Manager sentiment and stock returns

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Abstract

Based on aggregated textual tone of corporate financial disclosures → constructs → manager sentiment index

economically comparable ← a strong negative predictor

informationally complementary

far greater than previously

R^2s of 9.75% and 8.38%

Higher manager sentiment
- lower aggregate earnings surprises
- greater aggregate investment growth
- negatively predicts cross-sectional stock returns.

difficult to value and costly to arbitrage

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- Many studies in behavioral finance suggest that speculative market sentiment can lead prices to diverge from their fundamental values (e.g., De Long et al., 1990; Shefrin, 2008).

- However, there is little research on corporate managers' sentiment. This is somewhat surprising given managers' information advantage about their companies over outside investors.

- Corporate managers are not immune from behavioral biases.

- As a result, they can be overly optimistic or pessimistic relative to fundamentals, leading to irrational market outcomes.

Topic and Hypothesis

- **Topic:**
- we investigate the asset pricing implications of manager sentiment, focusing on its predictability for future U.S. stock market returns.

- **Hypothesis:**
- Investors may simply follow managers' sentiment in financial disclosures.
- high manager sentiment--- speculative market overvaluation
- true economic fundamentals revealed --- the misvaluation diminishes-- stock prices reverse--- low future stock returns

Contribution

- Our paper contributes to the literature on investor sentiment and its role in asset pricing(Baker and Wurgler, 2006, 2007; Yu and Yuan, 2011; Baker et al.,2012; Stambaugh et al. ,2012; Huang et al. ,2015) provide strong evidence of return predictability with stock market-based investor sentiment measures.

- Our paper proposes a new textual disclosure tone-based manager sentiment measure that contains unique and incremental sentiment information beyond existing investor sentiment measures and has greater predictive power than any other measure.

Contribution

- While these studies focus on firm-level measures (Henry, 2008; Price et al., 2012; Loughran and McDonald, 2011) for predicting firm-level outcome variables, we provide an aggregate index to gauge the overall manager sentiment in the market and investigate its impact on both aggregate and cross-sectional stock returns.

- While other studies use firm disclosures at the quarterly or annual frequency(Penman, 1987; Kothari et al., 2006; Anilowski et al., 2007), we compute a monthly index from both voluntary and mandatory firm disclosures filed within each month.

2.Data and methodology

- *2.1. Data*

- We compute the monthly manager sentiment index based on the aggregated textual tone in 10-Ks, 10-Qs, and conference call transcripts from 2003:01 to 2014:12.

- Using each firm's unique identifier, we then search Factiva's Fair Disclosure (FD) Wire for earnings conference calls made between 2003 and 2014 and find 113,570 total call transcripts for 5859 unique firms.

2.2 Construction of the manager sentiment index

- We calculate the monthly aggregated conference call tone, S^{CC}

- $S^{CC} = \dfrac{(the\ number\ of\ positive\ words - the\ number\ of\ negative\ words)}{the\ total\ word\ count\ in\ each\ earnings\ conference\ call\ transcript}$

- Negative and positive words are classified based on the financial word dictionaries from *Loughran and McDonald (2011)*.

- They develop a set of highly influential and widely used word lists for business applications that better reflect tone in financial and accounting text.(*https://sraf.nd.edu/*)

- We calculate the monthly financial statement tone, S^{FS},

- $S^{FS} = \dfrac{(the\ number\ of\ positive\ words - the\ number\ of\ negative\ words)}{the\ total\ word\ count\ in\ 10\text{-}Ks\ and\ 10\text{-}Qs\ from\ 2003\text{:}01\ to\ 2014\text{:}12.}$

- We then obtain 264,335 10-Ks and 10-Qs for 10,414 unique firms from the EDGAR website (www.sec.gov).

- We compute the textual tone based on the entire document.

- The monthly composite manager sentiment index, S^{MS}

- $S^{MS}=0.5S^{CC}+0.5\,S^{FS}$ (1)
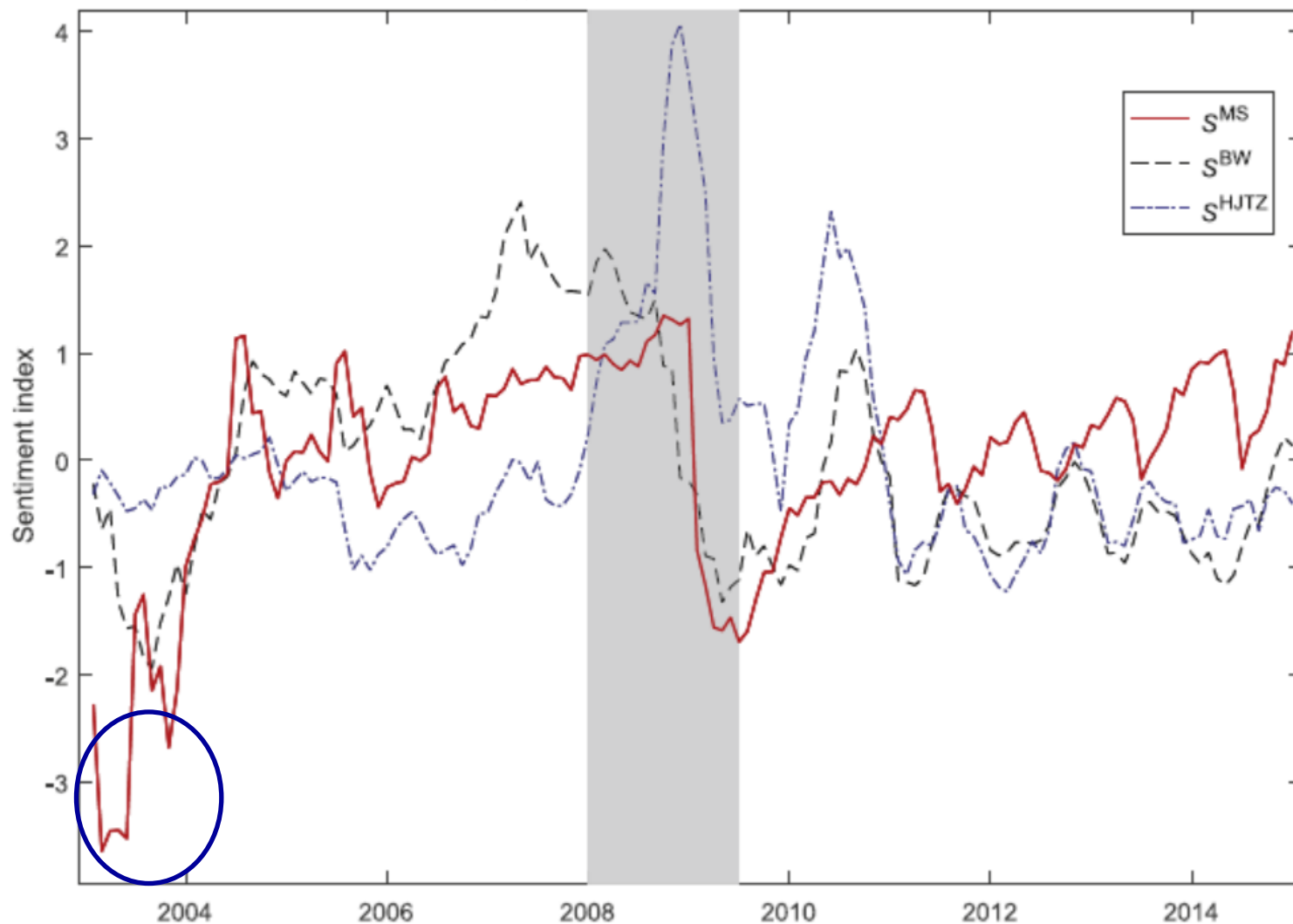
- We also estimate a sophisticated regression-combined manager sentiment index, $S^{RC} = 0.37S^{CC} + 0.63S^{FS}$

- The combination weights on the individual measures are optimally estimated by running regressions of excess market returns on individual tone measures in terms of a single factor,

$$R^m_{t+1} = \alpha + \beta(\Upsilon^{CC}S^{CC}_t + \Upsilon^{FS}S^{FS}_t) + \varepsilon_{t+1}.$$

- We form value-weighted manager sentiment indexes.

- We compute alternative manager sentiment measures using positive and negative words separately.

- The excess market return is equal to the monthly return on the S&P 500 index (including dividends) minus the risk-free rate, available from Goyal and Welch (2008) and Amit Goyal's website.

- We obtain cross-sectional stock returns on various portfolios single sorted on proxies for limits to arbitrage and speculation either directly from Ken French's website or calculated using individual stock prices and returns from CRSP and Compustat.

□We also consider five existing investor sentiment indexes:

- Baker and Wurgler (2006) investor sentiment index, S^{BW}

- Huang et al. (2015) aligned investor sentiment index, S^{HJTZ}

- University of Michigan consumer sentiment index, S^{MCS}

- Conference Board consumer confidence index, S^{CBC}, based on mail surveys on a random sample of U.S. households.

- Da et al. (2015) Financial and Economic Attitudes Revealed by Search (FEARS) investor sentiment index, S^{FEARS} , based on the volume of Internet searches related to household concerns.

To control for the influence of the business cycle, we use 14 monthly economic variables that are linked directly to macroeconomic fundamentals,

- the log dividend-price ratio (DP),
- log dividend yield (DY),
- log earnings-price ratio (EP),
- log dividend-payout ratio (DE),
- stock return variance (SVAR),
- book-to-market ratio (BM),

- net equity expansion (NTIS),
- Treasury bill rate (TBL),
- long-term bond yield (LTY),
- long-term bond return (LTR),
- term spread (TMS),
- default yield spread (DFY),
- default return spread (DFR),
- and inflation rate (INFL).

3. Predictive regression analysis

- *3.1. Market return predictability tests*
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- *3.3. Alternative measures of manager sentiment*
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3.1. Market return predictability tests

- We employ the standard predictive regression model for analyzing aggregate stock market return predictability:

$$R^m_{t \to t+h} = \alpha + \beta S^{MS}_t + \varepsilon_{t \to t+h}, \qquad (3)$$

- where $R^m_{t \to t+h}$ is the *h-month* ahead cumulative excess market return from month t to $t + h$ (in percentage) calculated from the monthly excess aggregate market return R^m_{t+1} (the monthly return on the S&P 500 index in excess of the risk-free rate).

- S^{MS}_t is the manager sentiment index

Table 2 Manager sentiment and aggregate market return

Horizon	α (%)	t-stat	β (%)	t-stat	R² (%)
1	0.76	2.39**	−1.26	−3.57***	9.75
3	2.35	2.82***	−3.85	−4.11***	24.92
6	4.59	2.67***	−6.03	−3.21***	25.80
9	6.69	2.58***	−7.73	−2.97***	27.15
12	8.47	2.40**	−8.58	−2.54**	25.39
24	15.27	1.92**	−11.64	−2.11**	20.41
36	20.17	1.56*	−12.43	−2.50**	16.18

1.Table 2 shows that, at the quarterly, semi-annual, nine-month, annual, two-year, and three-year horizons, S^{MS} consistently and significantly predicts the long run excess market return.

2.Across horizons, the in-sample forecasting power in terms of R^2 increases as the horizon increases and then declines. (inverted U)

3.2. Firm-level return predictability tests

- We investigate the relationship between manager sentiment and subsequent stock returns at the firm level.

Table 3 Manager sentiment and cross-sectional stock return.

	(1) [0, 3]	(2) 1 Month	(3) 3 Months	(4) 6 Months	(5) 9 Months	(6) 12 Months
S^{MS}	0.004 (20.38)	−0.002 (−8.16)	−0.004 (−7.86)	−0.008 (−9.41)	−0.010 (−8.46)	−0.012 (−7.60)
log(Size)	0.001 (6.17)	−0.002 (−9.79)	−0.008 (−15.14)	−0.018 (−14.70)	−0.024 (−13.30)	−0.031 (−12.65)
log(BM)	0.002 (7.95)	0.002 (5.39)	0.007 (8.47)	0.013 (8.18)	0.017 (7.26)	0.021 (6.71)
log(Turn)	−0.004 (−14.05)	0.001 (3.41)	−0.004 (−4.08)	−0.007 (−3.69)	−0.014 (−4.97)	−0.017 (−4.41)
Alpha	0.693 (4.55)	0.751 (2.89)	0.844 (1.56)	−0.186 (−0.17)	−2.779 (−1.91)	−8.061 (−4.26)
Institute	0.012 (17.24)	0.007 (7.26)	0.030 (13.74)	0.059 (13.47)	0.091 (13.87)	0.125 (14.29)
Nasdaq	0.000 (0.42)	−0.001 (−1.27)	−0.007 (−4.53)	−0.019 (−5.81)	−0.026 (−5.23)	−0.035 (−5.22)
R^2	0.006	0.003	0.007	0.010	0.012	0.014

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3.3. Alternative measures of manager sentiment

Table 4 Robustness tests.

$$R_{t+1}^m = \alpha + \beta S_t^k + \varepsilon_{t+1},$$

Panel A: Alternative measures

	β (%)	t-stat	R^2 (%)		β (%)	t-stat	R^2 (%)
S^{RC}	−1.28	−3.67	10.3	S^{CCP}	0.27	0.75	0.53
S^{CC}	−0.81	−2.13	4.05	S^{CCN}	−0.96	−2.51	5.61
S^{FS}	−1.15	−3.25	8.10	S^{FSP}	−0.61	−1.90	2.28
S^{CCV}	−0.76	−1.89	3.57	S^{FSN}	−0.93	−2.57	5.42
S^{FSV}	−0.95	−3.13	5.52				

Panel B: Subperiod analysis

	R^2_{rec}	R^2_{exp}		R^2_{high}	R^2_{low}
Business cycle	20.4	0.75	Sentiment level	12.9	6.93

3.4. Subperiod analysis(business-cycles)

$$R_c^2 = 1 - \frac{\sum_{t=1}^{T} I_t^c (\hat{\varepsilon}_{i,t})^2}{\sum_{t=1}^{T} I_t^c (R_t^m - \bar{R}^m)^2}, \qquad c = \text{rec, exp,} \qquad (4)$$

- where $I_t^{rec}(I_t^{exp})$ is an indicator that takes a value of 1 when month t is in a NBER recession (expansion) period and zero otherwise;

- $\hat{\varepsilon}_{i,t}$ is the fitted residual based on the in-sample estimates of the predictive regression model in (3) ;

- $\bar{R}_m$ is the full-sample mean of R_t^m;

- T is the number of observations for the full sample.

3.5. Comparison with economic predictors

- We consider the predictive regression on a single economic variable,

$$R_{t+1}^m = \alpha + \psi Z_t^k + \varepsilon_{t+1}, \qquad k = 1, ..., 15,$$

- We then investigate whether the forecasting power of S^{MS} remains significant after controlling for economic predictors.

$$R_{t+1}^m = \alpha + \beta S_t^{MS} + \psi Z_t^k + \varepsilon_{t+1}, \qquad k = 1, ..., 15. \qquad (6)$$

Table 5 Comparison with economic variables.

| | Panel A: Univariate regressions $R_{t+1}^m = \alpha + \psi Z_t^k + \varepsilon_{t+1}$ | | | Panel B: Bivariate regressions $R_{t+1}^m = \alpha + \beta S_t^{MS} + \psi Z_t^k + \varepsilon_{t+1}$ | | | | |
	ψ (%)	t-stat	R^2 (%)	β (%)	t-stat	ψ (%)	t-stat	R^2 (%)
DP	0.11	0.20	0.08	−1.26	−3.58	0.11	0.23	9.83
DY	0.31	0.63	0.61	−1.24	−3.54	0.25	0.56	10.1
EP	−0.22	−0.48	0.30	−1.42	−3.39	0.38	0.77	10.5
DE	0.21	0.42	0.26	−1.34	−3.37	−0.25	−0.49	10.1
SVAR	−0.96	−2.05	5.72	−1.18	−3.45	−0.85	−1.89	14.2
BM	0.20	0.49	0.25	−1.33	−3.52	0.43	1.04	10.9
NTIS	0.84	1.76	4.33	−1.10	−3.16	0.45	0.97	10.9
TBL	−0.41	−1.63	1.04	−1.22	−3.40	−0.15	−0.59	9.88
LTY	−0.54	−1.99	1.79	−1.37	−3.85	−0.75	−2.75	13.1
LTR	0.31	0.69	0.58	−1.29	−3.60	0.42	0.96	10.8
TMS	0.16	0.63	0.16	−1.39	−3.52	−0.36	−1.27	10.4
DFY	−0.26	−0.46	0.43	−1.31	−3.68	−0.44	−0.86	10.9
DFR	0.57	0.91	2.02	−1.19	−3.46	0.36	0.62	10.5
INFL	0.45	1.08	1.27	−1.26	−3.66	0.45	1.19	11.0
ECON	0.13	0.29	0.12	−1.30	−3.64	0.30	0.69	10.4

These results demonstrate that the return predictability of the manager sentiment index S^{MS} is not driven by macroeconomic fundamentals and it contains sizable sentiment forecasting information complementary to what is contained in the economic predictors.

3.6. Comparison with investor sentiment indexes

- We empirically compare the manager sentiment index S^{MS} with existing investor sentiment indexes documented in the literature. (*substitute or complementary*)

- Given that managers are better informed about their firms and yet are also subject to cognitive biases and emotion, it is of interest to examine the predictive power of manager sentiment in relation to that of investor sentiment.

$$R_{t+1}^m = \alpha + \beta S_t^{MS} + \delta S_t^k + \varepsilon_{t+1},$$
$$k = \text{BW, HJTZ, MCS, CBC, FEARS}, \tag{7}$$

Table 6 Comparison with existing investor sentiment indexes.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
S^{MS}	−1.26 [−3.57]		−1.08 [−2.79]		−1.16 [−3.48]		−1.25 [−3.53]		−1.27 [−3.44]		−1.71 [−3.29]	−1.59 [−2.64]
S^{BW}		−0.91 [−2.96]	−0.34 [−1.08]									1.72 [1.76]
S^{HJTZ}				−1.17 [−2.24]	−1.06 [−2.13]							−2.05 [−2.18]
S^{MCS}						0.22 [0.55]	0.15 [0.38]					2.07 [1.82]
S^{CBC}								−0.21 [-0.51]	0.05 [0.14]			−3.39 [−2.18]
S^{FEARS}										−0.75 [-1.96]	−0.35 [−0.97]	−0.12 [−0.30]
R^2 (%)	9.75	5.11	10.3	8.45	16.7	0.31	9.88	0.26	9.76	2.71	15.9	27.6

Our findings suggest that the manager sentiment index S^{MS} contains additional and complementary sentiment information beyond exiting investor sentiment indexes in forecasting the stock market.

3.7. Feedback relationship with investor sentiment

- investor sentiment leads manager sentiment,
- manager sentiment leads investor sentiment,
- manager sentiment and investor sentiment capture unique and complementary sentiment information.

$$S_t^{MS} = \alpha + \sum_{i=1}^{s} \delta_i S_{t-i}^{MS} + \sum_{i=1}^{s} \beta_i S_{t-i}^{k} + \varepsilon_t, \qquad k = BW, HJTZ, \qquad (8)$$

$$S_t^{k} = \alpha + \sum_{i=1}^{s} \delta_i S_{t-i}^{k} + \sum_{i=1}^{s} \beta_i S_{t-i}^{MS} + \varepsilon_t, \qquad k = BW, HJTZ, \qquad (9)$$

- equivalent to Granger causality tests for a lead–lag relationship between manager sentiment and investor sentiment.

- **Table 7** Feedback between manager sentiment and investor sentiment

	Panel A: IS ⇒ MS				Panel B: MS ⇒ IS			
	$S^{BW} \Rightarrow S^{MS}$		$S^{HJTZ} \Rightarrow S^{MS}$		$S^{BW} \Rightarrow S^{MS}$		$S^{HJTZ} \Rightarrow S^{MS}$	
β_1	−0.03	[−0.28]	−0.04	[−0.38]	0.02	[0.21]	−0.01	[−0.13]
β_2	0.22	[0.78]	0.20	[1.37]	0.05	[0.46]	0.14	[1.28]
β_3	−0.11	[−0.36]	−0.24	[−1.69]	−0.01	[−0.17]	−0.14	[−1.12]
β_4	0.19	[0.93]	−0.07	[−0.37]	−0.06	[−0.83]	0.00	[0.03]
β_5	−0.20	[−1.37]	0.07	[0.42]	0.02	[0.49]	0.02	[0.44]
Adj. R^2	0.84		0.83		0.94		0.92	

- These findings indicate that manager sentiment and investor sentiment capture different subsets of sentiment information, and they are complementary in measuring market sentiment.

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3.8. Forecast encompassing test

Table 8 Forecast encompassing tests

	S^{MS}	S^{CC}	S^{FS}	S^{BW}	S^{HJTZ}	S^{MCS}	S^{CBC}	S^{FEARS}
S^{MS}		0.68	0.28	0.26	0.04	0.47	0.51	0.39
S^{CC}	0.00		0.02	0.02	0.04	0.46	0.47	0.35
S^{FS}	0.08	0.18		0.30	0.03	0.45	0.51	0.27
S^{BW}	0.00	0.06	0.04		0.05	0.40	0.55	0.13
S^{HJTZ}	0.02	0.16	0.04	0.16		0.55	0.40	0.36
S^{MCS}	0.00	0.04	0.00	0.00	0.03		0.32	0.02
S^{CBC}	0.00	0.02	0.00	0.00	0.03	0.30		0.02
S^{FEARS}	0.00	0.03	0.03	0.07	0.05	0.40	0.47	

The 4th to 8th rows of Table 8 show that none of the five alternative sentiment indexes can significantly encompass S^{MS} and its components S^{CC} and S^{FS} , suggesting that the manager sentiment index S^{MS} contains incremental sentiment forecasting information beyond existing sentiment measures.

- **4. Economic value**
- *4.1. Out-of-sample R_{OS}^2(样本外的预测效果)*
- *4.2. Asset allocation implications (利用预测结果进行资产分配)*

4.1. Out-of-sample R_{OS}^2

- We investigate the out-of-sample forecasting performance of the manager sentiment index.

- The key requirement for out-of-sample forecasts at time t is that we only use information available up to t to forecast stock returns at $t + 1$.

- We run the out-of-sample predictive regressions recursively on each lagged manager sentiment measure,

$$\hat{R}_{t+1}^m = \hat{\alpha}_t + \hat{\beta}_t S_{1:t;t}^k, \qquad (10)$$

- $\hat{\alpha}_t$ and $\widehat{\beta}_t$ are the OLS estimates from regressing $\{R_{s+1}^m\}_{s=1}^{t=1}$ on a constant and a recursively estimated sentiment measure $\{S_{1:t;s}^k\}_{s=1}^{t-1}$.

Table 9 Out-of-sample forecasting results

	R^2_{OS} (%)	MSFE-*adj*	$R^2_{OS,rec}$ (%)	$R^2_{OS,exp}$ (%)
S^{MS}	8.38***	2.55	18.8	−1.20
S^C	7.94**	2.07	12.8	−7.27
S^{BW}	4.54***	2.56	5.60	3.57
S^{HJTZ}	3.14**	1.66	9.38	−1.91
S^{MCS}	−4.85	−0.09	−2.02	−7.45
S^{CBC}	−3.00	−0.71	−5.02	−1.14
S^{FEARS}	−0.53	1.82	1.12	−4.35

$$R^2_{OS} = 1 - \frac{\sum_{t=p}^{T-1}(R^m_{t+1} - \hat{R}^m_{t+1})^2}{\sum_{t=p}^{T-1}(R^m_{t+1} - \bar{R}^m_{t+1})^2},$$

Table 9 show that the manager sentiment index S^{MS} exhibits strong out-of-sample predictive ability for the aggregate market, with an R^2_{os} of 8.38%, S^{MS} is concentrated during recessions.

4.2. Asset allocation implications

- We further examine the economic value of the stock return predictability of the manager sentiment index S^{MS} from an asset allocation perspective.

- We compute the certainty equivalent return (CER) gain and Sharpe ratio for a mean-variance investor who optimally allocates across equities and the risk-free asset using the out-of-sample predictive regression forecasts.

$$w_t = \frac{1}{\gamma} \frac{\hat{R}_{t+1}^m}{\hat{\sigma}_{t+1}^2} \qquad (13)$$

- The $t+1$ realized portfolio return is $$R^p_{t+1} = w_t R^m_{t+1} + R^f_{t+1}, \qquad (14)$$

- The CER of the portfolio is $$CER_p = \hat{\mu}_p - 0.5\gamma\hat{\sigma}^2_p, \qquad (15)$$

Table 10 Asset allocation results

Predictor	No transaction cost		50bps transaction cost	
	CER gain (%)	Sharpe ratio	CER gain (%)	Sharpe ratio
S^{MS}	7.92	0.17	7.86	0.17
S^{C}	8.11	0.16	8.06	0.16
S^{BW}	9.06	0.19	8.97	0.19
S^{HJTZ}	8.79	0.18	8.73	0.17
S^{MCS}	4.17	0.03	4.15	0.03
S^{CBC}	0.62	−0.03	0.59	−0.03
S^{FEARS}	5.80	0.01	5.61	−0.01

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- **5. Economic channels**
- *5.1. Predicting aggregate earnings and earnings surprises*
- *5.2. Manager sentiment and aggregate investment growth*
- *5.3. Manager sentiment and characteristic-sorted portfolios*

5.1. Predicting aggregate earnings and earnings surprises

- We investigate the relationship between the manager sentiment index S^{MS} and future aggregate earnings and earnings surprises to explore the cash flow expectation error channel.

| manager sentiment | **—** | future aggregate stock market returns | | Stock price | ← | the discounted value of expected future cash flows |

| the negative return predictability of S^{MS} | → | may come from investors' biased expectations about future cash flows | ← | unjustified by economic fundamentals in hand |

| Past realized earnings | → | manager sentiment | → | managers expect future earnings | → | Leading to overvaluation |

In reality, earnings tend to mean revert, resulting in realized earnings being lower than expected and leading to negative earnings surprises and low stock returns.

- Eq. (16) estimates the prediction of the future aggregate earnings surprises using the lagged manager sentiment index at different horizons.

$$SUE_{t+h} = \alpha + \beta S_t^{MS} + \upsilon_{t+h}, \qquad\qquad (16)$$

- SUE_{t+h} , is the h -month ahead aggregate earnings surprise (in percentage) calculated as the value-weighted seasonally adjusted firm-level earnings surprises.

- If the time-varying risk premium is the primary channel through which manager sentiment predicts future market returns, manager sentiment should not be systematically associated with future earnings surprises.

- In contrast, if manager sentiment predicts future stock returns because it captures mispricing driven by cash flow expectation error, we would expect to see negative earnings surprises following periods of high manager sentiment.

Panel A: Predicting aggregate earnings surprises (SUE)

Horizon	β (%)	t-stat	R^2 (%)	β (%)	t-stat	γ (%)	t-stat	R^2 (%)
	Panel A1: Manager sentiment $SUE_{t+h} = \alpha + \beta S_t^{MS} + \upsilon_{t+h}$			*Panel A2: Investor sentiment* $SUE_{t+h} = \alpha + \beta S_t^{MS} + \gamma S_t^{BW} + \upsilon_{t+h}$				
0	0.06	0.37	0.53	0.05	0.36	0.02	0.26	0.56
3	−0.23	−2.42	6.84	−0.24	−1.98	0.01	0.08	6.85
6	−0.41	−2.37	21.33	−0.36	−1.98	−0.09	−1.11	22.06
9	−0.48	−2.33	29.04	−0.37	−1.92	−0.20	−1.61	31.49
12	−0.49	−2.45	31.03	−0.35	−2.12	−0.25	−1.59	35.17
24	−0.08	−0.46	0.74	0.12	0.75	−0.31	−1.25	5.84
36	0.08	0.65	0.74	−0.08	−0.72	0.23	1.20	2.23

Panel B: Predicting aggregate earnings (ROA)

	β (%)	t-stat	R^2 (%)	β (%)	t-stat	γ (%)	t-stat	R^2 (%)
	Panel B1: Manager sentiment $ROA_{t+h} = \alpha + \beta S_t^{MS} + \upsilon_{t+h}$			*Panel B2: Investor sentiment* $ROA_{t+h} = \alpha + \beta S_t^{MS} + \gamma S_t^{BW} + \upsilon_{t+h}$				
0	0.21	5.55	20.21	0.24	5.28	−0.07	−1.29	22.06
3	0.12	2.97	7.54	0.15	2.58	−0.05	−0.71	8.34
6	0.09	1.47	4.23	0.13	1.71	−0.08	−1.21	5.36
9	0.05	0.67	1.32	0.09	1.38	−0.08	−1.65	2.43
12	0.01	0.21	0.16	0.06	0.95	−0.08	−1.54	0.66
24	−0.08	−1.66	2.66	0.03	0.29	−0.15	−1.42	8.78
36	0.04	0.66	0.97	0.07	1.10	−0.04	−0.75	1.51

Panel C: Market return annual predictive regressions

$R_{t+1}^m = \alpha + \beta S_t^{MS} + \gamma S_t^{BW} + \psi SUE_{t+1} + \upsilon_{t+1}$

	β (%)	t-stat	γ (%)	t-stat	ψ (%)	t-stat	R^2 (%)
(1)	−2.41	−1.22			12.37	13.36	54.53
(2)	0.59	0.31	−6.85	−2.75	10.34	9.91	64.24

- For comparison, in Panel B1, we also study manager sentiment's predictive power for future aggregate earnings (ROA) at different horizons,

$$\text{ROA}_{t+h} = \alpha + \beta S_t^{\text{MS}} + \upsilon_{t+h}. \tag{17}$$

- The results in Panel C indicate that, at the annual predictive horizon, manager sentiment is no longer associated with one-year ahead cumulative excess aggregate market returns when we control for one-year ahead realized aggregate earnings surprises.

- Therefore, expectation errors for future cash flows are likely the primary driver for the predictive power of manager sentiment for future stock returns.

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5.2. *Manager sentiment and aggregate investment growth*

- we examine the relationship between manager sentiment and future aggregate investment growth to identify a potential source for the negative predictability.

| manager sentiment | → | Overestimate future cash flows | → | over-investment | → | firm value destruction | → | low future stock returns |

- We employ the following predictive regressions,

$$IG_{t+h} = \alpha + \beta S_t^{MS} + \upsilon_{t+h}, \qquad (19)$$

- IG $_{t+h}$, is the *h*-month ahead year-to-year growth rate of aggregate capital expenditures (in percentage) calculated using data from the Compustat database.

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	Panel A: Manager sentiment $IG_{t+h} = \alpha + \beta S_t^{MS} + \upsilon_{t+h}$			Panel B: Investor sentiment $IG_{t+h} = \alpha + \beta S_t^{MS} + \gamma S_t^{BW} + \upsilon_{t+h}$				
Horizon	β (%)	t-stat	R^2 (%)	β (%)	t-stat	γ (%)	t-stat	R^2 (%)
0	7.79	6.06	37.88	5.99	4.71	3.43	1.79	43.19
3	7.79	4.65	40.28	5.98	3.70	3.39	1.62	45.83
6	6.34	3.82	28.49	4.68	3.01	3.12	1.61	33.44
9	4.52	2.75	14.97	2.80	1.96	3.10	1.95	19.82
12	1.65	0.85	2.05	0.29	0.15	2.32	1.94	4.66
24	−6.13	−2.79	29.26	−3.75	−2.22	−3.74	−1.21	35.32
36	−2.15	−0.92	3.85	1.15	0.55	−5.02	−1.56	13.99

- High manager sentiment forecasts high investment growth in the short run, but low investment growth in the longer run.

- The results indicate that manager sentiment is distinct from existing investor sentiment. High manager sentiment is strongly tied to overinvestment, but the link between investor sentiment and overinvestment is weak.

- This finding suggests that a higher manager sentiment index captures managers' overly optimistic beliefs about future returns to investment which leads to overinvestment.
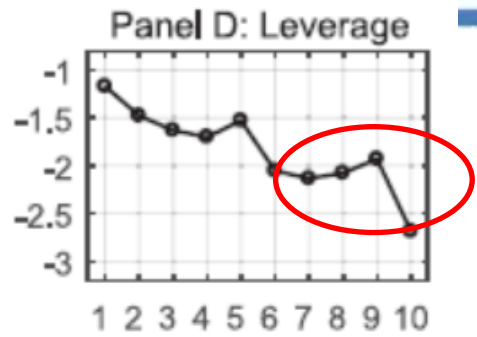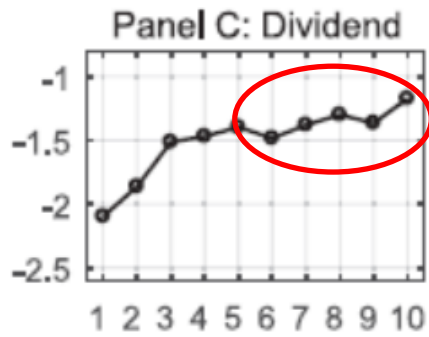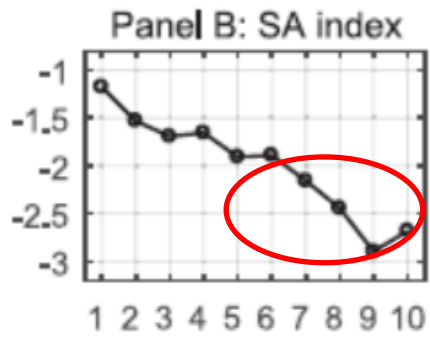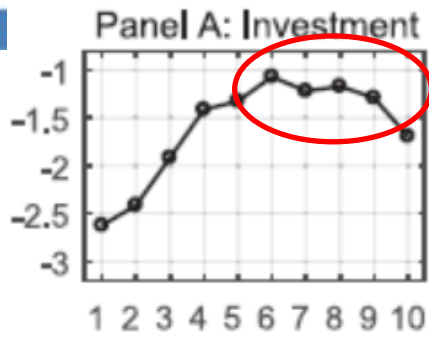
5.3. Manager sentiment and characteristic-sorted portfolios

- According to Baker and Wurgler (2006) , Stambaugh et al. (2012) , and Huang et al. (2015) , among others, if the manager sentiment index indeed reflects market sentiment, its forecasting power should be stronger among stocks that are more speculative, difficult to value, and costly to arbitrage.

- We consider 15 well-documented cross-sectional anomalies formed by single sorting on firm characteristics.

$$R_{t+1}^j = \alpha + \beta S_t^{MS} + \varepsilon_{t+1}^j, \qquad (21)$$

- where R_{t+1}^j is the monthly excess returns of the 15 characteristics-based decile portfolios, and SMS is the lagged manager sentiment index.

Panel A: Investment, Panel B: SA index, Panel C: Dividend, Panel D: Leverage, Panel E: O-score, Panel F: ROE, Panel G: SUE, Panel H: B/M, Panel I: Price, Panel J: Turnover, Panel K: Volatility, Panel L: Beta, Panel M: S-beta, Panel N: Age, Panel O: Size

| | Panel A: Manager sentiment $R^j_{t+1} = \alpha + \beta S^{MS}_t + \varepsilon^j_{t+1}$ | | | Panel B: Investor sentiment $R^j_{t+1} = \alpha + \beta S^{MS}_t + \gamma S^{BW}_t + \varepsilon^j_{t+1}$ | | | | | |
| | | | | 10 − 1 | | 10 − 5 | | 5 − 1 | |
	10 − 1	10 − 5	5 − 1	S^{MS}_t	S^{BW}_t	S^{MS}_t	S^{BW}_t	S^{MS}_t	S^{BW}_t
Investment	0.93	−0.37	1.30	0.79	0.27	−0.40	0.05	1.19	0.22
	[2.80]	[−1.68]	[4.85]	[2.24]	[0.94]	[v1.80]	[0.20]	[4.16]	[1.01]
SA index	−1.51	−0.77	−0.73	−1.21	−0.56	−0.47	−0.59	−0.75	0.03
	[−5.20]	[−3.35]	[−5.20]	[−3.18]	[−1.34]	[−1.52]	[−1.77]	[−4.21]	[0.15]
Dividend	0.92	0.22	0.70	0.92	0.01	0.28	−0.10	0.64	0.11
	[4.36]	[1.77]	[4.03]	[4.14]	[0.03]	[1.96]	[−0.63]	[3.59]	[0.63]
Leverage	−1.52	−1.16	−0.36	−1.44	−0.15	−0.89	−0.52	−0.55	0.37
	[−3.93]	[−4.04]	[−1.60]	[−3.30]	[−0.41]	[−2.61]	[−1.73]	[−2.20]	[1.27]
O-score	−1.60	−1.31	−0.28	−1.02	−1.09	−0.78	−1.01	−0.24	−0.08
	[−4.62]	[−4.39]	[−1.93]	[−2.69]	[−2.98]	[−2.15]	[−2.80]	[−1.36]	[−0.48]
ROE	1.54	0.54	1.00	1.03	0.96	0.43	0.21	0.61	0.75
	[4.32]	[2.69]	[3.03]	[2.67]	[3.02]	[1.94]	[1.46]	[1.52]	[2.71]
SUE	0.26	−1.54	1.81	0.26	0.01	−1.44	−0.20	1.70	0.21
	[0.70]	[−4.49]	[4.72]	[0.56]	[0.03]	[−3.43]	[−0.70]	[3.87]	[0.63]
B/M	−1.01	−0.89	−0.12	−0.95	−0.10	−0.70	−0.35	−0.25	0.25
	[−2.23]	[−2.31]	[−0.72]	[−1.83]	[−0.23]	[−1.71]	[−0.93]	[−1.23]	[1.23]
Price	3.94	0.90	3.04	3.29	1.25	0.68	0.42	2.60	0.83
	[5.62]	[4.05]	[5.47]	[4.10]	[1.85]	[3.14]	[2.22]	[3.80]	[1.38]
Turnover	−0.84	−0.45	−0.39	−1.24	0.76	−0.67	0.42	−0.56	0.33
	[−2.48]	[−1.83]	[−1.51]	[−3.49]	[2.45]	[−2.56]	[1.99]	[−2.18]	[1.44]
Volatility	−2.62	−1.49	−1.13	−2.14	−0.90	−0.84	−1.23	−1.30	0.33
	[−4.81]	[−3.45]	[−3.31]	[−3.73]	[−1.88]	[−2.01]	[−3.21]	[−4.09]	[1.07]
Beta	−2.34	−1.84	−0.51	−2.52	0.34	−2.07	0.45	−0.45	−0.11
	[−2.84]	[−3.15]	[−1.21]	[−2.94]	[0.65]	[−3.71]	[1.22]	[−0.92]	[−0.39]
S-beta	−0.89	−0.73	−0.17	−0.94	0.09	−0.76	0.07	−0.18	0.02
	[−2.72]	[−2.65]	[−1.86]	[−2.32]	[0.38]	[−2.49]	[0.42]	[−1.32]	[0.19]
Age	0.94	0.51	0.43	0.80	0.28	0.61	−0.19	0.18	0.47
	[3.37]	[3.00]	[2.61]	[3.14]	[1.26]	[3.44]	[−0.99]	[1.09]	[2.55]
Size	1.22	0.53	0.69	1.06	0.30	0.61	−0.15	0.46	0.45
	[5.47]	[3.00]	[4.34]	[4.22]	[1.01]	[3.15]	[−0.72]	[2.65]	[2.46]

- Panel A of Table 13 confirms our hypothesis that manager sentiment generally has a significantly stronger impact for portfolios with cash flows that are difficult to value (i.e., high investment, low dividend payout, low profitability, high unexpected earnings, high growth opportunities, high turnover, high volatility, high beta, young age, small size) and/or costly to arbitrage (i.e., low investment, high financial constraint, high leverage, high distress, low profitability, high growth opportunities, low price, high volatility, high beta, young age, small size), consistent with Baker and Wurgler (2006) .

- Panel B of Table 13 further shows that manager sentiment's predictive ability remains significant, when controlling for investor sentiment.

6.Conclusion

- They propose a manager sentiment index constructed based on the aggregate textual tone in 10-Ks, 10-Qs, and conference calls.

- We find that manager sentiment negatively predicts stock returns with lower future market returns following high manager sentiment periods.

- Manager sentiment's predictive power is far greater than commonly used macroeconomic variables, and it outperforms existing investor sentiment measures.

- Manager sentiment is complementary to investor sentiment in forecasting stock returns, implying that manager sentiment has a different impact on valuation relative to investor sentiment. Moreover, higher manager sentiment precedes lower aggregate earnings surprises and greater aggregate investment growth, implying that managers' biased beliefs about future cash flows and overinvestment helps to explain the predictability of manager sentiment.

- Finally, manager sentiment also strongly forecasts the cross-section of stock returns, particularly for stocks that are difficult to value or costly to arbitrage.

Thanks for your attention !

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