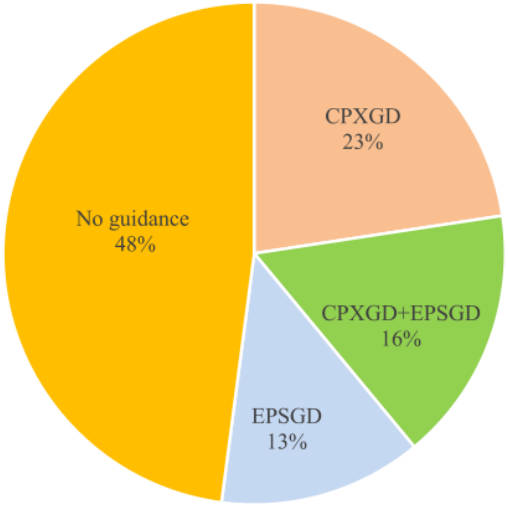


- 数据来源：
- Institutional Broker's Estimate System (IBES) Guidance data
- Compustat
- Center for Research in Security Prices (CRSP) data

- 对2009-2014年美国上市公司的6430个公司年观察样本进行了实证分析。

Table 1. (Color online) Sample Distributions

Panel A: Proportions of capex guidance and earnings guidance



Panel B: Distributions of capex guidance and earnings guidance by year

Year	Total	(1)		(2)		(1)–(2)
		$CPXGD_t = 1$	$CPXGD$ (%)	$EPSGD_t = 1$	$EPSGD$ (%)	(% p)
2009	842	324	38.5	234	27.8	10.7***
2010	976	381	39.0	284	29.1	9.9***
2011	1,053	418	39.7	312	29.6	10.1***
2012	1,185	486	41.0	365	30.8	10.2***
2013	1,212	475	39.2	360	29.7	9.5***
2014	1,162	423	36.4	341	29.3	7.1***
Total	6,430	2,507	39.0	1,896	29.5	9.5***

Panel C: Distributions of capex guidance and earnings guidance by industry

Industry	Total	(1)		(2)		(1)–(2)
		$CPXGD_t = 1$	$CPXGD$ (%)	$EPSGD_t = 1$	$EPSGD$ (%)	(% p)
Chemicals	282	129	45.7	100	35.5	10.3***
Computers	1,110	256	23.1	283	25.5	−2.4
Durable manufacturers	1,679	595	35.4	599	35.7	−0.2
Extractive industries 采掘业	572	369	64.5	20	3.5	61.0***
Food	251	105	41.8	90	35.9	6.0**
Mining and construction 采矿和建筑	139	45	32.4	0	0.0	32.4***
Pharmaceuticals 医药	438	85	19.4	153	34.9	−15.5***
Retail	681	410	60.2	276	40.5	19.7***
Services	780	273	35.0	261	33.5	1.5
Textiles and printing 纺织和印刷	222	129	58.1	81	36.5	21.6***
Transportation	276	111	40.2	33	12.0	28.3***
Total	6,430	2,507	39.0	1,896	29.5	9.5***

资本密集型行业，如采掘业和纺织业的资本支出指导频率相对较高。除了计算机、耐用消费品制造商、服务业和制药业，所有行业的资本支出指导频率都明显高于盈利指导。作者推测，计算机和医药公司较低的资本支出指导频率可能反映了将新技术投资传递给竞争对手的成本可能超过了分析师对资本支出指导反馈的收益。

Panel D: Number of breaks in capex guidance after capex guidance disclosed at least one year

Number of breaks	Total firms		Firms with 6 data years		Firms with 5 data years		Firms with 4 data years	
	N	%	*N*	%	*N*	%	*N*	%
0	489	55.4	109	59.9	86	45.7	51	32.5
1	321	36.4	63	34.6	79	42.0	77	49.0
2	69	7.8	9	4.9	22	11.7	27	17.2
3	4	0.5	1	0.5	1	0.5	2	1.3
Total	883	100.0	182	100.0	188	100.0	157	100.0

Panel E: Number of breaks in earnings guidance after earnings guidance disclosed at least one year

Number of breaks	Total firms		Firms with 6 data years		Firms with 5 data years		Firms with 4 data years	
	N	%	*N*	%	*N*	%	*N*	%
0	429	71.6	90	62.9	82	66.1	65	66.3
1	155	25.9	44	30.8	38	30.6	32	32.7
2	15	2.5	9	6.3	4	3.2	1	1.0
3	0	0.0	0	0.0	0	0.0	0	0.0
Total	599	100.0	143	100.0	124	100.0	98	100.0

Table 2. Summary Statistics

	(1) $CPXGD_t = 1$ ($N = 2{,}507$)		(2) $CPXGD_t = 0$ ($N = 3{,}923$)	
Variables	Mean	Median	Mean	Median
$INVEFF_t$	−12.802	−11.136	−17.358	−12.868
EPSGD	0.418	0.000	0.218	0.000
CPXGD	0.874	1.000	0.157	0.000
INSTOWN	0.604	0.763	0.530	0.635
ANALYST	1.487	1.386	1.277	1.099
FRQ	−0.042	−0.028	−0.061	−0.037
LEV	0.239	0.228	0.194	0.155
FREECF	0.363	0.107	0.825	0.137
STDCPX	9.809	5.876	16.831	8.297
STDRET	0.129	0.118	0.134	0.124
CAPINT	0.342	0.263	0.223	0.131
ROA	0.052	0.057	0.025	0.051
MTB	2.695	2.088	2.813	2.127
RISKIND	0.296	0.000	0.429	0.000
DISSEM_MEDIA	0.122	0.000	0.004	0.000

Hypothesis 1a. Managerial capex guidance forecast errors are positively associated with differences between postguidance analyst capex forecasts and capex guidance.

Hypothesis 1b. Managerial capex guidance revisions are positively associated with differences between postguidance analyst capex forecasts and capex guidance.

$$
\begin{aligned}
&CPXGD\_ERR_{i,t} \ (\text{or}\, CPXGD\_REV_{i,t}) \\
&\quad = \beta_0 + \beta_1 FEEDBACK_{i,t} + \beta_2 INDCPXGROWTH_{i,t} \\
&\qquad + \beta_3 CPXGROWTH\_Q1_{i,t} \\
&\qquad + \beta_4 CAR\_5DAY_{i,t} + Industry\,FE + Year\,FE \\
&\qquad + Industry \times Year\,FE + \varepsilon_{i,t}, \qquad (1)
\end{aligned}
$$

Table 3. Tests of Hypothesis 1—Analyst Feedback and Capex Guidance Forecast Errors and Revisions

		(1) Actual capex adjustment		(2) Capex guidance revision	
		Dependent variable = $CPXGD\_ERR_t$		Dependent variable = $CPXGD\_REV_t$	
Variables	Prediction	Coefficient	*t* statistic	Coefficient	*t* statistic
INTERCEPT		0.819	0.38	−0.355	−0.62
$FEEDBACK_t$	+	0.576	5.33***	0.057	2.89***
$INDCPXGROWTH_t$		0.023	2.13**	0.001	0.43
$CPXGROWTH\_Q1_t$		0.017	6.40***	0.002	3.02***
CAR_5DAY_t		0.243	1.36	0.074	1.10
Fixed effects		*Industry, Year, Industry × Year*		*Industry, Year, Industry × Year*	
N		2,117		1,708	
R^2		0.253		0.117	

Hypothesis 2. Capital investment efficiency changes are positively related to postguidance analyst capex forecast deviations from capex guidance.

$$CPX_{i,t} = \beta_0 + \beta_1 TOBINQ_{i,t-1} + \beta_2 CF_{i,t} + \varepsilon_{i,t}, \quad (2)$$

$$\begin{aligned} INVEFF\_DIFF\_ACTUAL\_MF_{i,t} &= \beta_0 + \beta_1 FEEDBACK\_DEV_{i,t} \\ &+ \beta_2 PSEUDOFEEDBACK\_DEV_{i,t} \\ &+ \beta_3 CHGEPSGD_{i,t-1} \\ &+ \beta_4 CHGEPSGD_{i,t-1} \times CHGEPSGACC_{i,t-1} \\ &+ \beta_5 CHGINSTOWN_{i,t-1} + \beta_6 CHGANALYST_{i,t-1} \\ &+ \beta_7 CHGFRQ_{i,t-1} + \beta_8 CHGLEV_{i,t-1} \\ &+ \beta_9 CHGFREECF_{i,t-1} + \beta_{10} CHGSTDCPX_{i,t-1} \\ &+ \beta_{11} CHGTOBINQ_{i,t-1} + \beta_{12} CHGCF_{i,t} \\ &+ Industry\ FE + Year\ FE \\ &+ Industry \times Year\ FE + \varepsilon_{i,t}, \end{aligned} \quad (3)$$

Table 4. Tests of Hypothesis 2—Analyst Feedback and Investment Efficiency Changes

		Dependent variable = $INVEFF\_DIFF\_ACTUAL\_MF_t$	
Variables	Prediction	Coefficient	*t* statistic
INTERCEPT		−1.575	−1.53
$FEEDBACK\_DEV_t$	+	0.510	4.74***
$PSEUDOFEEDBACK\_DEV_t$	+	0.108	1.45*
CHGEPSGD		−0.021	−0.03
CHGEPSGD × *CHGEPSGACC*		12.616	1.00
CHGINSTOWN		−3.965	−1.60
CHGANALYST		−0.289	−0.99
CHGFRQ		−3.342	−0.75
CHGLEV		−1.269	−0.33
CHGFREECF		−0.318	−1.27
CHGSTDCPX		0.005	0.26
CHGTOBINQ		0.086	0.85
$CHGCF_t$		0.022	0.08
Fixed effects		*Industry, Year, Industry* × *Year*	
Difference test			
$FEEDBACK\_DEV_t - PSEUDOFEEDBACK\_DEV_t$	+	0.402***	
N		4,796	
R^2		0.053	

Hypothesis 3a. Firm financial performance is positively related to the predicted values of capex forecast errors.

Hypothesis 3b. Firm financial performance is positively related to the predicted values of capex guidance revisions.

$$
\begin{aligned}
&ROA\,(CFO)_{i,t+1} \\
&\quad = \beta_0 + \beta_1 PredCPXGD\_ERR_{i,t}\,(PredCPXGD\_REV_{i,t}) \\
&\qquad + \beta_2 LOGMV_{i,t} + \beta_3 BTM_{i,t} + \beta_4 ROA_{i,t} \\
&\qquad + \beta_5 CFO_{i,t} + Industry\,FE + Year\,FE \\
&\qquad + Industry \times Year\,FE + \varepsilon_{i,t}. \qquad (4)
\end{aligned}
$$

Table 5. Tests of Hypothesis 3—Capex Adjustments and Firm Financial Performance

Panel A. *PredCPXGD_ERR*

		(1) Actual capex adjustment		(2) Capex guidance revision	
		Dependent variable = ROA_{t+1}		Dependent variable = CFO_{t+1}	
Variables	Prediction	Coefficient	*t* statistic	Coefficient	*t* statistic
INTERCEPT		−0.015	−0.80	0.096	4.45***
$PredCPXGD\_ERR_t$	+	0.001	2.97***	0.000	1.73**
$LOGMV_t$		0.004	4.27***	0.000	−0.84
BTM_t		−0.036	−6.13***	0.132	4.84***
ROA_t		0.398	8.82***	−0.022	−5.31***
CFO_t		0.239	6.46***	0.550	17.18***
Fixed effects		*Industry, Year, Industry × Year*		*Industry, Year, Industry × Year*	
N		2,117		2,117	
R^2		0.477		0.562	

Panel B. *PredCPXGD_REV*

		(1) Actual capex adjustment		(2) Capex guidance revision	
		Dependent variable = ROA_{t+1}		Dependent variable = CFO_{t+1}	
Variables	Prediction	Coefficient	*t* statistic	Coefficient	*t* statistic
INTERCEPT		–0.001	–0.07	0.102	4.00***
$PredCPXGD\_REV_t$	+	0.016	3.03***	0.010	2.48***
$LOGMV_t$		0.005	4.20***	0.000	–0.87
BTM_t		–0.039	–5.70***	–0.023	–4.88***
ROA_t		0.363	7.50***	0.137	4.34***
CFO_t		0.246	6.17***	0.532	15.27***
Fixed effects		*Industry, Year, Industry × Year*		*Industry, Year, Industry × Year*	
N		1,708		1,708	
R^2		0.458		0.558	

Table 6. Textual Analyses of Tone in Analysts' Questions Regarding Capex Guidance During Conference Calls

Panel A. Means (N = 6,430)

	(1) $CPXGD_t$ = 1 (N = 2,507)	(2) $CPXGD_t$ = 0 (N = 3,923)	(1)–(2)
$QUEST\_NUM_t$	0.703	0.229	0.474***
$NEGTONEQUEST\_NUM_t$	0.299	0.095	0.204***
$QUEST\_D_t$	0.391	0.153	0.238***
$NEGTONEQUEST\_D_t$	0.212	0.073	0.139***

Panel B. The Relation Between Feedback Deviation and Incidence of Analysts' Negative-Tone Questions

		Dependent variable = $FEEDBACK\_DEV_t$	
Variables	Prediction	Coefficient	t statistic
INTERCEPT		3.131	3.13***
$NEGTONEQUEST\_D_t$	+	0.442	1.68**
LOGMV		–0.135	–1.22
ANALYST		–0.379	–1.38
MTB		0.003	0.10
CAPINT		–4.421	–5.55***
STDCPX		0.023	2.00**
$RANGECPX\_D_t$		0.579	1.96*
Fixed effects		*Industry, Year, Industry × Year*	
N		2,117	
R^2		0.088	

Panel C. Incidence of analysts' negative-tone questions and capex guidance forecast errors (revisions)

		(1) Actual capex adjustment		(2) Capex guidance revision	
		Dependent variable = $ABSCPXGD\_ERR_t$		Dependent variable = $ABSCPXGD\_REV_t$	
Variables	Prediction	Coefficient	*t* statistic	Coefficient	*t* statistic
INTERCEPT		3.502	1.79*	1.196	2.93***
$NEGTONEQUEST\_D_t$	+	0.060	0.16	0.350	2.35***
$ABSINDCPXGROWTH_t$		0.017	1.44	0.003	0.83
$ABSCPXGROWTH\_Q1_t$		0.011	4.4***	0.001	1.85*
CAR_5DAY_t		0.552	1.82*	0.096	1.07
Fixed effects		*Industry, Year, Industry × Year*		*Industry, Year, Industry × Year*	
N		2,117		1,708	
R^2		0.107		0.065	

Panel D. Incidence of analysts' negative-tone questions and capex guidance forecast errors conditional on revisions.

		Actual capex adjustment	
		Dependent variable = $ABSCPXGD\_ERR_t$	
Variables	Prediction	Coefficient	*t* statistic
INTERCEPT		3.000	1.51
$NEGTONEQUEST\_D_t$		−0.520	−1.22
$ABSCPXGD\_REV\_D_t$		0.698	1.90*
$NEGTONEQUEST\_D_t \times CPXGD\_REV\_D_t$	+	1.523	1.94**
$ABSINDCPXGROWTH_t$		0.017	1.48
$ABSCPXGROWTH\_Q1_t$		0.011	4.43***
CAR_5DAY_t		0.547	1.82*
Fixed effects		*Industry, Year, Industry × Year*	
N		2,117	
R^2		0.113	

Panel E. Analysts' feedback measured by incidence of analysts' negative-tone questions and investment efficiency changes

Variables	Prediction	(1) Dependent variable = $INVEFF\_DIFF\_ACTUAL\_MF_t$ Coefficient	t statistic
INTERCEPT		–1.374	–1.39
$NEGTONEQUEST\_D_t$	+	0.775	1.48*
$PSEUDONEGTONEQUEST\_D_t$	+	–0.520	–0.57
CHGEPSGD		–0.183	–0.28
CHGEPSGD × *CHGEPSGACC*		11.348	0.97
CHGINSTOWN		–3.907	–1.56
CHGANALYST		–0.209	–0.67
CHGFRQ		–2.659	–0.59
CHGLEV		–0.190	–0.05
CHGFREECF		–0.296	–1.21
CHGSTDCPX		0.007	0.31
CHGTOBINQ		0.048	0.52
$CHGCF_t$		–0.009	–0.03
Fixed effects		*Industry, Year, Industry* × *Year*	
Difference test			
$NEGTONEQUEST\_D_t$,– $PSEUDONEGTONEQUEST\_D_t$	+	1.295*	
N		4,796	
R^2		0.021	

Table 7. Test of Hypothesis 2 Using Biddle et al. (2009) Conditional Investment Model

		Dependent variable = $CAPX_t$	
Variables	Prediction	Coefficient	*t* statistic
INTERCEPT		0.016	1.04
OVERFIRM		0.021	1.20
$FEEDBACK\_DEC_t$		0.018	2.55**
$FEEDBACK\_ZERO_t$		−0.004	−0.65
$FEEDBACK\_INC_t$	+	0.013	1.72**
$OVERFIRM \times FEEDBACK\_DEC_t$	−	−0.028	−2.35***
$OVERFIRM \times FEEDBACK\_ZERO_t$		0.012	1.01
$OVERFIRM \times FEEDBACK\_INC_t$		−0.015	−1.23
FRQ		−0.110	−2.23**
INSTOWN		0.014	1.97**
ANALYST		0.004	1.15
OVERFIRM × *FRQ*		0.123	1.65
OVERFIRM × *INSTOWN*		−0.019	−1.72*
OVERFIRM × *ANALYST*		−0.006	−0.98
LOGAT		−0.001	−1.05
MTB		0.000	3.83***
STDCFO		0.034	2.20**
STDSALES		−0.009	−2.10**
STDCAPX		0.000	2.36**
ZSCORE		−0.001	−1.23
CAPINT		0.161	19.2***
KSTRUCTURE		−0.051	−6.50***
INDKSTRUCTURE		−0.029	−1.98**
CFO_S		0.003	4.47***
DIV		−0.004	−2.35**
FIRMAGE		0.000	−3.45***
OPCYCLE		0.001	0.97
LOSS		−0.009	−4.58***
Fixed effects		*Industry*, *Year*, *Industry* × *Year*	
Difference test			
$FEEDBACK\_DEC_t + OVERFIRM \times FEEDBACK\_DEC_t$	−	−0.010**	
N		5,668	
R^2		0.593	

Abstract

- We test predictions that managers issuing voluntary capex guidance learn from analyst feedback and that this learning enhances investment efficiency and firm performance.
- Our findings are consistent with these predictions.
- First, we find that managers’capex adjustments and capex guidance revisions relate positively with analyst feedback measured by differences between postguidance analyst capex forecasts and managerial capex guidance.

- Second, changes in investment efficiency relate positively with analyst feedback.
- Third, subsequent firm financial performance relates positively with the predicted values of both managers' capex adjustments and capex guidance revisions.
- These findings extend prior evidence regarding sources of managerial learning and investment efficiency and help to explain the active issuance of voluntary guidance by managers in settings where, as for capex guidance, the potential for managerial learning from related share price effects is limited, as we also explain.

THANKS !