

Security Analysts and Capital Market Anomalies

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Motivation: Roles of analysts

*“Wall Street analysts know their companies. You should cut a research report in **two**. The first part, the information about the **company and its prospects**, is probably **pretty good**. The second part, the **recommendation**, should be used as **kindling**. We use analyst information, but we don't use the **recommendations very often**.”*

David Dreman

Motivation: Roles of analysts

- Debate in the industry and academia about whether analysts research helps improve stock market efficiency or not.
- Analysts help improve stock market efficiency
 - Stickel (1992) and Womack (1996): Stock prices react strongly to **analysts forecast revisions and recommendation changes**.
 - Barber et al. (2001) and Jegadeesh et al. (2004): Analysts **consensus** recommendations (level and change) predict returns beyond existing return predictors.

Motivation: Roles of analysts

- Incentive bias: investment-banking business or to curry favor with management
 - Conflicts of interest arising from **affiliation with underwriting**: Lin and McNichols (1998), Dechow, Hutton, and Sloan (2000), and O'Brien, McNichols, and Lin (2005); Bradshaw, Richardson, and Sloan (2006).
 - Generate **trading commission** (Cowen, Groysberg, and Healy 2006) or
 - **Curry favor with management** (Chen and Matsumoto 2006)
 - **Potential external financing** (Bradshaw, Richardson, and Sloan 2006)

Motivation: Roles of analysts

- **Behavioral bias:** limited attention and over-extrapolation (La Porta 1996; Hribar and McInnis 2012)
 - Analysts' expectations are sticky in the short run and underreact to persistence in firms' profitability (Bouchaud, Krueger, Landier, and Thesmar 2018)
 - Analysts are extrapolative in their long-term growth forecasts and overreact to past earnings growth (Bordalo, Gennaioli, La Porta, and Shleifer 2018)

Research questions

- **Q1:** Are analyst recommendations consistent with well-documented anomaly prescriptions?
- **Q2:** Do analysts amplify or weaken anomalies if their recommendations confirm or contradict anomaly prescriptions?

Research questions

- **Why analyst recommendations?**
 - Direct measure of analysts' valuation of a stock
 - Direct guidance on investors' decision making
- **Why market anomalies?**
 - Well established proxies for mispricing
 - Public available information

Predictions

The sophisticated analyst hypothesis

- Analysts recommendations should on average be consistent with anomaly prescriptions.
- When analyst recommendations are **contradictory** to anomaly prescriptions, the anomaly stocks **should not be** associated with future abnormal returns.

Predictions

The biased analyst hypothesis

- Analyst recommendations are **unrelated or even contradictory** to anomaly prescriptions.
- When recommendations are **contradictory to** anomaly information \Rightarrow anomaly returns are **amplified**
 - Because some investors follow analysts blindly (Malmendier and Shanthikumar 2007; Brown, Wei, and Wermers 2014)

Preview: Recommendations

- Based on 11 prominent anomalies studied by Stambaugh et al. (2012) and Stambaugh and Yuan (2017),
- **Our results broadly reject the *sophisticated analysts view* and more consistent with the biased analyst view**

Preview: Recommendations

- **Analyst recommendations are often contradictory to anomaly predictions**, especially for MGMT anomalies:
 - **Level**: Assign **more** favorable recommendations to stocks classified as **overvalued** ranked on anomaly characteristics and vice versa
 - **Change**: Actively **upgrade** stocks in the **short-leg** of anomalies and vice versa

Preview: Future returns

- Anomaly returns are **amplified** when analyst recommendations **contradict** anomaly signals, especially for **performance anomalies**:
 - **Short-leg stocks** with **favorable** recommendations have particularly **negative returns**
- Other **six market-based anomalies** (IVOL, turnover, long-run reversal, Market beta, and max daily return): same conclusion

Preview: Mutual fund trading

- Anomaly returns are **amplified** when analyst recommendations **contradict** anomaly signals, especially for **performance anomalies**:
 - **Short-leg stocks** with **favorable** recommendations have particularly **negative returns**
- Other **six market-based anomalies** (IVOL, turnover, long-run reversal, Market beta, and max daily return): same conclusion

Preview: Identifying skilled analysts

- Anomalies are useful to **identify skilled analysts** ex-ante:
 - Analysts whose recommendations more **aligned with** anomaly signals are **more skilled** and elicit **greater announcement returns**

Preview: Takeaway

- Analyst **recommendations** are in general **inconsistent** with and in some cases even contradictory to **anomaly prescriptions**, especially for anomalies related to equity issuance and investment.
- Recommendations **inconsistent** with **anomaly prescriptions** **amplify** anomaly returns, especially for anomalies associated with **performance**
- **Mutual fund trading collaborates with the amplifying effect**

Measures of anomalies

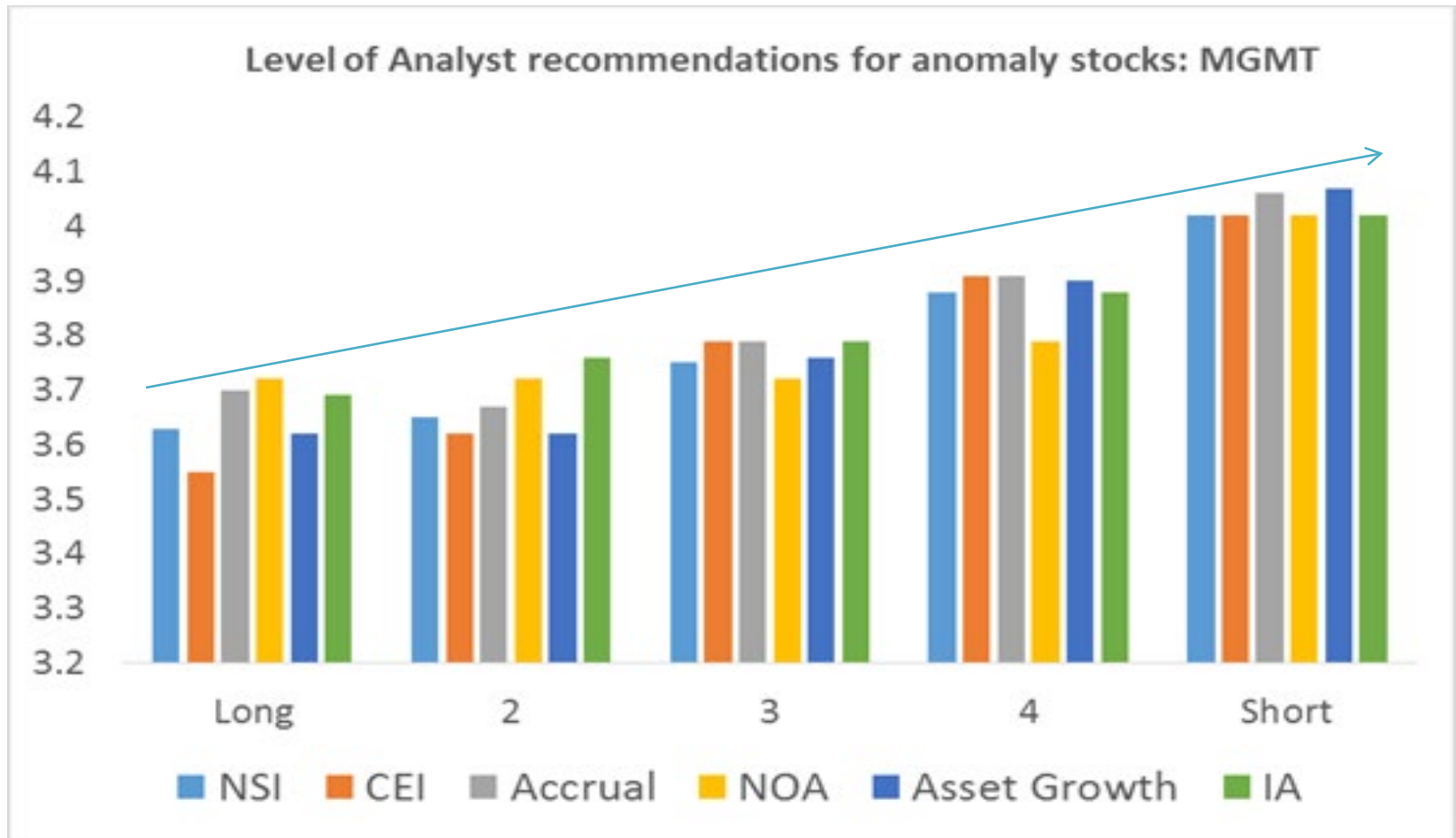
- **Anomalies: Following** Stambaugh and Yuan (2017), to use 11 prominent anomalies to construct two mispricing factors
 - **MGMT**: net stock issues (**NSI**), composite equity issues (**CEI**), accruals (**Accrual**), net operating assets (**NOA**), asset growth (**AG**), and investment to assets (**I/A**) => related to managerial decisions
 - **PERF**: gross profitability (**GP**), return on assets (**ROA**), momentum (**MOM**), distress (**Distress**), and **O-score** => related to performance
- Other six market-based anomalies: **IVOL**, **turnover**, **long-run reversal**, **Market beta**, and **max daily return**

Informativeness of anomaly signals

Panel C: Cluster 1 (Alphas)							
	MGMT	NSI	CEI	Accrual	NOA	TAG	IA
Long	0.23%	0.26%	0.32%	0.00%	0.17%	0.13%	0.07%
	(3.61)	(3.22)	(3.82)	(-0.01)	(1.84)	(1.84)	(0.86)
Short	-0.62%	-0.48%	-0.37%	-0.35%	-0.55%	-0.63%	-0.57%
	(-4.83)	(-4.88)	(-3.02)	(-2.93)	(-4.43)	(-4.84)	(-4.19)
Long - Short	0.86%	0.75%	0.68%	0.35%	0.72%	0.76%	0.64%
	(5.18)	(6.03)	(5.24)	(2.61)	(2.62)	(4.31)	(3.80)
Panel D: Cluster 2 (Alphas)							
	PERF	Distress	O-score	MOM	GP	ROA	
Long	0.36%	0.37%	0.13%	0.24%	0.29%	0.32%	
	(3.85)	(3.65)	(1.33)	(1.87)	(3.04)	(3.22)	
Short	-0.63%	-0.33%	-0.31%	-0.62%	-0.18%	-0.77%	
	(-4.72)	(-2.56)	(-2.91)	(-3.02)	(-1.50)	(-5.37)	
Long - Short	0.99%	0.69%	0.45%	0.86%	0.47%	1.09%	
	(5.63)	(3.95)	(2.94)	(2.95)	(2.13)	(4.69)	

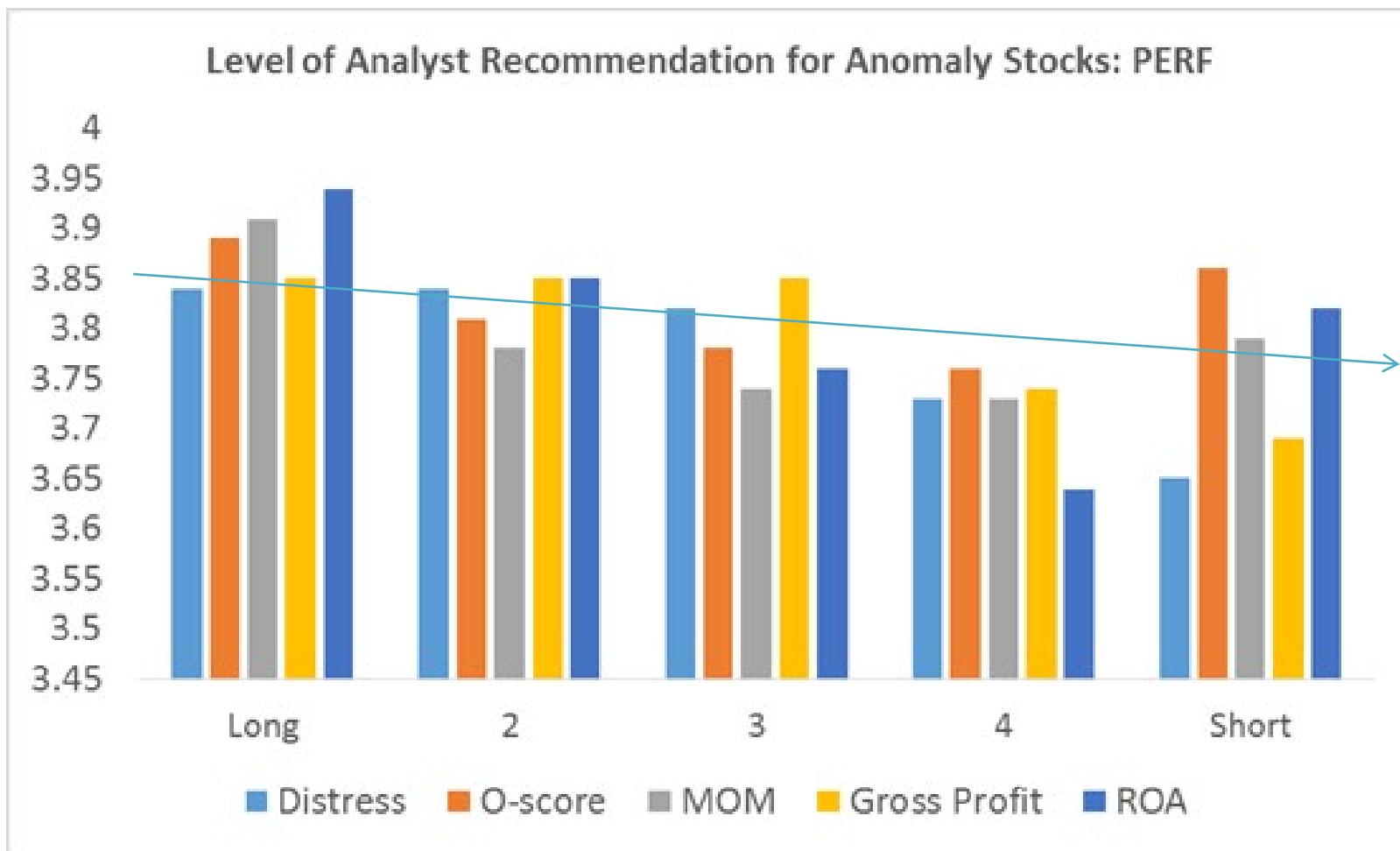
Anomalies contain valuable information about future expected returns, of which analysts should take advantage

Recommendations: MGMT



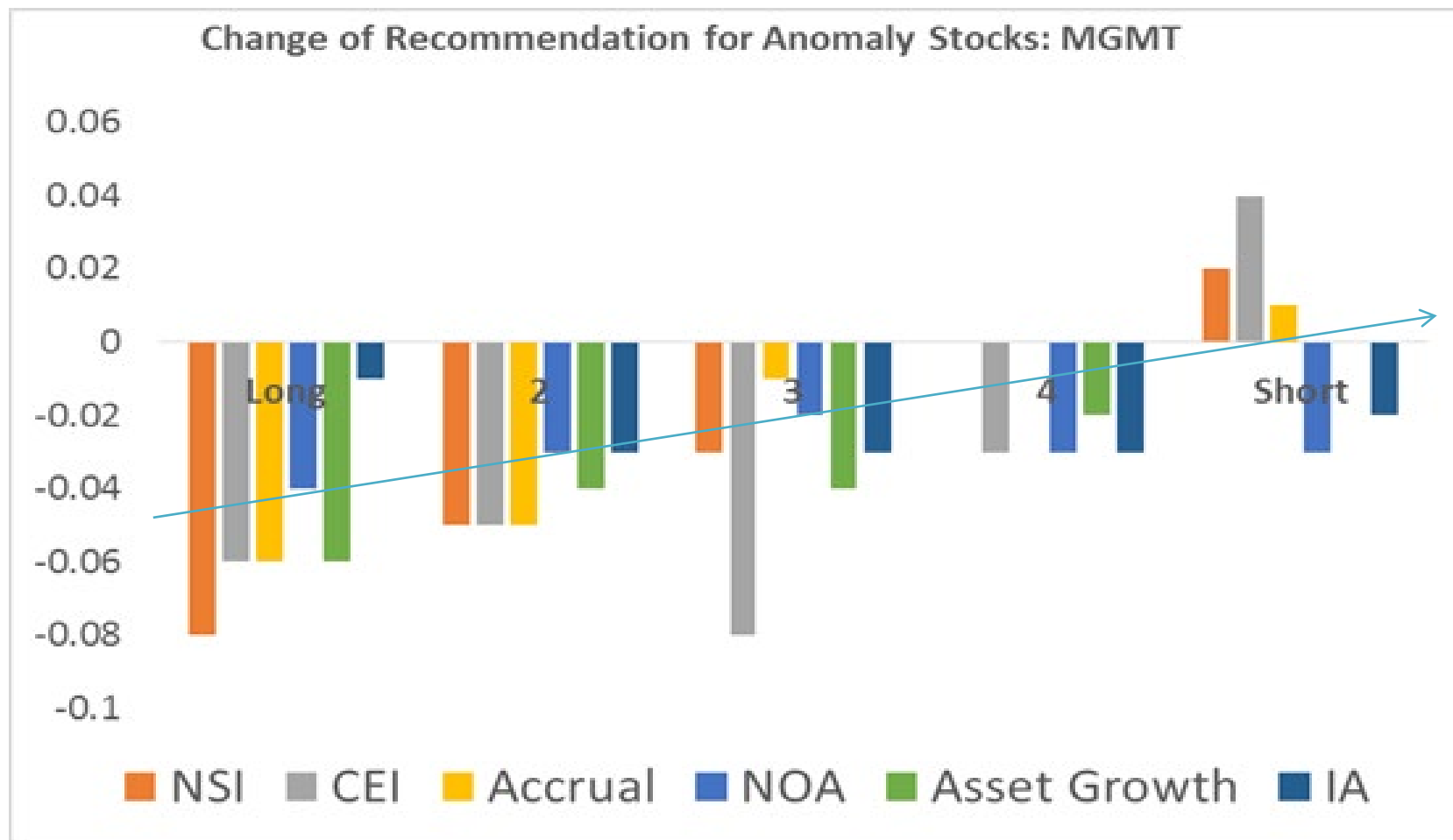
Stocks in the **short leg** of anomalies receive more **favorable** recommendations than the long leg

Recommendations: PERF



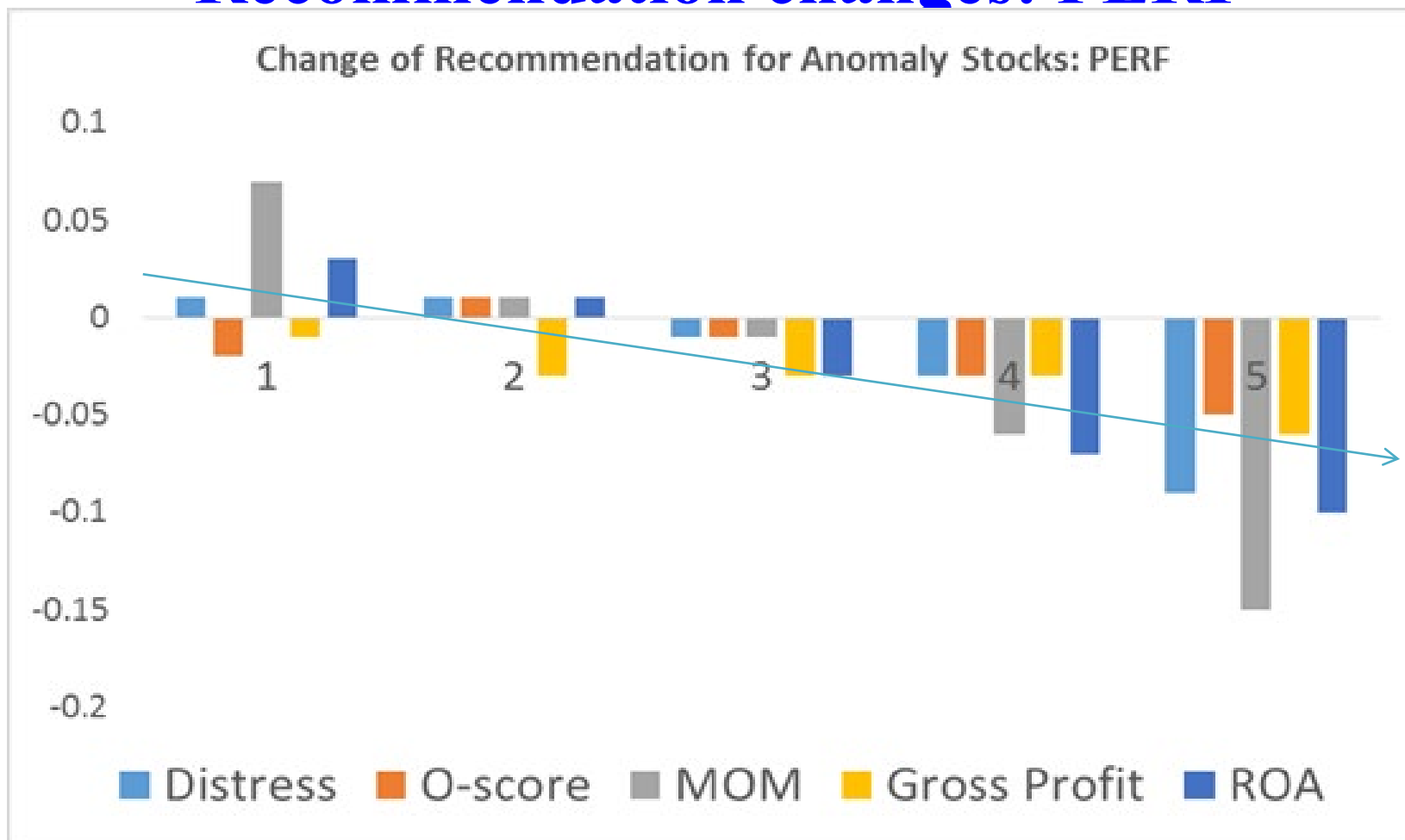
Recommendations seem to **be consistent** with performance-related anomalies, but relation is not monotonic

Recommendation changes: MGMT



Analysts actively **downgrade undervalued** stocks based on anomaly prediction, and vice versa

Recommendation changes: PERF



Analysts recommendation changes seem to be **more consistent** with performance-related anomalies

Anomaly returns conditional on recommendations

- Analysts may have **superior private information** such that the information content of their recommendations offset that of anomalies
 - **Independent double sort** on anomalies and recommendation level
 - **Consistent L/S**: **long-leg** anomaly with **favorable** recommendation – **short-leg** anomaly with **unfavorable** recommendation
 - **Inconsistent L/S**: **long-leg** anomaly with **unfavorable** recommendation – **short-leg** with **favorable** recommendation
 - **Difference** between inconsistent and consistent L/S alphas

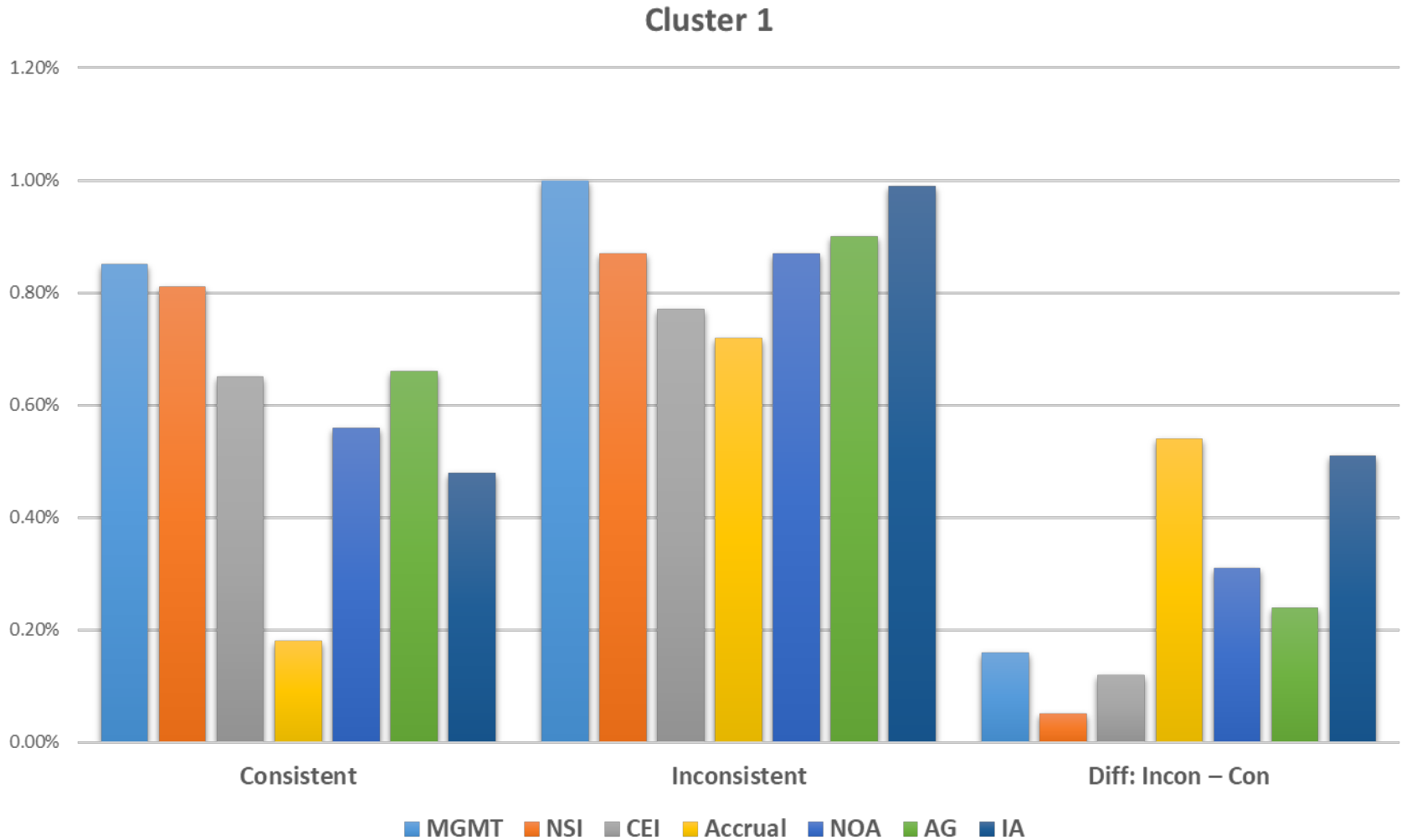
Anomaly returns conditional on recommendations: MGMT

Panel A: Cluster 1 (Fama-French three-factor alphas)

	MGMT			NSI			CEI			Accrual		
	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down
Long	0.40%	0.27%	0.17%	0.37%	0.32%	0.23%	0.44%	0.35%	0.27%	0.10%	-0.19%	0.07%
	(3.09)	(1.92)	(1.87)	(3.13)	(2.19)	(1.93)	(3.11)	(2.87)	(2.32)	(0.75)	(-1.20)	(0.57)
Short	-0.83%	-0.42%	-0.44%	-0.63%	-0.29%	-0.45%	-0.51%	-0.10%	-0.21%	-0.64%	-0.09%	-0.07%
	(-5.20)	(-3.31)	(-3.48)	(-4.94)	(-3.08)	(-3.98)	(-4.11)	(-1.07)	(-1.80)	(-4.65)	(-0.79)	(-0.65)
Consistent		0.85%			0.81%			0.65%			0.18%	
		(4.87)			(5.30)			(3.91)			(1.00)	
Inconsistent		1.00%			0.87%			0.77%			0.72%	
		(5.07)			(4.43)			(4.38)			(3.80)	
Diff:		0.16%			0.05%			0.12%			0.54%	
		(0.85)			(0.29)			(0.65)			(2.34)	
	NOA			AG			IA					
	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down			
Long	0.08%	0.30%	0.18%	0.22%	0.18%	0.06%	0.11%	0.02%	0.14%			
	(0.50)	(2.50)	(1.37)	(1.45)	(1.23)	(0.67)	(0.93)	(0.13)	(1.31)			
Short	-0.69%	-0.44%	-0.48%	-0.84%	-0.41%	-0.44%	-0.85%	-0.44%	-0.38%			
	(-4.21)	(-3.07)	(-3.39)	(-5.25)	(-3.53)	(-3.04)	(-5.00)	(-2.86)	(-2.21)			
Consistent		0.56%			0.66%			0.48%				
		(1.53)			(3.40)			(2.93)				
Inconsistent		0.87%			0.90%			0.99%				
		(3.21)			(4.09)			(4.54)				
Diff:		0.31%			0.24%			0.51%				
		(1.56)			(1.22)			(2.41)				

Over-valued stocks with favorable recommendation underperform

Anomaly returns conditional on recommendations: MGMT

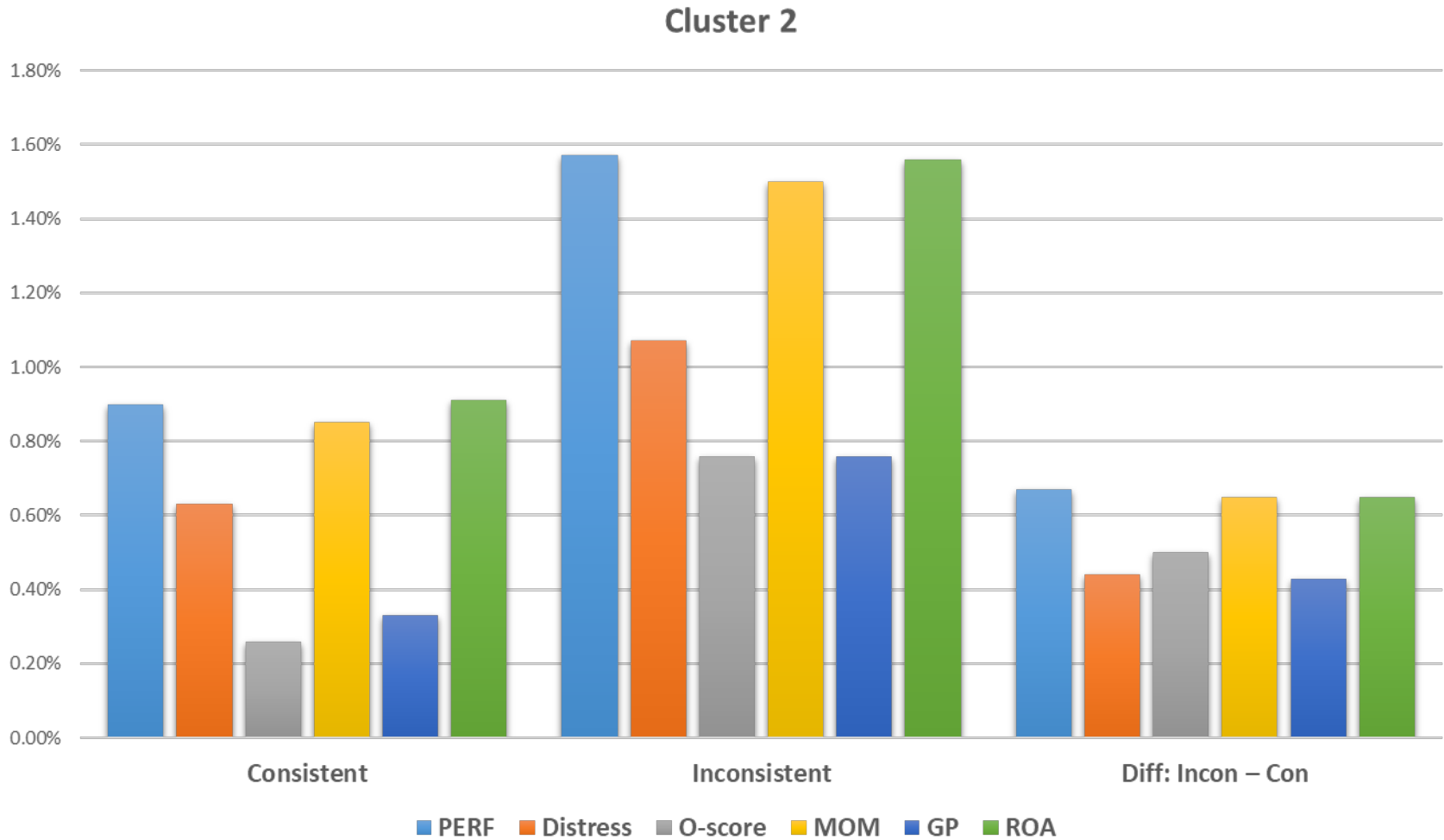


Anomaly returns conditional on recommendations: PERF

Panel B: Cluster 2 (Fama-French three-factor alphas)												
	PERF			Distress			O-score			MOM		
	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down
Long	0.40%	0.39%	0.47%	0.36%	0.21%	0.36%	0.08%	0.15%	0.22%	0.40%	0.54%	0.41%
	(3.48)	(3.96)	(4.11)	(2.69)	(1.58)	(3.24)	(0.72)	(1.30)	(2.01)	(2.65)	(2.75)	(2.94)
Short	-1.09%	-0.54%	-0.50%	-0.71%	-0.08%	-0.27%	-0.55%	-0.22%	-0.18%	-1.09%	-0.68%	-0.45%
	(-5.87)	(-3.42)	(-4.13)	(-4.26)	(-0.46)	(-1.84)	(-3.08)	(-1.50)	(-1.23)	(-4.87)	(-2.88)	(-2.14)
Consistent	0.90%			0.63%			0.26%			0.85%		
	(5.21)			(2.98)			(1.54)			(2.75)		
Inconsistent	1.57%			1.07%			0.76%			1.50%		
	(6.47)			(5.34)			(3.72)			(4.44)		
Diff:	0.67%			0.44%			0.50%			0.65%		
	(2.96)			(1.96)			(2.31)			(3.29)		
	GP			ROA								
	Up	Middle	Down	Up	Middle	Down						
Long	0.22%	0.34%	0.37%	0.28%	0.42%	0.49%						
	(2.10)	(2.94)	(2.69)	(2.30)	(3.72)	(3.23)						
Short	-0.39%	-0.04%	-0.11%	-1.07%	-0.70%	-0.63%						
	(-2.26)	(-0.28)	(-0.65)	(-5.79)	(-3.82)	(-4.31)						
Consistent	0.33%			0.91%								
	(1.86)			(4.34)								
Inconsistent	0.76%			1.56%								
	(2.78)			(6.65)								
Diff:	0.43%			0.65%								
	(2.27)			(3.06)								

Over-valued stocks with favorable recommendation substantially underperform

Anomaly returns conditional on recommendations: PERF



Fama-MacBeth regressions: MGMT

Panel A: Cluster 1							
	MGMT	NSI	CEI	Accrual	NOA	AG	IA
Long×RecUp	0.127	0.024	0.144	0.151	-0.055	0.308**	0.015
	(1.02)	(0.22)	(0.99)	(1.17)	(-0.32)	(2.34)	(0.15)
Long×RecMid	0.191	0.023	0.093	0.013	0.133	0.267	0.005
	(1.52)	(0.17)	(0.79)	(0.11)	(0.84)	(1.62)	(0.04)
Long×RecDown	0.033	0.029	-0.120	0.257*	-0.046	0.177	0.231*
	(0.34)	(0.26)	(-1.04)	(1.94)	(-0.28)	(1.37)	(1.93)
Short×RecUp	-0.810***	-0.645***	-0.330**	-0.570***	-0.660***	-0.753***	-0.755***
	(-6.19)	(-4.84)	(-2.32)	(-3.76)	(-4.97)	(-4.50)	(-4.54)
Short×RecMid	-0.337**	-0.226	0.089	-0.027	-0.520***	-0.318*	-0.186
	(-2.19)	(-1.36)	(0.79)	(-0.12)	(-3.68)	(-1.85)	(-1.01)
Short×RecDown	-0.579***	-0.474***	-0.326**	-0.269*	-0.541***	-0.492***	-0.462**
	(-3.68)	(-3.28)	(-2.07)	(-1.71)	(-3.97)	(-2.92)	(-2.56)
Observations	668,865	650,129	605,441	513,929	667,793	669,836	575,196
Adjusted R²	0.063	0.065	0.072	0.063	0.066	0.065	0.062

Same results as in portfolio analysis: Over-valued stocks with favorable recommendation substantially underperform.

Fama-MacBeth regressions: PERF

Panel B: Cluster 2						
	PERF	Distress	O-score	MOM	GP	ROA
Long×RecUp	0.319***	0.285*	-0.003	0.413**	0.281**	0.482***
	(2.78)	(1.92)	(-0.02)	(2.24)	(2.24)	(3.80)
Long×RecMid	0.365**	0.056	0.111	0.503**	0.499**	0.602***
	(2.40)	(0.37)	(0.76)	(2.53)	(2.56)	(3.54)
Long×RecDown	0.300**	0.361*	0.189	0.527**	0.487***	0.591***
	(2.18)	(1.95)	(1.59)	(2.33)	(3.28)	(3.85)
Short×RecUp	-1.041***	-0.798***	-0.474**	-0.701***	-0.537***	-0.800***
	(-4.67)	(-3.49)	(-2.57)	(-2.88)	(-2.63)	(-2.85)
Short×RecMid	-0.336**	0.062	-0.146	0.087	-0.157	-0.270
	(-1.99)	(0.32)	(-0.80)	(0.33)	(-0.74)	(-1.02)
Short×RecDown	-0.547***	-0.537***	0.032	-0.091	-0.402*	-0.268
	(-3.53)	(-3.16)	(0.21)	(-0.37)	(-1.87)	(-1.19)
Observations	661,412	359,496	522,326	616,331	673,591	691,037
Adjusted R²	0.068	0.075	0.064	0.079	0.069	0.067

Same results as in portfolio analysis: Over-valued stocks with favorable recommendation substantially underperform.

Mutual fund net buys: MGMT

Panel A: Cluster 1 (Mutual fund net buys)

	MGMT			NSI			CEI			Accrual		
	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down
Long	1.00%	0.69%	0.47%	1.40%	0.73%	0.42%	1.31%	0.77%	0.64%	2.06%	1.24%	0.43%
	(5.06)	(5.32)	(2.86)	(5.70)	(4.67)	(2.61)	(6.92)	(14.97)	(4.60)	(11.36)	(6.31)	(1.96)
Short	3.86%	2.65%	0.91%	4.30%	2.77%	1.12%	4.27%	2.95%	1.42%	3.62%	2.20%	0.62%
	(14.04)	(13.80)	(2.93)	(20.3)	(16.76)	(3.90)	(16.46)	(13.06)	(6.56)	(14.63)	(11.42)	(1.45)
Long×RecUp – Long×RecDown	0.53%			0.98%			0.67%			1.63%		
	(2.65)			(6.00)			(3.97)			(7.65)		
Short×RecUp – Short×RecDown	2.95%			3.18%			2.84%			3.01%		
	(7.16)			(8.41)			(7.43)			(5.15)		
	NOA			AG			IA					
	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down			
Long	2.59%	1.52%	0.56%	1.50%	1.06%	0.32%	2.13%	1.32%	0.52%			
	(15.69)	(13.27)	(2.52)	(9.34)	(6.05)	(1.80)	(11.48)	(6.72)	(2.53)			
Short	2.93%	1.65%	0.30%	4.00%	2.55%	0.95%	3.21%	1.87%	0.52%			
	(9.60)	(8.20)	(1.14)	(17.02)	(13.44)	(3.15)	(12.59)	(8.67)	(1.63)			
Long×RecUp – Long×RecDown	2.03%			1.18%			1.61%					
	(13.08)			(6.17)			(11.19)					
Short×RecUp – Short×RecDown	2.63%			3.05%			2.69%					
	(7.95)			(8.01)			(5.94)					

Mutual fund net buys are larger for stocks with favorable than stocks with unfavorable recommendations, especially for over-valued stocks.

Mutual fund net buys: PERF

Panel A: Cluster 2 (Mutual fund net buys)												
	PERF			Distress			O-score			MOM		
	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down	Up	Middle	Down
Long	2.95%	1.59%	0.95%	2.35%	1.21%	0.84%	3.12%	1.53%	0.72%	3.22%	2.15%	0.94%
	(10.52)	(7.90)	(5.35)	(8.16)	(5.43)	(4.14)	(12.39)	(7.02)	(2.28)	(12.43)	(8.94)	(5.62)
Short	2.23%	1.36%	0.32%	1.92%	1.47%	0.64%	2.41%	1.59%	-0.31%	2.46%	1.27%	0.39%
	(12.19)	(8.16)	(1.83)	(11.59)	(5.51)	(2.19)	(11.21)	(6.16)	(-1.80)	(21.51)	(6.65)	(1.30)
Long×RecUp – Long×RecDown	2.00%			1.52%			2.40%			2.28%		
	(8.13)			(8.50)			(5.26)			(11.58)		
Short×RecUp – Short×RecDown	1.91%			1.28%			2.71%			2.07%		
	(9.13)			(4.14)			(13.54)			(8.64)		
	GP			ROA								
	Up	Middle	Down	Up	Middle	Down						
Long	2.77%	1.43%	0.64%	2.99%	1.57%	0.82%						
	(12.81)	(10.57)	(2.61)	(11.07)	(7.27)	(4.73)						
Short	2.16%	1.38%	0.61%	2.56%	1.45%	0.17%						
	(13.44)	(13.03)	(3.42)	(16.88)	(6.82)	(0.79)						
Long×RecUp – Long×RecDown	2.12%			2.17%								
	(8.17)			(8.71)								
Short×RecUp – Short×RecDown	1.55%			2.39%								
	(9.97)			(11.52)								

Mutual fund net buys are larger for stocks with favorable than stocks with unfavorable recommendations.

Market reactions to skilled analysts' upward

Panel A: Upgrade recommendation changes ($CAR[0, +1]$)

	Cluster 1			Cluster 2		
$Corr_{MGMT}$	-0.000	0.000	-0.001			
	(-0.43)	(0.39)	(-0.53)			
$Corr_{PERF}$				0.002**	0.003**	0.004*
				(2.26)	(2.21)	(1.86)
$ \Delta Rec_{individual} $	0.003***	0.005***	0.005***	0.003***	0.005***	0.005***
	(7.74)	(8.71)	(6.84)	(7.85)	(8.94)	(6.92)
$AllStar$	0.006***	0.002**	0.001	0.006***	0.003**	0.002
	(8.77)	(2.28)	(0.94)	(8.83)	(2.42)	(1.36)
$Accuracy$	0.006***	0.002	0.001	0.006***	0.002	0.000
	(7.21)	(1.61)	(0.65)	(6.84)	(1.41)	(0.33)
$Ln(FirmExp + 1)$	0.000	0.000	-0.000	0.000	0.000	-0.000
	(1.29)	(0.85)	(-0.63)	(1.14)	(0.47)	(-0.38)
$Ln(TotalExp + 1)$	0.001***	0.001	0.002	0.001***	0.001	0.003*
	(5.21)	(1.36)	(1.49)	(5.37)	(1.52)	(1.92)
$Ln(BrokerSize)$	0.003***	0.002***	0.002***	0.003***	0.002***	0.002***
	(16.07)	(4.47)	(3.10)	(15.80)	(4.36)	(2.73)
Observations	94,046	94,046	94,046	91,545	91,545	91,545
Adjusted R ²	0.074	0.080	0.069	0.071	0.076	0.064

The market reacts much more strangely to skilled analysts' upgrade recommendation announcements for PERF anomalies.

Market reactions to skilled analysts' downward

Panel B: Downgrade recommendation changes ($CAR[0, +1]$)						
	Cluster 1			Cluster 2		
$Corr_{MGMT}$	-0.003**	-0.004*	-0.005*			
	(-2.13)	(-1.90)	(-1.76)			
$Corr_{PERF}$				-0.005***	-0.006***	-0.007***
				(-3.34)	(-3.06)	(-2.71)
$ \Delta Rec_{individual} $	-0.008***	-0.013***	-0.014***	-0.009***	-0.013***	-0.015***
	(-11.88)	(-13.50)	(-10.30)	(-11.94)	(-13.32)	(-10.38)
<i>AllStar</i>	-0.009***	-0.004**	-0.002	-0.008***	-0.004**	-0.001
	(-8.18)	(-2.57)	(-0.80)	(-7.95)	(-2.41)	(-0.64)
<i>Accuracy</i>	-0.008***	-0.003**	-0.001	-0.008***	-0.004**	-0.002
	(-6.69)	(-2.23)	(-0.67)	(-6.90)	(-2.40)	(-0.91)
$\ln(FirmExp + 1)$	0.000	0.001***	0.001	0.000	0.001***	0.001
	(0.76)	(3.88)	(1.40)	(0.82)	(3.60)	(0.94)
$\ln(TotalExp + 1)$	-0.001***	-0.003*	0.000	-0.001***	-0.002	0.001
	(-3.58)	(-1.86)	(0.22)	(-3.50)	(-1.63)	(0.40)
$\ln(BrokerSize)$	-0.005***	-0.002***	-0.000	-0.005***	-0.002***	-0.000
	(-16.91)	(-3.44)	(-0.50)	(-16.65)	(-3.15)	(-0.10)
Observations	111,237	111,237	111,237	111,237	111,237	111,237
Adjusted R ²	0.080	0.102	0.078	0.080	0.102	0.078

The market reacts much more strangely to skilled analysts' downgrade recommendation announcements, especially for PERF anomalies.

Alternative Explanations

- Analysts are **unaware** of the return predictability of these anomalies before their discoveries by academics (Mclean and Pontiff 2016)
 - Most anomalies are discovered in 1990s or early 2000s.
 - Weaker anomaly returns in the post-publication periods
 - But some are still highly significant, especially for MGMT anomalies
- The patterns of analyst recommendations are similar to those during the whole period
 - more favorable recommendations for short legs of MGMT anomalies
 - Recommendations are more consistent for PERF anomalies.

Alternative Explanations

- Analysts are **reluctant** to incorporate anomaly signals into their recommendations because their institutional clients face severe constraints (limits to arbitrage) when trading these stocks
 - The recommendation patterns and the amplifying effects between inconsistent and consistent recommendations are similar results between small stocks and big stocks
- Catering to institutional investors **preferences** for overvalued stocks (Edelen, Ince, and Kadlec 2016)
 - The recommendation patterns and the amplifying effects between inconsistent and consistent recommendations are similar results between low and high IO stocks

Alternative Explanations

- Misaligned incentives or behavioral bias?
 - Recommendations are more biased toward overvalued stocks and the amplification effect is stronger during high sentiment periods
- Overall, except for the misaligned incentives or behavioral bias explanation, our results appear to be inconsistent the above alternative explanations.

Other anomalies: Market-based anomalies

- Other six market-based anomalies: IVOL, turnover, long-run reversal, beta, and max daily return
- All generated significant abnormal returns, except Beta.
- The patterns for recommendations and the pricing effects are similar
 - Analyst recommendations are contradictory to market-based anomaly signals.
 - The anomaly returns are amplified when analyst recommendations contradict to anomaly signals.

Reconcile with prior studies

- Reconcile with prior studies documenting investment value of analyst consensus recommendations (Jegadeesh et al., 2004; Barber et al., 2001)
 - Different results mainly are attributable to different sample periods

Conclusion

- Analysts biased recommendations could be a source of market frictions contributing to mispricing:
 - Analysts tend to make more favorable recommendations to stocks classified as overvalued (short-leg of anomaly)
 - Overvalued stocks receiving more favorable recommendations tend to earn particularly large negative returns in the future
 - Mutual funds trade aligned with recommendations
- Anomalies are useful to identify skilled analysts ex-ante:
 - Analysts whose recommendations are more aligned with anomaly predictions are more skilled and elicit stronger recommendation announcement returns