Imprecise and Informative: Lessons from Market Reactions to Imprecise Disclosure

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2022/01/09

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1.Introduction

Background

- academic literature disagrees regarding whether complex language contains more or less information:

1. managers increase the complexity of their disclosures, which increases information asymmetry and decreases valuations.
2. complex language can convey important information that cannot be disclosed in simple terms.

1.Introduction

Research motivation

- To help resolve background from another perspective.

Research approach

1. develop a novel measure of the clarity of financial disclosures — linguistic imprecision.
2. use it to understand the information content of linguistic imprecision.

1.Introduction

Research design for approach 1

- constructing a new dictionary of imprecise words and phrases that draws on Wikipedia's crowdsourced solution to identify the linguistic imprecision.
- generate a measure of linguistic imprecision at the firm-year level by computing the fraction of imprecision keywords in each firm's annual 10-K filing by using our dictionary of imprecision keywords.

1.Introduction

Research design for approach 2

- do 10-week window following the 10-K disclosure and test core variables.
- evaluate the textual content of the disclosures that drive these results.
- conduct a series of heterogeneity tests to shed light into the mechanisms underlying the return reaction to linguistic imprecision.

1.Introduction

Questions

- whether imprecise language in 10-Ks communicates valuable information.
- Market reactions about imprecise language in 10-Ks.

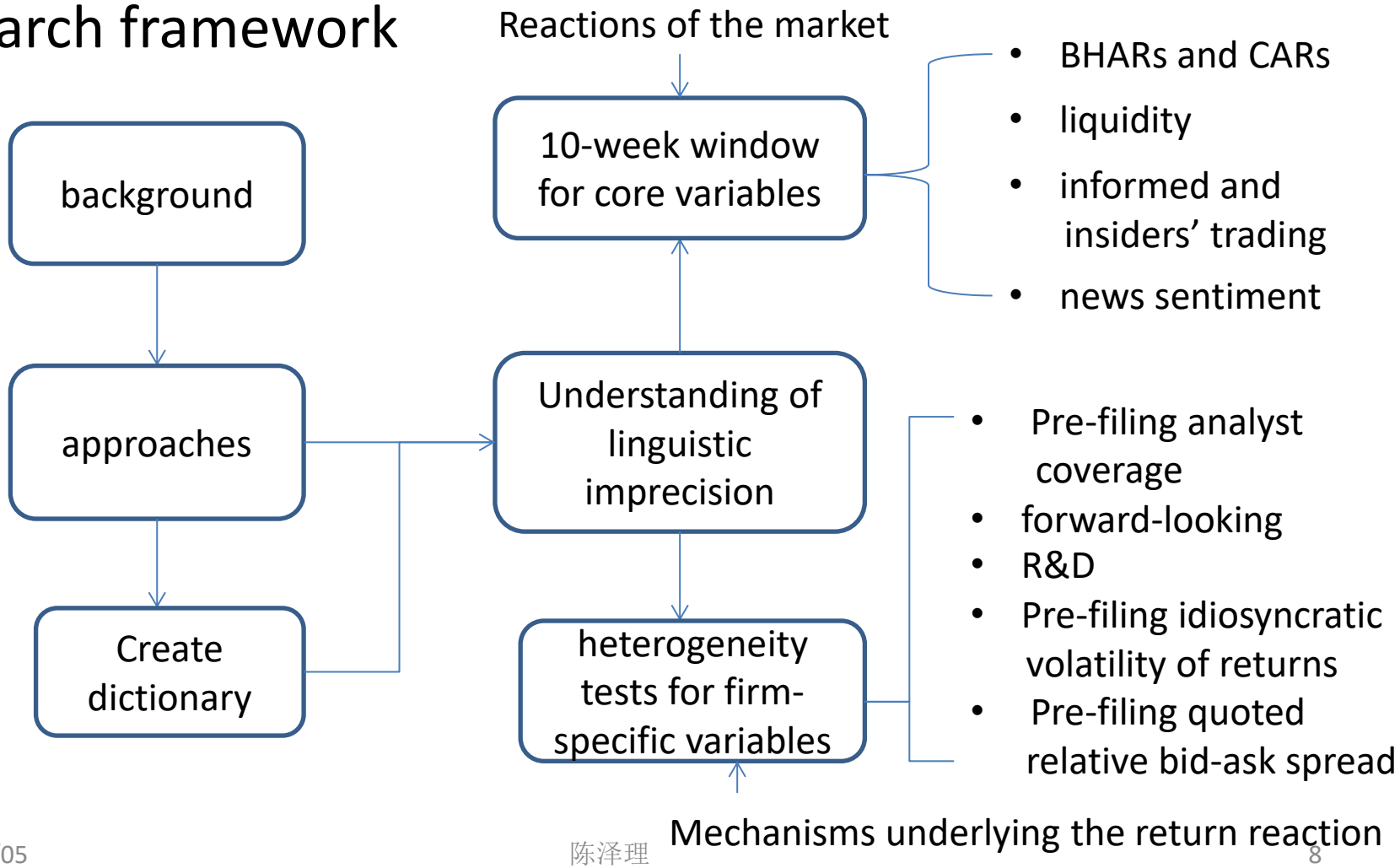
➢ 10-week window for BHARs and core variables.

- Mechanisms underlying the return reaction.

➢ heterogeneity tests for firm-specific variables.

1.Introduction

Research framework



1.Introduction

Contributions

- our evidence on the use of imprecise language in firm disclosures relates to the work on the discretionary disclosure and persuasion through information revelation.
- our measurement and analysis of linguistic imprecision in 10-K disclosures provide a useful perspective on the SEC regulatory mandate to use plain English in firm disclosures.
- our work is a part of a growing literature within finance and accounting that makes use of text descriptions to study important aspects of financial market reactions.

2.Data

construct the dictionary : appeal to Wikipedia

- take the entire Wikipedia articles as our text corpus(17,483,910 articles)
- identify sentences with Weasel tags attached
- compile a list of linguistic imprecision keywords from these weasel-tagged sentences.
- Tag types : numerically vague expressions; the passive voice; adverbs that weaken.

2.Data

Construct the dictionary : appeal to Wikipedia

Examples:

- “The Tic Tok Men”

  Many{{weasel inline—date=March 2009}} consider this album to be the quintessential Tic Tok sound.

- “Manu Parrotlet”

  It has been said{{weasel inline—date=January 2014}} that the Manu parrotlet can be seen along the Man on top of trees across from the Altamira beach about 25 minutes from the Manu Resort.

- “Nathaniel Mather”

  He finished his studies in England probably{{weasel inline—date=January 2014}} returning with his brother [[Samuel Mather (Independent minister)—Samuel]] in 1650.

2.Data

construct the dictionary : appeal to Wikipedia

- Because weasel tags are typically removed after the language is edited and improved, the tags are not frequently observed at any given snapshot of Wikipedia articles.
- We identify 433 sentences with weasel tags from 367 Wikipedia articles after removing corrupt or redundant sentences.

2.Data

construct the dictionary : appeal to Wikipedia

- The numbers of unique and total words in the extracted sentences containing weasel tags are approximately 6,000 and 16,000.
- calculate the frequencies of each word and their bigrams and trigrams.
- extract a control sentence that occurs three sentences later from the same Wikipedia article.
- extract and use only the imprecision keywords that are the most distinctive of the weasel-tagged sentences relative to control sentences.

2.Data

construct the dictionary : appeal to Wikipedia

(i) Top 10 Unigrams, Bigrams, and Trigrams

Rank	Unigrams	Bigrams	Trigrams
1	the	of the	one of the
2	and	in the	it has been
3	some	it is	considered by many
4	that	to be	is considered by
5	was	has been	of the most
6	many	to the	is one of
7	for	for the	it can be
8	with	one of	may have been
9	has	and the	according to some
10	have	that the	be one of

(ii) Top and Bottom 10 Unigrams, Sorted on Saliency

Rank	Top 10 Unigrams	Bottom 10 Unigrams
1	some	the
2	many	and
3	although	for
4	considered	was
5	may	from
6	said	their
7	have	new
8	argued	united
9	believed	also
10	often	first

2.Data

Test data : 10-K filings whose report dates range from 1997 to 2015

- extract the raw counts of how many times a given firm mentions each of the imprecision keywords in a given year.
- After merging with the Compustat and CRSP databases, our data reduces from 219,491 to 46996.

2.Data

Test data : Each variable is winsorized at the top and bottom 1% of its distribution.

Panel A: Textual Tonal Variables

	Mean	Std.Dev	Min	Median	Max	Num. of Obs.
Imprecision	1.387	0.458	0.000	1.471	4.901	46996
Sentiment	-0.716	0.443	-4.362	-0.671	1.670	46996
Uncertain	1.011	0.362	0.000	1.042	3.230	46996
Modal	0.790	0.369	0.000	0.832	2.607	46996
Constraining	0.571	0.245	0.000	0.590	2.116	46996
Litigious	1.207	0.874	0.039	0.966	6.819	46996
Superfluous	0.009	0.011	0.000	0.006	0.253	46996
Interesting	0.123	0.078	0.000	0.115	1.666	46996
Fog	30.416	4.504	14.066	30.145	53.947	46996

3. Empirical results

Return Reaction

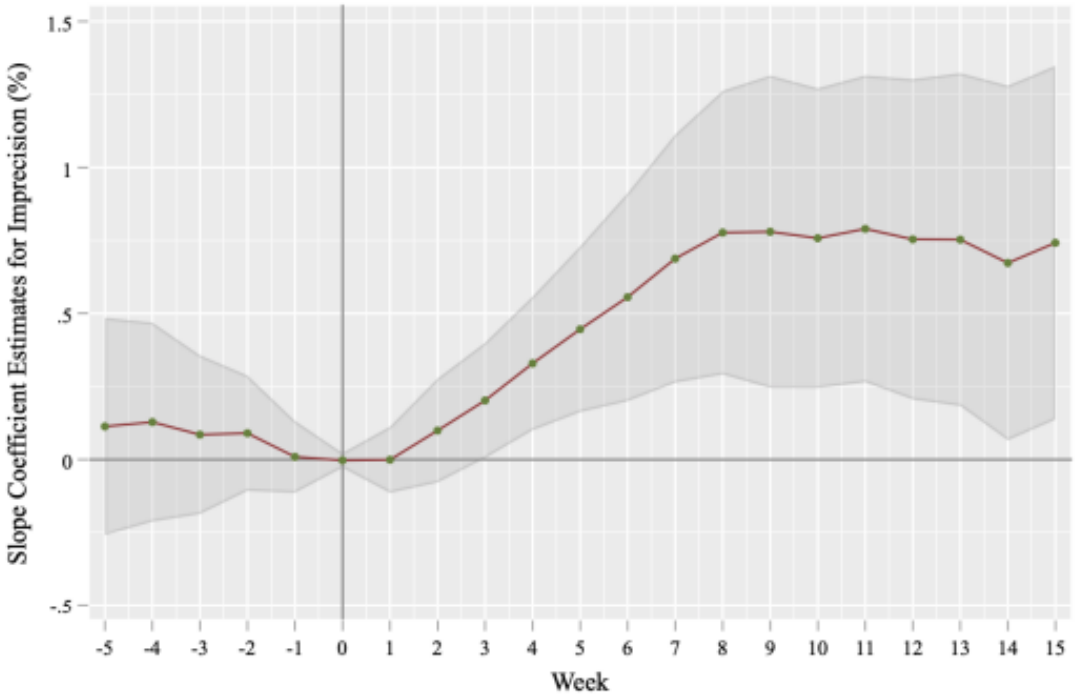
$$BHAR_{itn} = \alpha_n + \beta_n Imprecision_{it} + \eta_n^{'}\mathbf{X}_{it} + \gamma_n RMkt_{tn} + \epsilon_{itn},$$

Panel A: Weekly BHARs	Dependent variable = BHARs												
	Week(-3)	Week(-2)	Week(-1)	Week(0)	Week(1)	Week(2)	Week(3)	Week(4)	Week(5)	Week(6)	Week(7)	Week(8)	Week(9)
Imprecision(Z)	0.004	-0.084	-0.001	-0.000	-0.001	0.102*	0.128**	0.143***	0.126**	0.115**	0.136**	0.048	0.007
	(0.048)	(0.061)	(0.063)	(0.000)	(0.058)	(0.053)	(0.054)	(0.047)	(0.059)	(0.054)	(0.062)	(0.058)	(0.055)
Sentiment(Z)	0.009	0.029	-0.069	-0.000	-0.009	0.030	-0.002	0.048	-0.070	0.007	0.057	-0.049	-0.045
	(0.048)	(0.041)	(0.058)	(0.000)	(0.048)	(0.044)	(0.044)	(0.036)	(0.050)	(0.055)	(0.043)	(0.039)	(0.036)
nth-week market return(Z)	-0.045	-0.197	0.047	0.000	0.173	-0.141	-0.121	-0.015	-0.013	0.021	0.034	0.084	0.018
	(0.099)	(0.207)	(0.140)	(0.000)	(0.210)	(0.186)	(0.162)	(0.153)	(0.098)	(0.084)	(0.082)	(0.082)	(0.160)
Clustered SE	Firm / Filing year-month												
Observations	42063	42173	42262	42298	41885	41711	41567	41505	41398	41248	41123	41010	40953
Adjusted R^2	0.022	0.013	0.021	1.000	0.003	0.002	0.004	0.002	0.002	0.001	0.001	0.002	0.001

Panel B: Cumulative BHARs	Dependent variable = Cumulative BHARs												
	Week[-3,0]	Week[-2,0]	Week[-1,0]	Week[0,0]	Week[1,1]	Week[1,2]	Week[1,3]	Week[1,4]	Week[1,5]	Week[1,6]	Week[1,7]	Week[1,8]	Week[1,9]
Imprecision(Z)	0.085	0.090	0.009	-0.003	-0.001	0.099	0.202**	0.329***	0.446***	0.556***	0.688***	0.777***	0.780***
	(0.139)	(0.101)	(0.063)	(0.013)	(0.058)	(0.091)	(0.101)	(0.117)	(0.145)	(0.182)	(0.217)	(0.248)	(0.273)
Sentiment(Z)	-0.068	-0.038	0.016	-0.030**	-0.009	0.037	0.058	0.108	0.047	0.057	0.110	0.093	0.026
	(0.100)	(0.069)	(0.053)	(0.013)	(0.048)	(0.064)	(0.076)	(0.080)	(0.100)	(0.127)	(0.156)	(0.178)	(0.190)
nth-week cumulative	0.563*	0.366	0.153	0.033	0.173	0.278	0.395	0.474	0.682	0.997**	1.063**	1.246**	1.602***
market return(Z)	(0.321)	(0.257)	(0.114)	(0.020)	(0.210)	(0.269)	(0.306)	(0.356)	(0.416)	(0.445)	(0.468)	(0.534)	(0.525)
Clustered SE	Firm / Filing year-month												
Observations	42010	42156	42262	42298	41885	41681	41498	41376	41116	40909	40723	40570	40397
Adjusted R^2	0.225	0.280	0.395	0.923	0.003	0.003	0.005	0.005	0.007	0.010	0.009	0.010	0.012

3. Empirical results

Return Reaction



3. Empirical results

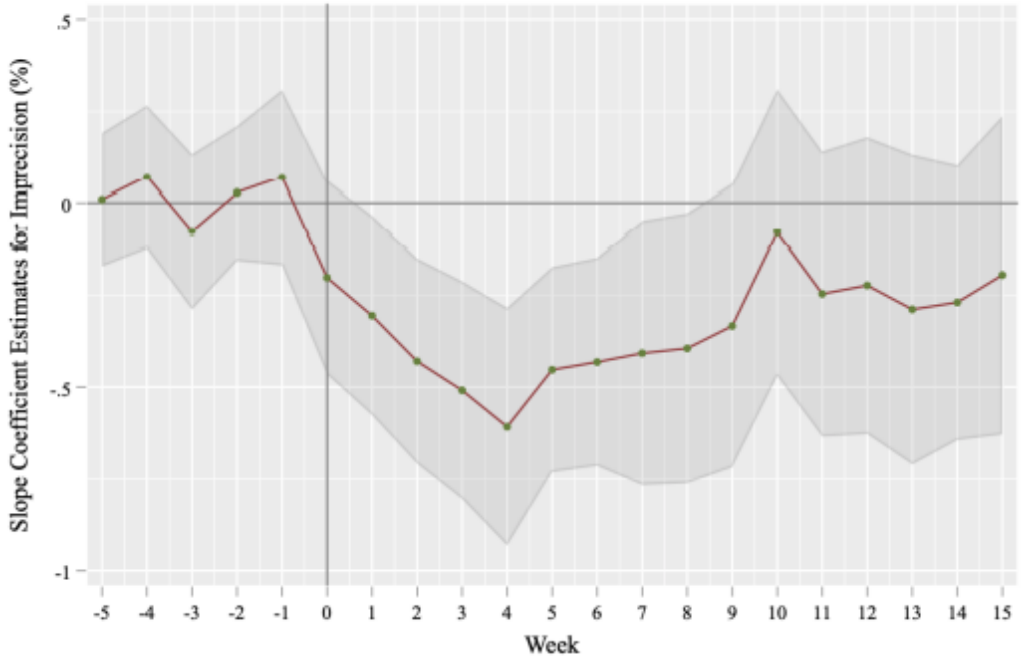
Liquidity Reaction

$$Spread_{itn} = \alpha_n + \beta_n Imprecision_{it} + \eta_n^{'}\mathbf{X}_{it} + \epsilon_{itn},$$

	Dependent variable = Quoted relative bid-ask spread												
	Week(-3)	Week(-2)	Week(-1)	Week(0)	Week(1)	Week(2)	Week(3)	Week(4)	Week(5)	Week(6)	Week(7)	Week(8)	Week(9)
Imprecision(Z)	-0.078	0.026	0.069	-0.203	-0.306**	-0.430***	-0.509***	-0.608***	-0.453***	-0.432***	-0.408**	-0.395**	-0.334*
	(0.108)	(0.094)	(0.122)	(0.134)	(0.138)	(0.142)	(0.151)	(0.165)	(0.142)	(0.144)	(0.183)	(0.187)	(0.196)
Sentiment(Z)	-0.012	-0.076	0.037	-0.005	0.105	0.090	0.104	-0.179	-0.009	-0.135	-0.320*	-0.397**	-0.175
	(0.104)	(0.123)	(0.110)	(0.175)	(0.134)	(0.136)	(0.155)	(0.171)	(0.159)	(0.186)	(0.181)	(0.179)	(0.189)
Pre-filing spread(Z)	49.655***	48.158***	46.462***	41.002***	39.534***	37.737***	36.937***	36.188***	35.278***	34.365***	32.573***	31.836***	31.554***
	(0.337)	(0.410)	(0.501)	(0.742)	(0.764)	(0.935)	(1.026)	(1.115)	(1.241)	(1.269)	(1.421)	(1.508)	(1.585)
Fixed effect	Firm / Filing year-month												
Clustered SE	Firm / Filing year-month												
Observations	40541	40645	40734	40771	39335	39249	39192	39185	39177	39113	39096	39062	39085
Adjusted R^2	0.939	0.937	0.933	0.87	0.896	0.887	0.883	0.88	0.876	0.871	0.865	0.86	0.853

3. Empirical results

Liquidity Reaction



3. Empirical results

Informed Traders' Reactions

$$Probability\ of\ informed\ buying_{itn} = \alpha_n + \beta_n Imprecision_{it} + \eta_n^{'}\mathbf{X}_{it} + \epsilon_{itn},$$

	Dependent variable = Probability of informed buying												
	Week(-3)	Week(-2)	Week(-1)	Week(0)	Week(1)	Week(2)	Week(3)	Week(4)	Week(5)	Week(6)	Week(7)	Week(8)	Week(9)
Imprecision(Z)	-0.248	-0.041	0.108	0.613**	0.659***	0.408**	0.443**	0.502**	0.394**	0.369*	0.338	0.222	0.171
	(0.182)	(0.203)	(0.183)	(0.285)	(0.203)	(0.200)	(0.194)	(0.213)	(0.190)	(0.214)	(0.216)	(0.238)	(0.211)
Sentiment(Z)	-0.051	-0.274***	-0.147	-0.425**	-0.309**	-0.059	-0.057	-0.117	-0.081	0.287**	0.123	-0.157	0.139
	(0.096)	(0.102)	(0.125)	(0.199)	(0.149)	(0.144)	(0.140)	(0.171)	(0.165)	(0.134)	(0.149)	(0.181)	(0.146)
Pre-filing informed buying(Z)	16.496***	15.763***	14.564***	8.613***	6.509***	5.351***	4.334***	3.419***	2.275***	1.607***	1.206***	1.008***	0.650***
	(0.152)	(0.188)	(0.188)	(0.215)	(0.182)	(0.294)	(0.209)	(0.176)	(0.180)	(0.184)	(0.174)	(0.161)	(0.189)
Fixed effect	Filing year-month												
Clustered SE	Firm / Filing year-month												
Observations	33218	33339	33334	32766	31747	31553	31355	31320	31390	31171	31151	30956	31135
Adjusted R^2	0.430	0.396	0.345	0.122	0.087	0.065	0.053	0.055	0.050	0.051	0.054	0.048	0.040

3. Empirical results

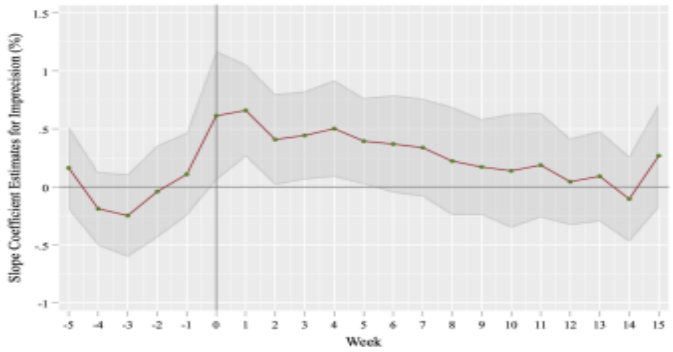
Informed Traders' Reactions

$$Dollar\ volume\ of\ insider\ buying_{itn} = \alpha_n + \beta_n Imprecision_{it} + \eta_n^{'}\mathbf{X}_{it} + \epsilon_{itn},$$

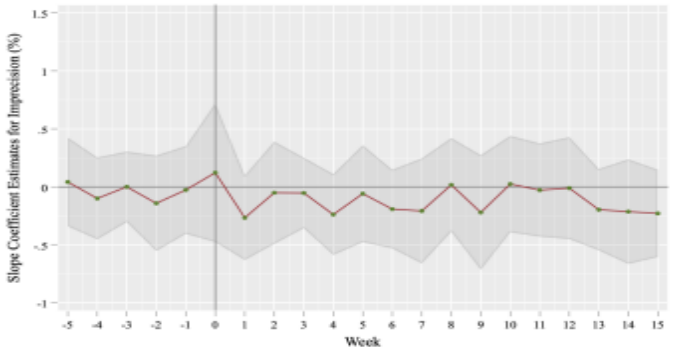
	Dependent variable = Dollar volume of insider buying												
	Week(-3)	Week(-2)	Week(-1)	Week(0)	Week(1)	Week(2)	Week(3)	Week(4)	Week(5)	Week(6)	Week(7)	Week(8)	Week(9)
Imprecision(Z)	23.132***	20.916**	24.360***	24.057***	23.836***	36.369***	49.362***	38.129***	33.601***	20.689**	26.999***	31.381***	26.373***
	(8.383)	(9.050)	(8.240)	(8.270)	(8.248)	(9.516)	(11.488)	(9.980)	(11.170)	(9.184)	(9.639)	(10.816)	(6.931)
Sentiment(Z)	-8.951	-8.446	-0.209	-0.880	-2.867	-7.230	4.575	10.509	-3.294	-5.164	-5.823	-0.732	-2.157
	(6.616)	(7.044)	(7.614)	(8.235)	(7.334)	(8.037)	(9.803)	(7.652)	(8.220)	(6.731)	(6.813)	(6.779)	(5.678)
Fixed effect	Filing year-month												
Clustered SE	Firm / Filing year-month												
Observations	1939	1824	1774	1448	1896	1421	1056	1085	1258	1444	1769	2054	2247
Adjusted R^2	0.141	0.167	0.134	0.124	0.125	0.102	0.146	0.135	0.057	0.079	0.146	0.111	0.152

3. Empirical results

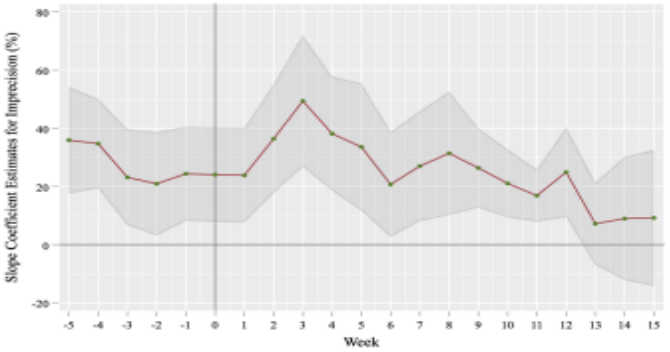
Informed Traders' Reactions



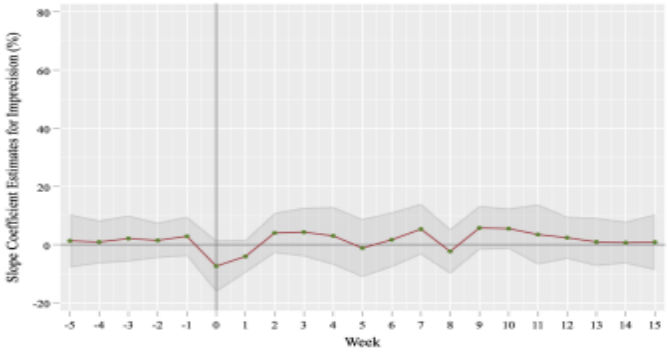
(a) Probability of informed buying



(b) Probability of informed selling



(c) Dollar volume of insider buying



(d) Dollar volume of insider selling

3. Empirical results

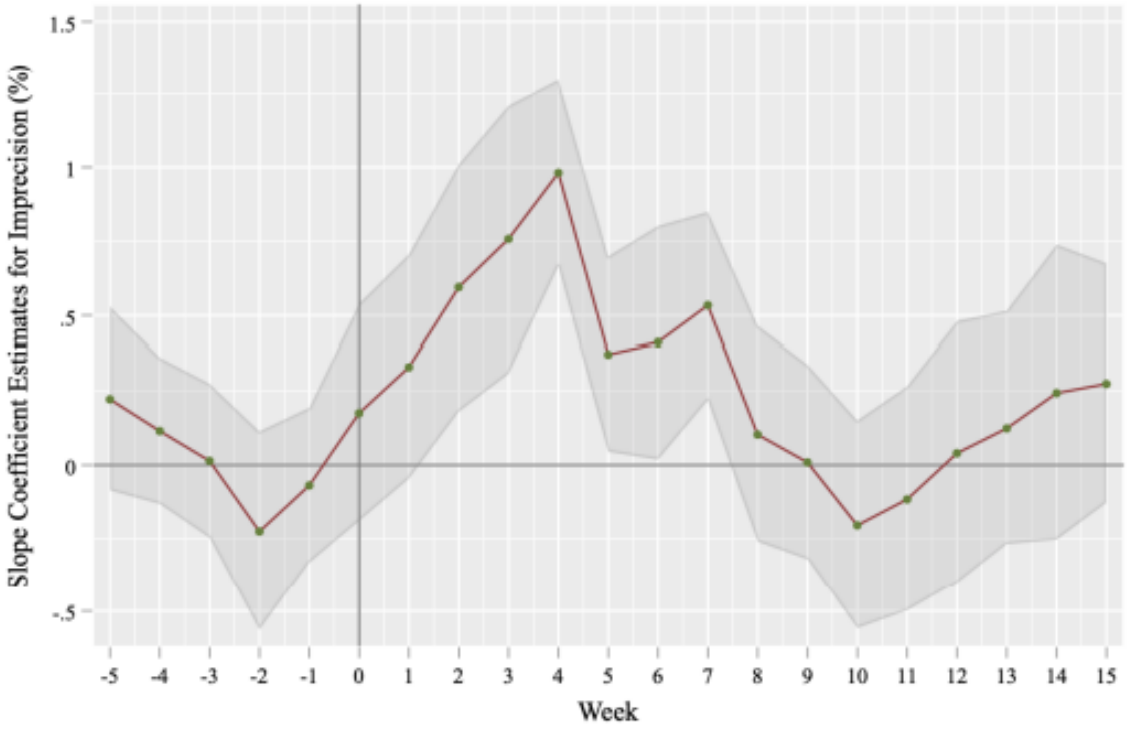
News Sentiment in the Subsequent Periods

$$News\ sentiment_{itn} = \alpha_n + \beta_n Imprecision_{it} + \eta_n^{'}\mathbf{X}_{it} + \gamma_n NSMkt_{tn} + \epsilon_{itn},$$

	Dependent variable = Average news sentiment score												
	Week(-3)	Week(-2)	Week(-1)	Week(0)	Week(1)	Week(2)	Week(3)	Week(4)	Week(5)	Week(6)	Week(7)	Week(8)	Week(9)
Imprecision(Z)	0.014	-0.225	-0.069	0.175	0.330*	0.595***	0.758***	0.981***	0.372**	0.410**	0.534***	0.103	0.009
	(0.133)	(0.173)	(0.134)	(0.186)	(0.192)	(0.212)	(0.230)	(0.161)	(0.167)	(0.200)	(0.161)	(0.185)	(0.168)
Sentiment(Z)	-0.018	-0.244	-0.069	0.003	-0.534**	-0.213	-0.173	0.258	-0.567***	-0.376	-0.341**	0.105	-0.248
	(0.128)	(0.153)	(0.152)	(0.222)	(0.210)	(0.266)	(0.193)	(0.172)	(0.204)	(0.234)	(0.166)	(0.162)	(0.239)
Pre-filing news sentiment(Z)	13.552***	13.777***	14.141***	2.636***	2.865***	2.840***	2.536***	2.628***	2.234***	2.318***	2.609***	2.421***	2.195***
	(0.185)	(0.172)	(0.232)	(0.269)	(0.203)	(0.247)	(0.268)	(0.261)	(0.242)	(0.205)	(0.263)	(0.203)	(0.203)
nth-week market news sentiment(Z)	0.507***	0.198	0.051	0.619**	-0.139	0.307	0.168	0.372**	-0.033	0.765***	0.391**	0.328	0.493**
	(0.133)	(0.122)	(0.168)	(0.269)	(0.184)	(0.287)	(0.279)	(0.164)	(0.188)	(0.216)	(0.186)	(0.236)	(0.201)
Clustered SE	Firm / Filing year-month												
Observations	21632	21499	22047	18274	19146	18568	19093	19208	20189	21266	21833	21886	21232
Adjusted R^2	0.310	0.324	0.349	0.027	0.024	0.022	0.021	0.021	0.019	0.017	0.018	0.014	0.012

3. Empirical results

News Sentiment in the Subsequent Periods



3. Empirical results

Firm Heterogeneous Effects

$$Cumlative\ BHAR_{itn} = \alpha_n + \beta_n Imprecision_{it} + \eta_n^{'}\mathbf{X}_{it} + \gamma_n Cumulative\ RMkt_{tn} + \epsilon_{itn},$$

		Dependent variable = Cumulative BHARs												
Subsamples by		Week[-3,0]	Week[-2,0]	Week[-1,0]	Week[0,0]	Week[1,1]	Week[1,2]	Week[1,3]	Week[1,4]	Week[1,5]	Week[1,6]	Week[1,7]	Week[1,8]	Week[1,9]
Panel A: Forward-looking disclosure														
High	Imprecision(Z)	0.095	0.077	0.028	0.009	0.079	0.211*	0.290**	0.448**	0.582***	0.718***	0.940***	0.999***	1.063***
		(0.168)	(0.121)	(0.087)	(0.017)	(0.067)	(0.126)	(0.148)	(0.178)	(0.187)	(0.208)	(0.251)	(0.276)	(0.295)
Low	Imprecision(Z)	0.012	0.059	-0.058	-0.016	-0.035	0.057	0.158	0.205	0.236	0.243	0.332	0.453	0.441
		(0.139)	(0.103)	(0.063)	(0.015)	(0.074)	(0.116)	(0.142)	(0.175)	(0.209)	(0.250)	(0.285)	(0.320)	(0.341)
Panel B: R&D disclosure														
High	Imprecision(Z)	0.249	0.206	0.054	-0.011	0.024	0.191	0.307**	0.392**	0.506***	0.602***	0.834***	0.959***	1.008***
		(0.187)	(0.138)	(0.091)	(0.017)	(0.077)	(0.118)	(0.155)	(0.177)	(0.195)	(0.214)	(0.255)	(0.289)	(0.309)
Low	Imprecision(Z)	-0.158	-0.087	-0.079	0.003	-0.027	0.034	0.111	0.206	0.280	0.346	0.434	0.489	0.438
		(0.139)	(0.107)	(0.062)	(0.016)	(0.089)	(0.145)	(0.164)	(0.182)	(0.220)	(0.277)	(0.317)	(0.353)	(0.370)
Panel C: Pre-filing idiosyncratic volatility of returns														
High	Imprecision(Z)	0.106	0.121	0.047	0.014	0.004	0.166	0.233	0.362**	0.466**	0.573**	0.682**	0.757**	0.812**
		(0.193)	(0.137)	(0.094)	(0.024)	(0.087)	(0.135)	(0.165)	(0.183)	(0.216)	(0.250)	(0.300)	(0.357)	(0.394)
Low	Imprecision(Z)	0.039	0.042	0.067	0.009	-0.027	0.015	0.139	0.213*	0.368**	0.513***	0.593***	0.650***	0.660***
		(0.102)	(0.080)	(0.051)	(0.007)	(0.053)	(0.090)	(0.112)	(0.120)	(0.143)	(0.176)	(0.196)	(0.209)	(0.226)
Panel D: Pre-filing analyst coverage														
Absence	Imprecision(Z)	0.231	0.203	0.054	0.007	0.092	0.150	0.297**	0.430**	0.553***	0.687***	0.837***	0.976***	1.000***
		(0.145)	(0.126)	(0.086)	(0.021)	(0.077)	(0.128)	(0.149)	(0.171)	(0.206)	(0.239)	(0.259)	(0.287)	(0.325)
Presence	Imprecision(Z)	0.063	0.073	0.011	-0.004	-0.033	0.114	0.175	0.317**	0.417***	0.519***	0.648***	0.710***	0.717**
		(0.156)	(0.105)	(0.064)	(0.015)	(0.058)	(0.094)	(0.113)	(0.126)	(0.158)	(0.193)	(0.232)	(0.262)	(0.280)
Panel E: Pre-filing quoted relative bid-ask spread														
Hgih	Imprecision(Z)	0.048	0.068	0.016	-0.002	0.046	0.230	0.355**	0.465**	0.563**	0.716**	0.883**	1.009***	1.014**
		(0.141)	(0.120)	(0.077)	(0.021)	(0.081)	(0.147)	(0.165)	(0.181)	(0.228)	(0.290)	(0.343)	(0.388)	(0.433)
Low	Imprecision(Z)	0.059	0.079	-0.023	-0.001	-0.000	0.084	0.093	0.224*	0.332**	0.357**	0.517***	0.590***	0.597***
		(0.162)	(0.106)	(0.068)	(0.015)	(0.052)	(0.079)	(0.111)	(0.128)	(0.143)	(0.158)	(0.179)	(0.186)	(0.198)

3. Empirical results

Decomposition with Forward-looking Disclosure

$$BHAR_{itn} = \alpha_n + \beta_n Imprecision_{jt}^{FW} + \delta_n Imprecision_{it}^{-FW} + \gamma_{1n}' \mathbf{X}_{it} + \gamma_n RMkt_{tn} + \epsilon_{itn},$$

Panel A: Weekly BHARs	Dependent variable = BHARs												
	Week(-3)	Week(-2)	Week(-1)	Week(0)	Week(1)	Week(2)	Week(3)	Week(4)	Week(5)	Week(6)	Week(7)	Week(8)	Week(9)
$Imprecision^{FW}$(Z)	0.006	0.106	0.001	0.000	0.003	0.097	0.097**	0.146**	0.120**	0.110*	0.121*	0.067	0.014
	(0.054)	(0.071)	(0.063)	(0.000)	(0.071)	(0.062)	(0.047)	(0.056)	(0.058)	(0.062)	(0.063)	(0.068)	(0.069)
$Imprecision^{-FW}$(Z)	0.004	-0.045	-0.006	-0.000	-0.015	0.146***	0.121***	0.127***	0.126**	0.120**	0.115**	0.034	0.022
	(0.049)	(0.056)	(0.052)	(0.000)	(0.048)	(0.049)	(0.045)	(0.037)	(0.051)	(0.050)	(0.047)	(0.047)	(0.044)
Sentiment(Z)	0.011	0.012	-0.069	-0.000	-0.012	0.035	0.007	0.059	-0.071	0.012	0.065	-0.039	-0.040
	(0.048)	(0.039)	(0.057)	(0.000)	(0.045)	(0.043)	(0.043)	(0.036)	(0.051)	(0.055)	(0.042)	(0.037)	(0.036)
nth-week market return(Z)	-0.045	-0.199	0.047	0.000	0.173	-0.137	-0.122	-0.015	-0.013	0.021	0.033	0.085	0.017
	(0.100)	(0.205)	(0.140)	(0.000)	(0.210)	(0.185)	(0.161)	(0.153)	(0.097)	(0.084)	(0.082)	(0.082)	(0.159)
Clustered SE	Firm / Filing year-month												
Observations	42063	42173	42262	42298	41885	41711	41567	41505	41398	41248	41123	41010	40953
Adjusted R^2	0.022	0.014	0.021	1.000	0.003	0.002	0.005	0.002	0.002	0.001	0.001	0.002	0.001

Panel B: Cumulative BHARs	Dependent variable = Cumulative BHARs												
	Week[-3,0]	Week[-2,0]	Week[-1,0]	Week[0,0]	Week[1,1]	Week[1,2]	Week[1,3]	Week[1,4]	Week[1,5]	Week[1,6]	Week[1,7]	Week[1,8]	Week[1,9]
$Imprecision^{FW}$(Z)	0.043	0.070	-0.017	-0.011	-0.003	0.082	0.155	0.280**	0.380**	0.478**	0.582**	0.683**	0.689**
	(0.125)	(0.098)	(0.061)	(0.015)	(0.071)	(0.105)	(0.118)	(0.127)	(0.154)	(0.189)	(0.229)	(0.268)	(0.298)
$Imprecision^{-FW}$(Z)	0.151	0.131	0.025	0.004	-0.015	0.147*	0.244**	0.364***	0.493***	0.627***	0.759***	0.828***	0.845***
	(0.164)	(0.111)	(0.056)	(0.010)	(0.048)	(0.078)	(0.096)	(0.108)	(0.144)	(0.170)	(0.199)	(0.225)	(0.234)
Sentiment(Z)	-0.069	-0.033	0.008	-0.033**	-0.012	0.038	0.066	0.124	0.058	0.072	0.131	0.123	0.060
	(0.098)	(0.068)	(0.053)	(0.013)	(0.045)	(0.061)	(0.073)	(0.077)	(0.094)	(0.121)	(0.147)	(0.166)	(0.177)
nth-week cumulative market return(Z)	0.566*	0.367	0.155	0.033*	0.173	0.281	0.398	0.478	0.688*	1.005**	1.069**	1.257**	1.604***
	(0.319)	(0.255)	(0.114)	(0.020)	(0.210)	(0.266)	(0.303)	(0.353)	(0.412)	(0.439)	(0.462)	(0.525)	(0.521)
Clustered SE	Firm / Filing year-month												
Observations	42010	42156	42262	42298	41885	41681	41498	41376	41116	40909	40723	40570	40397
Adjusted R^2	0.226	0.280	0.395	0.923	0.003	0.003	0.005	0.006	0.008	0.010	0.010	0.011	0.013

4.Conclusion

- firms tend to use more imprecise language in their 10-Ks to communicate valuable information.
- imprecise language is most valuable when it accompanies forward-looking statements, statements about proprietary information, and the information environment surrounding the firm is relatively opaque.
- Market participants initially under-react to the information contained in this imprecise language but they eventually understand and digest it.