Social Ties and Predictable Returns

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Backgrounds & Motivation

- There has been extensive literature studying how investor attention affects information processing, suggesting that limited attention can lead to market underreactions to value-relevant news. The underreaction-based mechanism explains predictable returns in firms connected by shared economic links.

- A growing literature highlights the interconnected nature of firms in the economy and shows that economic exchanges between regions are positively associated with the intensity of social connections.

➢ Can the returns of firms located in socially-connected regions help predict the future stock returns and performances of related firms?

Research Problem

- Can the returns of firms located in socially-connected regions help predict the future stock returns and performances of related firms?

➢ We find focal firm's return can be predicted by the returns of firms located in socially-connected regions. And the result is robust.

- What are potential channels that may explain our findings?

➢ We find that return predictability results are stronger among firms that receive little investors attention (investor inattention). We find no evidence of return reversal (no investors' overreaction).

➢ And social-peer firm returns can predict the future fundamentals and earnings surprises of the focal firm.

Contribution

- We present a new and robust lead-lag relationship based on social ties between firms' headquarters locations, which captures a substantial component of economic ties of firms that are not explained by the local socioeconomic conditions or physical proximity.
- We also contribute to the understanding of how networks shape economic relationships - the effect of social connections can also be important, in a way that is neither localized nor limited to customer-supplier relations.

Data and Model Design

- Measure: Social Connectedness Index (SCI) - Bailey et al. (2018a)

$$Social\ Connectedness\ Index = \frac{Friendship\ Links_{i,j}}{Population_i \times Population_j}$$

- Sample:

all common stocks in CRSP universe, exclude stocks with a price lower than $5 and higher that $1000 at the end of each month to ensure that our results are not affected by illiquidity, January 1962 to December 2019

- Data source:

Accounting variables are obtained from the CRSP-Compustat merged database. Analyst earnings forecasts and institutional ownership data are from I/B/E/S and Thomson Reuters institutional holdings database. Customer-supplier firm links are obtained through the Linking Suite by WRDS. Firm headquarters data are gathered from the augmented 10-X header data file on the SRAF. The Economic Area-ZIP code link file is obtained from Riccardo Sabbatucci's website.

Data and Model Design

- Social-Peer Firm Return (SPFRET):

$$SPFRET = \frac{\sum_{j \in I_i, j \notin S_i} SCI_{c_i,c_j} RET_{j,t}}{\sum_{j \in I_i, j \notin S_i} SCI_{c_i,c_j}}$$

Note: Only include firms from a different state to mitigate the effect of geographic proximity on our measures.

- $SPFMOM$: the compound $SPFRET$ between t − 11 and t − 1
- Controls:
- Industry momentum: INDRET and INDMOM
- Geographic lead lag effect: GEORET and GEOMOM
- customer-supplier lead lag effect: CRET and CMOM
- shared analyst coverage: CFRET and CFMOM
- RET, SIZE, BMKT, BM, MOM, IVOL, ILLIQ, MAX, SKEW, COSKEW

Data and Model Design

- Summary Statistics

SPFRET⊥: obtained by regressing SPFRET on INDRET using a panel regression with month fixed effects

	RET_{t+1}	SPFRET	SPFMOM	$SPFRET_{\perp}$	INDRET	INDMOM	GEORET	GEOMOM	CFRET	CFMOM	CRET
RET_{t+1}	1.000										
SPFRET	0.023	1.000									
SPFMOM	0.010	0.078	1.000								
$SPFRET_{\perp}$	0.012	0.694	0.014	1.000							
INDRET	0.027	0.700	0.096	0.008	1.000						
INDMOM	0.012	0.044	0.710	-0.041	0.101	1.000					
GEORET	-0.002	0.044	0.018	0.010	0.047	0.018	1.000				
GEOMOM	0.008	-0.002	0.058	-0.012	0.013	0.073	0.035	1.000			
CFRET	0.033	0.392	0.029	0.130	0.414	0.013	0.097	0.004	1.000		
CFMOM	0.021	0.048	0.425	-0.000	0.067	0.437	0.024	0.110	0.043	1.000	
CRET	0.014	0.140	0.009	0.052	0.139	0.010	0.044	-0.002	0.206	0.011	1.000

The average cross-sectional correlation between SPFRET and INDRET / SPFMOM and INDMOM is 0.70 / 0.71. Because of these high correlations with the industry variables, we prepare another set of results using the orthogonalized versions as a robustness check.

Empirical Results - The Return Predictability

- Univariate-Sorted Portfolios: SPFRET

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(10-1)
Raw Return	0.072	0.266	0.521**	0.803***	0.893***	0.879***	0.940***	1.161***	1.345***	1.538***	1.466***
	(0.307)	(1.180)	(2.393)	(3.705)	(4.168)	(4.019)	(4.472)	(5.302)	(5.990)	(6.374)	(8.518)
DGTW Alpha	−0.494***	−0.341***	−0.147**	0.056	0.130**	0.127***	0.127**	0.363***	0.444***	0.631***	1.125***
	(−6.246)	(−3.891)	(−2.136)	(0.991)	(2.223)	(2.645)	(2.533)	(6.221)	(5.913)	(6.528)	(7.541)
FF5 Alpha	−1.033***	−0.767***	−0.547***	−0.274***	−0.227***	−0.248***	−0.132**	0.086	0.330***	0.520***	1.552***
	(−8.283)	(−5.819)	(−5.688)	(−3.127)	(−2.605)	(−3.044)	(−2.255)	(1.007)	(3.004)	(3.880)	(6.944)

- Univariate-Sorted Portfolios: SPFRET⊥

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(10-1)
Raw Return	0.541**	0.607***	0.631***	0.716***	0.769***	0.918***	0.974***	1.001***	1.054***	1.204***	0.663***
	(2.561)	(2.700)	(3.070)	(3.561)	(3.723)	(4.303)	(4.617)	(4.713)	(4.789)	(5.349)	(6.814)
DGTW Alpha	−0.148**	−0.085	−0.088	−0.020	0.025	0.147***	0.185***	0.233***	0.286***	0.358***	0.506***
	(−2.069)	(−1.480)	(−1.537)	(−0.364)	(0.435)	(2.714)	(3.459)	(4.621)	(4.930)	(5.638)	(6.150)
FF5 Alpha	−0.580***	−0.458***	−0.438***	−0.332***	−0.305***	−0.131*	−0.076	−0.060	−0.016	0.101	0.681***
	(−5.270)	(−4.989)	(−6.505)	(−3.905)	(−4.479)	(−1.674)	(−1.173)	(−0.854)	(−0.270)	(1.640)	(6.304)

Empirical Results - The Return Predictability

- Controlling for Industry Effects

Panel A: Dependent sort.

	SPFRET					
	(1)	(2)	(3)	(4)	(5)	(5-1)
INDRET1	−1.265***	−1.209***	−0.923***	−0.750***	−0.594***	0.671***
	(−8.034)	(−8.597)	(−6.446)	(−4.742)	(−3.691)	(5.146)
INDRET2	−0.664***	−0.527***	−0.366***	−0.202	−0.320***	0.344***
	(−4.724)	(−4.304)	(−3.197)	(−1.545)	(−3.594)	(2.727)
INDRET3	−0.416***	−0.172*	−0.220*	−0.086	−0.152*	0.264***
	(−4.326)	(−1.836)	(−1.950)	(−1.093)	(−1.718)	(2.721)
INDRET4	−0.355***	−0.070	−0.050	0.109	0.162	0.517***
	(−3.877)	(−0.695)	(−0.496)	(1.068)	(1.471)	(4.080)
INDRET5	0.231**	0.275**	0.443***	0.559***	0.834***	0.603***
	(1.985)	(2.038)	(3.095)	(3.579)	(4.651)	(4.036)
Average	-0.494***	-0.341***	-0.223***	-0.074	-0.014	0.480***
	(-8.532)	(-6.027)	(-3.992)	(-1.326)	(-0.239)	(8.418)

Empirical Results - The Return Predictability

- Fama-MacBeth Regression Analysis

	RET_{t+1}					
	(1)	(2)	(3)	(4)	(5)	(6)
SPFRET	0.420***	0.212***	0.213***	0.143***	0.195***	0.128**
	(9.467)	(7.244)	(6.972)	(3.789)	(2.924)	(2.057)
INDRET		0.295***	0.278***	0.082*	0.217***	0.082
		(7.364)	(6.739)	(1.805)	(2.578)	(1.081)
INDMOM		0.093**	0.100**	0.088**	0.089	0.093
		(2.508)	(2.550)	(2.061)	(1.467)	(1.404)
GEORET			0.035**	0.018	−0.017	−0.032
			(2.098)	(0.834)	(−0.342)	(−0.595)
CFRET				0.501***		0.416***
				(7.727)		(4.612)
CRET					0.240***	0.190***
					(5.415)	(3.715)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
# Periods	672	672	672	453	492	445
# Stocks	1,951	1,951	1,689	1,942	368	353
R^2	0.082	0.090	0.093	0.074	0.133	0.129

Empirical Results - The Return Predictability

- Heterogeneity Analysis

	Size		Inst. Own.		Analyst Cov.	
	Small	Large	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
SPFRET	0.193***	0.081	0.159***	0.096**	0.240***	0.056
	(3.545)	(1.572)	(3.086)	(2.525)	(4.671)	(1.139)
INDRET	0.129**	−0.040	0.187***	−0.032	0.006	−0.009
	(2.360)	(−0.735)	(2.704)	(−0.720)	(0.108)	(−0.148)
INDMOM	0.143**	0.066	0.103*	0.017	0.083**	0.054
	(2.375)	(1.335)	(1.899)	(0.361)	(2.033)	(0.964)
GEORET	−0.0002	0.067***	0.023	0.044*	0.037	0.018
	(−0.006)	(2.639)	(0.968)	(1.691)	(1.070)	(0.629)
CFRET	0.545***	0.385***	0.485***	0.470***	0.529***	0.506***
	(7.834)	(6.300)	(7.027)	(7.356)	(7.375)	(6.756)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
# Periods	453	453	453	453	441	441
# Stocks	1,355	587	962	962	700	699
R^2	0.069	0.130	0.086	0.104	0.088	0.127

Empirical Results - The Return Predictability

- Return Predictability in the Long Run

Panel A: Portfolio sort on *SPFRET* and *SPFMOM*.

	SPFRET			SPFMOM		
	Low	High	High-Low	Low	High	High-Low
	(1)	(2)	(3)	(4)	(5)	(6)
CAR12	2.270***	5.324***	3.054***	2.422***	5.622***	3.201***
	(4.004)	(7.157)	(5.269)	(3.402)	(5.327)	(2.727)
CAR24	6.877***	9.558***	2.681***	6.778***	9.532***	2.754*
	(6.129)	(7.408)	(3.947)	(5.676)	(5.838)	(1.654)
CAR60	20.580***	24.834***	4.254***	19.326***	26.304***	6.977**
	(8.666)	(8.411)	(2.917)	(8.842)	(6.903)	(1.985)

Panel B: Fama-MacBeth regression results.

	CAR12	CAR24	CAR60
	(1)	(2)	(3)
SPFRET	0.406**	0.586**	0.904***
	(2.466)	(2.418)	(2.990)
SPFMOM	1.079***	1.292*	2.358***
	(2.632)	(1.899)	(2.874)
INDRET	0.171	−0.379	−0.155
	(0.991)	(−1.343)	(−0.361)
INDMOM	−0.970**	−1.471**	−0.600
	(−2.246)	(−1.961)	(−0.565)
GEORET	0.196*	0.114	0.162
	(1.899)	(0.742)	(0.748)
GEOMOM	−0.024	−0.319	0.230
	(−0.103)	(−0.949)	(0.459)
CFRET	1.132***	1.109***	1.361***
	(6.053)	(5.321)	(4.282)
CFMOM	1.077**	0.859*	1.127
	(2.350)	(1.735)	(1.541)
Controls	Yes	Yes	Yes
# Periods	394	394	394
# Stocks	1,495	1,495	1,495
R^2	0.069	0.072	0.080

Empirical Results - Predict Firm Performances

- Long-Run Firm Fundamentals

	Asset Turnover			EBITDA			Gross Profitability		
	1 Year (1)	2 Years (2)	5 Years (3)	1 Year (4)	2 Years (5)	5 Years (6)	1 Year (7)	2 Years (8)	5 Years (9)
SPFRET	4.293*** (4.154)	7.040*** (4.199)	14.967*** (4.171)	0.338*** (3.386)	0.518*** (3.177)	1.024*** (3.065)	1.840*** (5.944)	3.142*** (6.328)	6.983*** (6.683)
SPFMOM	15.589*** (8.963)	25.841*** (9.022)	54.652*** (8.792)	1.017*** (5.466)	1.561*** (4.950)	3.236*** (4.834)	6.472*** (11.810)	11.244*** (12.229)	25.075*** (12.505)
INDRET	−4.315*** (−3.618)	−6.693*** (−3.443)	−13.187*** (−3.152)	−0.272** (−2.439)	−0.401** (−2.172)	−0.671* (−1.753)	−1.638*** (−4.403)	−2.674*** (−4.416)	−5.574*** (−4.311)
INDMOM	−15.037*** (−7.641)	−24.217*** (−7.533)	−50.044*** (−7.325)	−1.098*** (−5.738)	−1.638*** (−5.099)	−3.162*** (−4.687)	−6.091*** (−10.146)	−10.289*** (−10.409)	−22.272*** (−10.550)
GEORET	0.464 (1.176)	0.788 (1.172)	1.643 (1.081)	0.051 (0.920)	0.069 (0.721)	0.094 (0.469)	0.170 (1.460)	0.236 (1.249)	0.432 (1.073)
GEOMOM	0.883 (1.350)	1.430 (1.278)	3.359 (1.369)	0.029 (0.335)	−0.056 (−0.378)	−0.057 (−0.178)	0.163 (0.794)	0.142 (0.421)	0.518 (0.711)
CFRET	0.705 (0.893)	0.955 (0.728)	1.284 (0.449)	−0.0005 (−0.004)	−0.036 (−0.200)	−0.286 (−0.760)	0.260 (0.903)	0.368 (0.783)	0.432 (0.433)
CFMOM	2.659*** (2.747)	3.261** (1.992)	4.880 (1.393)	0.243 (1.607)	0.239 (0.946)	0.006 (0.013)	1.370*** (4.117)	1.972*** (3.575)	3.411*** (2.929)

- Social-peer firm returns and social-peer firm indeed contain information about focal firms' future fundamental performances.

Empirical Results - Predict Firm Performances

- Earnings Surprises and Analyst Forecast Errors

	Cumulative SUE			Cumulative Analyst Forecast Errors		
	1 Year (1)	2 Years (2)	5 Years (3)	1 Year (4)	2 Years (5)	5 Years (6)
SPFRET	0.029*	0.075***	0.146**	0.043**	0.074**	0.012
	(1.802)	(2.653)	(2.572)	(2.074)	(2.132)	(0.202)
SPFMOM	0.132***	0.275***	0.582***	0.146***	0.116	0.057
	(3.593)	(3.980)	(3.955)	(2.886)	(1.163)	(0.323)
INDRET	0.014	−0.038	−0.084	−0.030	−0.060	−0.025
	(0.771)	(−1.182)	(−1.275)	(−1.103)	(−1.587)	(−0.441)
INDMOM	−0.117***	−0.308***	−0.559***	−0.036	−0.031	0.108
	(−3.202)	(−4.574)	(−4.009)	(−0.797)	(−0.375)	(0.769)
GEORET	0.011	0.002	−0.007	0.013	0.023	0.062*
	(1.153)	(0.106)	(−0.267)	(0.958)	(1.021)	(1.876)
GEOMOM	−0.011	−0.044	−0.045	0.014	0.008	0.062
	(−0.551)	(−1.200)	(−0.674)	(0.477)	(0.180)	(0.706)
CFRET	0.061***	0.088***	0.059	0.018	0.023	0.035
	(3.898)	(3.186)	(1.169)	(0.897)	(0.882)	(0.893)
CFMOM	0.241***	0.308***	0.304***	−0.047	−0.016	−0.165
	(8.299)	(6.409)	(3.523)	(−1.246)	(−0.282)	(−1.594)

- Social-peer firm returns and social-peer firm indeed contain important information that is not fully incorporated into prices or explained by existing factors.

Conclusion

- This paper explores a new dimension of cross-firm linkages that are based on social connections between regions in which the firms are located. We construct a novel measure of socially-connected peer firm returns and find that these returns are highly correlated with the returns of focal firms. Additionally, this predictability is unexplained, lasts for up to five years does not reverse in the long run, and the analysts fail to account for such information.
- Consistent with investor inattention generates sluggish price adjustments, our results are stronger among firms with low visibility.
- We show that returns of social-peer firms help predict focal firms' long-term fundamentals for up to five years, which suggest that social ties across regions do offer a new way to capture important fundamental economic linkages across firms.

Summary

- This paper propose a new measure of cross-firm linkages that are based on the social connectedness between regions of firms' locations and show that the linkages are positively associated with co-movements in firm value. Returns of socially-connected industry peer strongly predict the future returns of focal firms, with a long-short portfolio generating a monthly value-weighted alpha of 71 basis points. The result is stronger for small firms and firms with low institutional ownership or analyst coverage. Further, those peer firms' returns strongly predict focal firms' future fundamentals, earnings surprises, and analysts' forecast errors. The findings suggest that social connection-based linkages contain important information that is not fully incorporated into prices or explained by existing factors.