Connected Stocks

The Journal of Finance

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IESE and LSE

2013

Research Question

Can institutional ownership cause excess return comovement?

- We connect stocks through common ownership by active mutual funds
- We focus on excess return comovement for a pair of stocks
- We use common ownership to forecast cross-sectional variation in the realized correlation of four-factor residuals

Findings

- **Simple measures** of institutional connnectedness statistically and economically **improve forecasts** of cross-sectional variation in the correlation of four-factor residuals
  - Our primary pair-level variable is *FCAP*, the total value of stock held by the common active mutual fund owners, scaled by the total market capitalization of the pair
- **Natural experiment** based on the 2003 mutual fund trading scandal confirms that the link is casual
- The effect is stronger when there are **extreme flows** in the common funds of the pair and when the **stocks in the pair have relatively low float**
- A **trading strategy** exploiting this price dislocation generates abnormal returns averaging approximately 9% per year
- **Hedge funds load negatively** on the connected stock strategy

Connectedness predicts return correlation

PANEL A: Full sample (1980-2008)

	Dependent Variable: Correlation of 4F residuals			
	(1)	(2)	(3)	(4)
Constant	0.00508	0.00512	0.00284	0.00288
	(11.30)	(11.17)	(6.92)	(6.85)
$FCAP^{*}_{ij,t}$	0.00395	0.00256	0.00168	0.00184
	(13.43)	(11.61)	(8.58)	(9.85)
$A^{*}_{ij,t}$		0.01437	0.01342	0.01334
		(11.92)	(11.83)	(11.77)
$SAMESIZE^{*}$		-0.00365	-0.00396	-0.00402
		(-1.43)	(-1.53)	(-1.54)
$SAMEBEME^{*}$		0.00031	-0.00024	-0.00001
		(2.68)	(-2.80)	(-0.00)
$SAMEMOM^{*}$		0.00228	0.00143	-0.00736
		(8.60)	(6.87)	(-2.36)
$NUMSIC^{*}$		0.00745	0.00676	0.00671
		(12.39)	(12.22)	(12.03)
$SIZE1^{*}$		0.04683	0.04816	0.04855
		(11.90)	(11.84)	(11.66)
$SIZE2^{*}$		0.01012	0.01021	0.01033
		(2.78)	(2.79)	(2.83)
$SIZE1SIZE2^{*}_{ij,t}$		-0.06530	-0.06750	-0.06692
		(-12.2)	(-11.8)	(-11.8)
Additional Controls (Online Appendix)				
Non-linear size controls	No	Yes	Yes	Yes
Pair Characteristic controls	No	No	Yes	Yes
Non-linear style controls	No	No	No	Yes

What drives the comovement?

- Of course, funds may endogeneously choose to invest in pairs that move together. Any interpretation of causality must be cautious
- We look for evidence that the phenomenon is consistent with price pressure in three ways:
  1. **Natural experiment** - mutual fund scandal 2003.
  2. Exploit heterogenity in the effect by examining **extreme flows into pairs of low-float stocks**
  3. Measure the returns to a **cross-reversal trading strategy** exploiting these temporary deviations due to connectedness.

1. Natural Experiment

In September 2003, 25 large mutual fund families settled allegations of illegal trading

- Those families lost 14.1% of their capital within one year, and 24.3% within two years
- We instrument *FCAP* from 2004-2006 with $RATIO = FCAP_{Scandal}/FCAP$ as of September 2003

		Dependent Variable: Correlation of four-factor residuals			
Specification	Instrument	(1)	(2)	(3)	(4)
2SLS	*RATIO*	0.04204	0.04261	0.03345	0.02874
		(5.39)	(3.51)	(2.41)	(2.03)
2SLS	RATIO>Median[RATIO]	0.04107	0.04007	0.03222	0.02826
		(5.98)	(3.44)	(2.50)	(2.15)
OLS		0.00181	0.00062	-0.00026	0.00041
		(4.43)	(1.47)	(-0.47)	(0.83)
Additional Controls (Online Appendix)					
Non-linear size controls		No	Yes	Yes	Yes
Pair Characteristic controls		No	No	Yes	Yes
Non-linear style controls		No	No	No	Yes

2. Cross-sectional variation: extreme flows, small stocks

Dep. Variable: Correlation of four-factor residuals

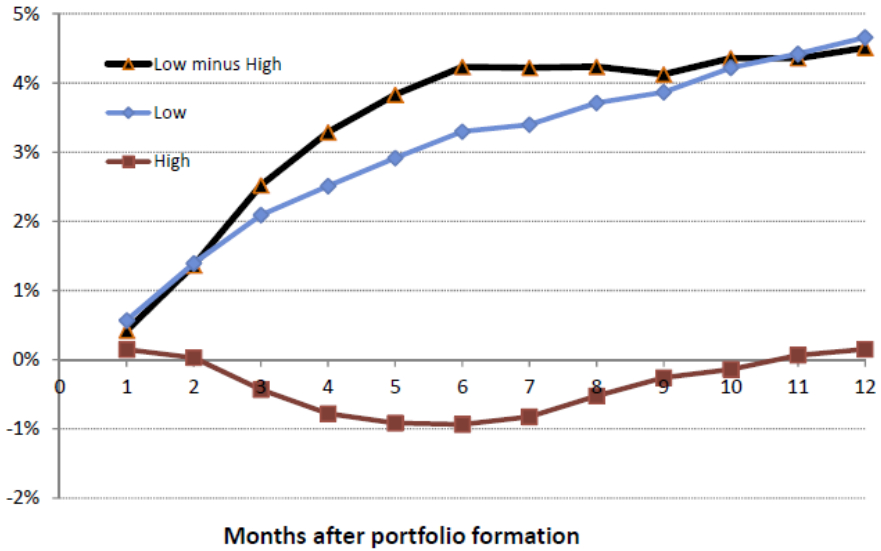
	(1)	(2)	(3)	(4)
Intercept	0.00426	0.00454	0.00084	0.00101
	(6.74)	(6.51)	(1.19)	(1.51)
FCAP*	0.00835	0.00428	0.00313	0.00338
	(15.95)	(12.59)	(10.86)	(12.17)
FCAP* x PFLOAT*	-0.00038	-0.00016	-0.00043	-0.00038
	(-1.64)	(-0.88)	(-2.44)	(-2.10)
FCAP* x PFLOW*	0.00407	0.00244	0.00253	0.00248
	(8.18)	(6.17)	(7.00)	(6.90)
FCAP* x PFLOAT* x PFLOW*	-0.00051	-0.00028	-0.00050	-0.00046
	(-2.15)	(-1.39)	(-2.58)	(-2.41)
Additional Controls (Online Appendix)				
Non-linear size controls	No	Yes	Yes	Yes
Pair Characteristic controls	No	No	Yes	Yes
Non-linear style controls	No	No	No	Yes

- These results are consistent with the causal interpretation provided by the natural experiment
- Prices are more subject to non-fundamental comovement when pressure from net mutual fund trading is high and especially so when the stocks in question have low float and are thus less liquid

3. Connected Stocks Trading Strategy

Buy (sell) stocks that have gone down (up) if their connected stocks have gone down (up) as well. The connected return is a confirming signal that the own return will revert

		i's connected ret	
		Low	High
i's own return	Low	BUY	
	High		SELL



Hedge Fund Index Attribution

Hedge fund returns (particularly those of Long/Short equity strategies) strongly and negatively covary with our connected return factor, and particularly so in turbulent times (when VIX has increased)

Variable	HF ALL		HF LONG/SHORT		MF ALL
Alpha	0.0025	0.0030	0.0029	0.0027	-0.0009
	(1.93)	(2.63)	(2.91)	(2.42)	(-2.45)
CS	-0.0490	-0.1306	-0.0989	-0.2245	-0.0225
	(-1.13)	(-5.38)	(-2.88)	(-9.25)	(-1.78)
CS * ΔVIXt-1	-0.0070	-0.0034	-0.0140	-0.0124	-0.0018
	(-1.30)	(-0.67)	(-3.29)	(-2.49)	(-1.18)
Carhart Factors	Yes	No	Yes	No	Yes
Fung-Hsieh Factors	No	Yes	No	Yes	No
Nobs	182	182	182	182	182
RSquare	52%	59%	82%	75%	99%

Conclusions

- Stocks are connected through institutional ownership
- These connections help reveal the covariance matrix of returns
- The common-ownership comovement effect is consistent with a causal explanation:
  - A natural experiment links exogenous variation in common ownership to future excess comovement
  - The effect is stronger for small pairs and pairs whose common funds have extreme flows
  - A trading strategy exploiting this price pressure phenomenon yields alphas over 9% per year
- Hedge funds load negatively on this strategy