UCLA Anderson

Quantitative Asset Management

Bernard Herskovic

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The shorting premium and asset pricing anomalies

Itamar Drechsler and Qingyi Freda Song Drechsler (2016, working paper)

Shorting Premium

- Shorting premium: cheap-minus-expensive-to-short (CME)
- Significant and positive: avg. returns and four-factor alpha

- Thoughts?

Shorting Premium

- Short fee interact with other anomalies
  - Short fees are higher for stocks that anomalies target for shorting
  - Anomalies are nonexistent among low short fee stocks
- Anomalies considered:
  - value-growth (Fama and French, 1992)
  - momentum (Jegadeesh and Titman, 1993),
  - idiosyncratic volatility (Ang et al., 2006)
  - composite equity issuance (Daniel and Titman, 2006)
  - financial distress (Campbell et al., 2008)
  - max return (Bali et al., 2011)
  - net stock issuance (Loughran and Ritter, 1995)
  - gross profitability (Novy-Marx, 2013)
- Anomalies' alphas are small after controlling for CME

Shorting Premium

Data:

- Lending fees from Markit Securities Finance (MSF)
- These are actual (not quoted) rates on security loans
- Time period: January 2004 to December 2013
- Daily frequency

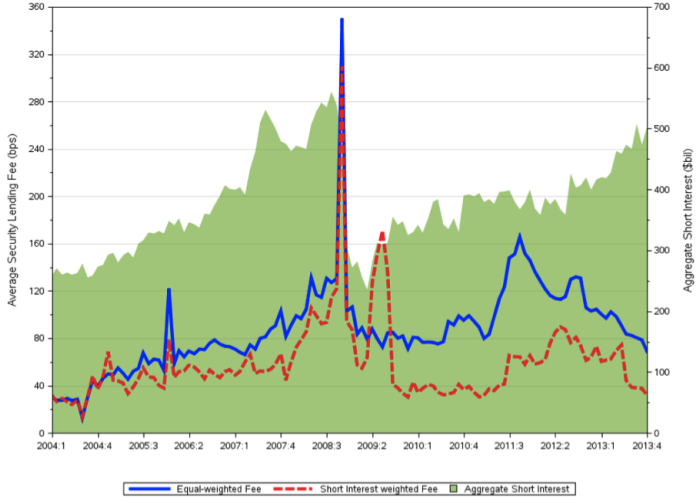
- Merge with CRSP/Compustat
- Drop small market cap stocks
- Drop stock with low share price (penny stocks)

- Lending fees: value-weighted fees
- Also use short fee proxy: Short Interest Ratio relative to Institutional Ownership (available post 1980)

Summary Stats

Year	No. Stocks	Market Cap. ($mil)	B/M	IOR (%)	SIR (%)	SIR_{IO} (%)	Aggregate Short Interest ($bil)	Short Fee (bps)
2004	3,072	3,988	0.58	59.2	4.4	8.0	267	33
2005	3,435	3,919	0.52	60.1	4.4	8.3	312	61
2006	3,529	4,100	0.52	62.2	5.2	9.0	362	70
2007	3,653	4,384	0.51	64.5	6.2	9.9	464	80
2008	3,568	3,803	0.60	64.9	7.3	11.3	473	134
2009	3,358	3,014	1.00	60.6	4.9	8.4	307	81
2010	3,283	3,792	0.85	60.1	5.0	9.4	360	86
2011	3,195	4,500	0.70	63.2	5.0	8.7	385	124
2012	3,113	4,811	0.77	63.0	5.0	9.0	392	118
2013	3,036	5,853	0.73	62.6	4.7	8.2	472	86

The table reports data summary statistics. The figures reported for a given year are averages for the months in that year. IOR is institutional ownership ratio, the ratio of shares held by institutions to total common shares outstanding; SIR is the short interest ratio, the ratio of short interest to total shares outstanding; SIR_{IO} is short interest divided by shares held by institutions; Aggregate Short Interest is the total value of shares shorted for all stocks in dollars; Short Fee is the annual borrowing fee in basis points. All quantities except Aggregate Short Interest are equal-weighted averages.



The figure plots the monthly time series of aggregate short interest and the average lending (i.e., shorting) fee across all stocks. The shaded area plots the aggregate dollar value of shares shorted across all stocks in billions of dollars, measured in the middle of the month. The solid blue line plots the equal weighted average annual shorting fee across all stocks in basis points. The dashed red line reports the short-interest weighted average annual shorting fee across all stocks in basis points.

Table 2: Short fee sorted portfolios

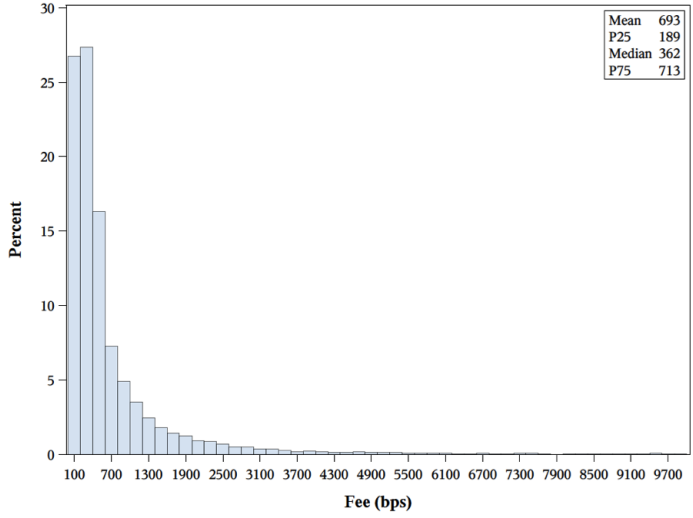
Fee Decile	No. Stocks	*Fee* (*bps*)	SIR_{IO} (%)	*mktcap* ($*bil*)	*B/M*	*mom* (%)	*ivol* (%)	*cei*	*distress*	*maxret* (%)	*nsi*	*Gross Ret* (%)	*Net Ret* (%)	$FF4\,\alpha$ (%)
Panel A: Portfolio Characteristics and Returns by Decile														
1 (Cheap)	332	2	4.5	16.05	0.62	9.91	1.65	0.04	-8.35	4.63	0.02	0.98	0.99	0.11
2	332	8	5.9	6.50	0.64	10.18	1.82	0.06	-8.37	5.08	0.02	1.05	1.06	0.15
3	333	10	6.6	3.69	0.64	9.90	1.92	0.08	-8.33	5.30	0.03	1.10	1.11	0.16
4	332	12	6.5	2.34	0.66	9.91	2.01	0.09	-8.33	5.52	0.03	1.03	1.05	0.11
5	332	13	6.3	1.99	0.69	9.68	2.10	0.09	-8.25	5.71	0.03	1.13	1.14	0.17
6	333	15	6.2	1.81	0.72	9.12	2.21	0.09	-8.26	5.93	0.03	1.10	1.12	0.18
7	333	18	6.9	2.56	0.73	10.07	2.26	0.10	-8.22	6.11	0.04	1.20	1.22	0.25
8	332	29	8.9	2.92	0.72	10.47	2.41	0.14	-8.05	6.44	0.05	1.11	1.13	0.16
9	333	71	12.5	3.11	0.69	10.34	2.67	0.21	-7.78	6.98	0.07	0.83	0.89	-0.10
10 (Expensive)	332	696	26.5	1.22	0.66	12.63	3.41	0.44	-3.24	8.76	0.13	-0.34	0.21	-1.33
1 − 10 Return												1.31	0.78	1.44
(t-stat)												(5.00)	(3.01)	(6.90)
Panel B: Highest Fee Decile														
10*a* (Expensive)	166	223	18.5	1.56	0.68	10.46	3.11	0.33	-7.48	8.00	0.10	0.32	0.49	-0.63
10*b* (Expensive)	166	1172	34.5	0.88	0.64	14.75	3.72	0.57	1.16	9.52	0.15	-0.99	-0.08	-2.02
1 − 10*b* Return												1.97	1.06	2.14
(t-stat)												(5.95)	(3.27)	(7.87)

The table reports equal-weighted averages of the monthly decile portfolio returns and stock characteristics. Decile 1 contains the cheapest-to-short stocks, while decile 10 contains the most expensive-to-short stocks. Fee is the annualized short fee in basis points; mktcap is market capitalization; B/M is the book-to-market ratio; mom is the average return over the previous twelve months; ivol is the idiosyncratic volatility; cei is composite equity issuance; distress is financial distress. GrossRet is the (usual) raw return without accounting for shorting fees; NetRet is the return net of shorting fees.

Shorting Premium

- The gross returns are similar among the top eight deciles, which are cheap-to-short stocks
- Highly significant FF4 alpha
- Shorting fee are related to characteristics from other anomalies (e.g. ivol, mom)
- Strong positive relationship between short fees and SIR_{IO} (short interest as a fraction of institutional ownership)
- Premium is large even after fees

- What can explain the shorting premium?



The figure plots a histogram of the annual short fees for the expensive-to-short stocks (decile 10 in Table 2). It is calculated for the sample of all short fees for decile-10 stocks from January 2004 to December 2013. The legend reports the distribution's mean, 25-percentile ("P25"), median, and 75th-percentile ("P75") values.

CME Portfolio: cheap-minus-expensive

Panel A: Moments

N	Mean(%)	Std. Dev.(%)	Skewness	Kurtosis	AC(1)
120	1.31	2.87	-0.38	1.51	0.26

Panel B: Correlations

	CME	*MKTRF*	*SMB*	*HML*	*UMD*
CME	1.00	-0.36	-0.47	-0.28	0.46
MKTRF		1.00	0.46	0.34	-0.33
SMB			1.00	0.18	-0.10
HML				1.00	-0.32
UMD					1.00

Summary statistics for the monthly return of the CME (cheap-minus-expensive) portfolio. Panel A reports moments of the CME return. Panel B gives the correlation matrix for the returns of the CME portfolio and the four Fama-French factors, MKTRF, SMB, HML, and UMD. The sample is January 2004 to December 2013.

CME Portfolio: cheap-minus-expensive

Which stocks are expensive to short?

Anomaly Rank	Anomalies *B/M*	*mom*	*ivol*	*cei*	*distress*	*maxret*	*nsi*	*gprof*
Panel B: Average Annual Shorting Fee (bps)								
1 (Long)	92	127	26	50	51	38	48	93
2	60	63	27	51	35	39	46	60
3	58	54	32	41	37	44	68	54
4	57	52	40	43	41	52	84	58
5	57	49	50	40	46	60	65	65
6	63	54	61	44	51	67	62	57
7	67	61	80	44	68	86	55	77
8	78	75	108	60	85	108	70	79
9	97	105	160	94	131	147	139	92
10 (Short)	181	212	290	182	272	234	213	233

The table reports the returns and shorting fees by decile for eight anomalies. For each anomaly, we sort stocks into deciles so that decile 1 is the long leg of the anomaly strategy and decile 10 is the short leg. Panel B reports the average annualized shorting fee in basis points for the stocks in each anomaly decile. The anomalies are: value-growth (B/M), momentum (mom), idiosyncratic volatility (ivol), composite equity issuance (cei), financial distress (distress), max return (maxret), net share issuance (nsi), and gross profitability (gprof). The sample is January 2004 to December 2013.

Shorting Fess and Anomalies

Can the CME portfolio explain these anomalies?

Anomaly	Anomalies							
Rank	*B/M*	*mom*	*ivol*	*cei*	*distress*	*maxret*	*nsi*	*gprof*
Panel A: Anomaly Strategy Returns (%)								
1 (Long)	1.15	1.15	0.92	0.99	1.09	0.93	0.95	1.24
2	1.03	0.94	1.06	0.93	1.08	1.01	0.94	1.09
3	0.96	0.94	1.03	1.08	1.08	1.09	0.91	1.13
4	1.05	1.05	0.95	1.09	1.07	1.06	0.92	1.11
5	0.87	0.97	1.06	1.09	1.13	1.08	1.13	1.18
6	1.03	1.01	1.10	1.24	1.11	0.97	1.12	1.03
7	0.91	1.07	1.00	1.07	1.14	0.96	1.11	0.97
8	0.85	1.01	1.05	1.08	1.16	0.89	1.05	0.82
9	0.75	0.92	0.81	0.86	1.00	0.81	0.75	0.41
10 (Short)	0.64	1.00	0.22	0.48	0.47	0.39	0.40	0.28
L-S Return	0.51	0.15	0.70	0.51	0.62	0.54	0.55	0.96
(t-stat)	(1.52)	(0.25)	(1.49)	(1.92)	(1.19)	(1.20)	(2.26)	(3.46)
L-S Net Fee Return	0.44	0.07	0.47	0.40	0.44	0.37	0.41	0.84
(t-stat)	(1.29)	(0.11)	(1.00)	(1.51)	(0.84)	(0.83)	(1.69)	(3.05)
L-S FF4 α	0.45	0.19	1.20	0.78	0.98	1.05	0.70	1.07
(t-stat)	(2.24)	(0.64)	(4.30)	(3.42)	(3.87)	(4.09)	(3.34)	(3.55)
L-S FF4+CME α	0.65	0.16	0.08	0.14	0.48	0.25	0.03	0.40
(t-stat)	(2.68)	(0.44)	(0.29)	(0.56)	(1.61)	(0.89)	(0.13)	(1.14)

Shorting Fees and Anomalies

Can the CME portfolio explain these anomalies?

- Little evidence of anomaly returns within the eighty percent of stocks that have low shorting fees.
- Anomalies are concentrated among stocks with significant fees, and are especially large for the highest short-fee stocks.
- Momentum, which exhibits a negligible return spread unconditionally, is sizable among the high-fee stocks.

- Similar patterns in alphas?

Anomalies conditional on shorting fees (double sort)

Where are the anomalies among cheap-to-short stocks?

Fee	Anomalies							
Bucket	B/M	*mom*	*ivol*	*cei*	*distress*	*maxret*	*nsi*	*gprof*
				Panel A: Monthly Returns (%)				
$F0$	0.19	-0.15	-0.14	0.19	-0.07	-0.10	0.17	0.65
(t-stat)	(0.60)	(0.25)	(0.32)	(0.87)	(0.13)	(0.23)	(0.82)	(2.51)
$F1$	0.26	0.22	0.69	0.17	0.22	0.41	-0.21	0.68
(t-stat)	(0.79)	(0.47)	(1.98)	(0.49)	(0.45)	(1.09)	(0.64)	(2.17)
$F2$	0.59	0.11	0.65	0.41	0.71	0.62	0.50	0.74
(t-stat)	(1.56)	(0.20)	(1.61)	(0.98)	(1.26)	(1.53)	(1.46)	(2.36)
$F3$	0.67	0.56	1.56	1.00	1.22	1.26	0.49	1.06
(t-stat)	(1.48)	(1.09)	(3.40)	(1.88)	(2.03)	(2.73)	(1.28)	(2.63)
$F3 - F0$	0.48	0.71	1.70	0.80	1.29	1.36	0.33	0.41
(t-stat)	(1.33)	(1.13)	(3.62)	(1.74)	(2.46)	(3.31)	(1.00)	(1.26)

We divide the short-fee deciles from Table 2 into four buckets. Deciles 1-8, the low-fee stocks, are placed into the F0 bucket. Deciles 9 and 10, the intermediate- and high-fee stocks, are divided into three equal-sized buckets, F1 to F3, based on shorting fee, with F3 containing the highest fee stocks. We then sort the stocks within each bucket into portfolios based on the anomaly characteristic and let the bucket's long-short anomaly return be given by the difference between the returns of the extreme portfolios. Due to the larger number of stocks in the F0 bucket, we sort it into deciles based on the anomaly characteristic, while F1 to F3 are sorted into terciles. Panel A reports the monthly anomaly long-short returns for each anomaly and bucket.

Anomalies conditional on shorting fees (double sort)

Where are the anomalies among cheap-to-short stocks?

Fee	Anomalies							
Bucket	*B/M*	*mom*	*ivol*	*cei*	*distress*	*maxret*	*nsi*	*gprof*
Panel B: Fama-French 4-Factor Alphas (%)								
*F*0	0.11	0.05	0.32	0.40	0.34	0.35	0.38	0.64
(t-stat)	(0.73)	(0.18)	(1.42)	(2.38)	(1.50)	(1.69)	(2.32)	(2.63)
*F*1	0.30	0.37	1.06	0.38	0.56	0.79	0.03	0.62
(t-stat)	(1.09)	(1.14)	(4.06)	(1.24)	(1.96)	(2.81)	(0.11)	(2.04)
*F*2	0.72	0.22	1.00	0.71	1.13	0.98	0.79	0.72
(t-stat)	(2.32)	(0.58)	(3.23)	(2.01)	(3.07)	(3.35)	(2.90)	(2.26)
*F*3	0.74	0.54	1.79	1.21	1.41	1.51	0.70	1.03
(t-stat)	(2.12)	(1.12)	(4.10)	(2.42)	(2.62)	(3.54)	(2.12)	(2.56)
$F3 - F0$	0.63	0.49	1.48	0.81	1.07	1.17	0.32	0.40
(t-stat)	(1.80)	(0.90)	(3.60)	(1.74)	(2.13)	(3.06)	(1.07)	(1.19)

We divide the short-fee deciles from Table 2 into four buckets. Deciles 1-8, the low-fee stocks, are placed into the F0 bucket. Deciles 9 and 10, the intermediate- and high-fee stocks, are divided into three equal-sized buckets, F1 to F3, based on shorting fee, with F3 containing the highest fee stocks. We then sort the stocks within each bucket into portfolios based on the anomaly characteristic and let the bucket's long-short anomaly return be given by the difference between the returns of the extreme portfolios. Due to the larger number of stocks in the F0 bucket, we sort it into deciles based on the anomaly characteristic, while F1 to F3 are sorted into terciles. Panel B reports the corresponding FF4 alphas.

Anomalies conditional on shorting fees (double sort)

Where are the anomalies among cheap-to-short stocks?

Fee	Anomalies							
Bucket	B/M	*mom*	*ivol*	*cei*	*distress*	*maxret*	*nsi*	*gprof*
Panel C: Fama-French 4-Factor + CME Alphas (%)								
$F0$	0.30	0.18	-0.18	0.11	0.19	0.09	0.10	0.29
(t-stat)	(1.70)	(0.50)	(0.72)	(0.56)	(0.72)	(0.38)	(0.53)	(1.04)
$F1$	0.48	0.48	0.71	0.12	0.49	0.56	-0.32	0.42
(t-stat)	(1.48)	(1.26)	(2.31)	(0.34)	(1.45)	(1.68)	(0.99)	(1.16)
$F2$	0.48	-0.21	-0.07	-0.07	0.59	0.17	0.08	0.69
(t-stat)	(1.30)	(0.46)	(0.22)	(0.17)	(1.37)	(0.52)	(0.26)	(1.81)
$F3$	1.10	0.69	0.23	0.67	0.12	0.20	-0.01	0.37
(t-stat)	(2.66)	(1.19)	(0.52)	(1.14)	(0.20)	(0.44)	(0.01)	(0.79)
$F3 - F0$	0.80	0.52	0.42	0.57	-0.08	0.11	-0.11	0.08
(t-stat)	(1.90)	(0.80)	(0.92)	(1.02)	(0.14)	(0.26)	(0.30)	(0.19)

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Shorting Premium: takeaway

- Short fees are a strong predictor of the cross-section of stock returns
  - Both gross and net of fees
  - FF4 alphas
- Short fees are substantially higher for the stocks targeted for selling by the anomalies.
- Strong interaction between the level of short fees and the magnitude of anomaly returns.
  - The anomalies largely disappear among the 80% of stocks that have low fees, but are highly amplified among those with high fees.

Comomentum: Inferring arbitrage activity from return correlations

Dong Lou and Christopher Polk (2022, Review of Financial Studies)

Arbitrage Activity

- How to measure arbitrage activity?
  - Extremely difficult to measure at any given point in time.
  - Huge measurement challenge
- Arbitrage activity $\implies$ stock return comovement
- Link time-series variation in our new measure to variation in existing variables previously tied to arbitrage activity
- Forecast time variation in whether prices slowly correct or instead overshoot as a function of our arbitrage activity proxy.
- This approach enables us to identify periods when there is too little or too much arbitrage trading, depending on the subsequent return pattern.

Comovement as a measure of arbitrage activity

Should comovement in stock returns forecast anomaly returns?

Momentum

- "When arbitrageurs take positions in assets, their trades can have simultaneous price impacts [...] and thus cause return comovement"
- Positive-feedback: momentum is a likely place where arbitrage activity can be destabilizing when trading becomes too crowded

Comomentum

- Comomentum is significantly correlated with existing variables plausibly linked to the size of arbitrage activity in this market.
- When comomentum is relatively high, the long-run buy-and-hold returns to a momentum strategy are negative, consistent with relatively high amounts of arbitrage activity pushing prices further away from fundamentals.
- Comomentum forecasts relatively high holding-period return volatility and relatively more negative holding-period return skewness for the momentum strategy.

Comomentum

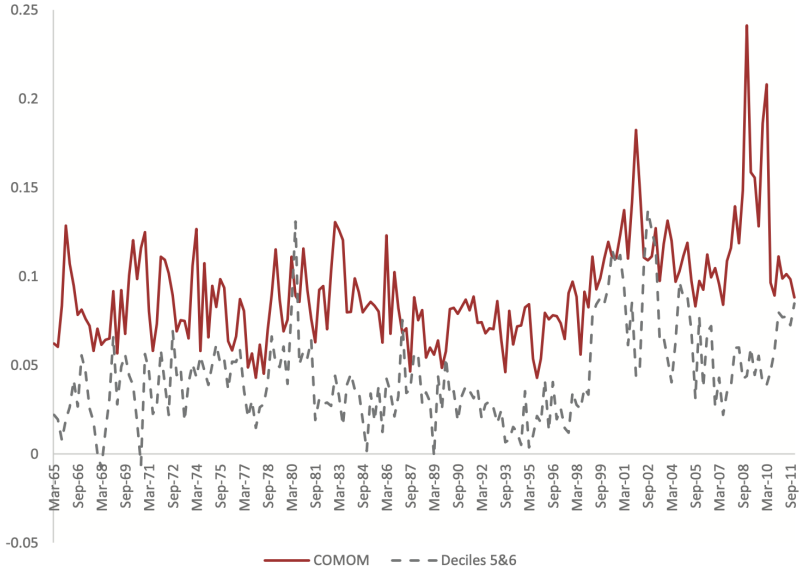
Data:

- CRSP stocks
- Drop stock with share price below $5
- Drop stock in the bottom decile of NYSE market cap
- Institutional ownership data from Thompson Financial
- AUM from TASS
- Hedge fund returns from CRSP

Comomentum

- At the end of each month, sort all stocks into deciles based on their previous 12-month return (skipping the most recent month)
- For each stock compute the Fama and French three-factor model residuals
- Compute pairwise partial correlations using 52 weekly returns for all stocks in each decile in the portfolio ranking period
  - Use FF3 residuals: control for the Fama-French three factors when computing these partial correlations
- Loser comomentum ($comom^L$): average pairwise partial correlation for the loser decile
- Winner comomentum ($comom^W$): average pairwise partial correlation for the winner decile
- $CoMOM = 0.5 comom^L + 0.5 comom^W$

Comomentum Time Series



Summary Stats

A. Summary statistics

Variable	N	Mean	SD	Min	Max
$CoMOM$	564	0.092	0.029	0.037	0.241
$CoMOM^L$	564	0.098	0.038	0.012	0.250
$CoMOM^W$	564	0.086	0.030	0.022	0.270
$MRET$	564	0.231	0.259	−0.453	0.970
$MVOL$	564	0.043	0.014	0.018	0.075

Correlations

Does comomentum capture time-varying expected returns?

B. Correlation

	$CoMOM$	$CoMOM^L$	$CoMOM^W$	$MRET$	$MVOL$
$CoMOM$	1.000				
$CoMOM^L$	0.889	1.000			
$CoMOM^W$	0.820	0.467	1.000		
$MRET$	−0.368	−0.303	−0.331	1.000	
$MVOL$	0.278	0.211	0.273	−0.358	1.000

Autocorrelations

C. Autocorrelation

	$CoMOM_t$	$CoMOM_t^L$	$CoMOM_t^W$	$CoMOM_{t+1}$	$CoMOM_{t+1}^L$	$CoMOM_{t+1}^W$
$CoMOM_t$	1.000					
$CoMOM_t^L$	0.889	1.000				
$CoMOM_t^W$	0.820	0.467	1.000			
$CoMOM_{t+1}$	0.483	0.468	0.347	1.000		
$CoMOM_{t+1}^L$	0.399	0.390	0.282	0.892	1.000	
$CoMOM_{t+1}^W$	0.436	0.418	0.319	0.819	0.471	1.000

Comomentum

Comomentum associated with proxies for the size of arbitrage activity in the momentum strategy

DepVar = Detrended $CoMOM_t$

	(1)	(2)	(3)	(4)	(5)	(6)
MOM_{t-1}	0.388***	0.457***		0.572***	0.379***	0.408***
	[0.132]	[0.140]		[0.148]	[0.143]	[0.129]
PIH^W_{t-1}		0.056*		0.093***	0.065***	0.063***
		[0.030]		[0.033]	[0.019]	[0.023]
AUM_{t-1}			0.011***	0.007**	0.007***	0.008***
			[0.004]	[0.003]	[0.003]	[0.003]
$MRET_{t-1}$					−0.024*	−0.034***
					[0.012]	[0.012]
$MVOL_{t-1}$					−0.047	−0.312
					[0.222]	[0.256]
PS_{t-1}					−0.150***	−0.173***
					[0.046]	[0.063]
NAT^L_t					−3.589***	
					[0.693]	
NAT^W_t					1.879**	
					[0.861]	
$NAT^W_t - NAT^L_t$						3.334***
						[0.837]
Adj. R^2	.09	.19	.11	.39	.56	.52
No. obs.	564	370	204	204	204	204

Does variation in arbitrage activity forecast variation in the long-run reversal of momentum returns?

Forecasting Momentum Returns with Comomentum

Comomentum and reversals?

- At the end of each month, all stocks are sorted into deciles based on their lagged 12-month cumulative returns (skipping the most recent month).
- All months are then classified into five groups based on CoMOM

A. Raw momentum returns

Rank	No obs.	Year 0 Estimate	Year 1 Estimate	Year 2 Estimate	Years 1-2 Estimate	Years 3-4 Estimate
1	112	8.50%	0.88%	0.24%	0.56%	0.08%
2	113	9.00%	0.68%	−0.22%	0.23%	−0.30%
3	113	9.31%	0.71%	−0.43%	0.14%	−0.15%
4	113	9.90%	0.67%	−0.90%	−0.12%	−0.19%
5	113	11.09%	−0.18%	−0.84%	−0.51%	0.07%
5-1		**2.59%**	**−1.06%**	**−1.08%**	**−1.07%**	−0.01%
		(2.45)	(−2.72)	(−2.75)	(−3.35)	(−0.04)
OLS		**0.006**	**−0.002**	**−0.003**	**−0.002**	0.000
		(2.60)	(−2.42)	(−2.96)	(−3.53)	(0.13)

Forecasting Momentum Returns with Comomentum

Comomentum and reversals?

- At the end of each month, all stocks are sorted into deciles based on their lagged 12-month cumulative returns (skipping the most recent month).
- All months are then classified into five groups based on CoMOM

C. Five-factor-adjusted momentum returns

1	112	8.27%	1.23%	0.41%	0.82%	0.27%
2	113	8.85%	1.15%	0.27%	0.71%	−0.13%
3	113	9.10%	1.04%	−0.07%	0.48%	0.07%
4	113	9.79%	0.86%	−0.34%	0.26%	0.10%
5	113	10.84%	0.10%	−0.35%	−0.13%	0.25%
5-1		**2.58%**	**−1.13%**	**−0.76%**	**−0.95%**	−0.02%
		(2.55)	(−2.78)	(−2.07)	(−2.87)	(−0.10)
OLS		**0.006**	**−0.003**	**−0.002**	**−0.002**	0.000
		(2.77)	(−2.96)	(−2.57)	(−3.41)	(0.44)

- Robustness in Table 4

Covalue?

Covalue vs. Comomentum

- Momentum trading is an unanchored strategy
- Momentum has positive feedback: hard to traders to know when to stop
- Different effect for anchored strategies: stabilizing rather than destabilizing arbitrage activity

Comomentum: takeaway

- Novel measure of arbitrage activity to study destabilizing effect in the stock market
- Comomentum: high-frequency abnormal return correlation among stocks on which a typical momentum strategy
- Low comomentum periods: momentum strategies are profitable and stabilizing
  - Underreaction that arbitrageurs correct
- High comomentum: momentum tends to crash and revert, reflecting prior overreaction resulting from crowded
  - Overreaction from crowded trading pushing prices away from fundamental
- Covalue positively forecasts future value strategy returns and is positively correlated with the value spread