How are stocks connected?

The evidence from emerging market

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Abstract

1 Introduction

2 Data and Methodology

2.1 Data and Sample

2.2 Pair composition

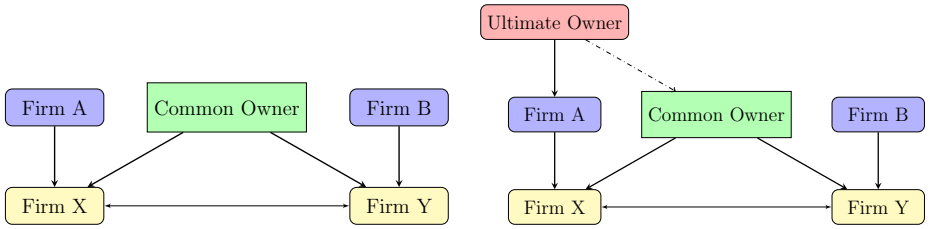
Table 1: This table reports summary statistics of ownership features for all the listed firms. At this table by group, we mean business groups.

Year	1393	1394	1395	1396	1397	1398
No. of Firms	365	376	447	552	587	618
No. of Blockholders	777	803	984	1297	1454	1458
No. of Groups	38	41	43	44	40	43
No. of Firms not in Groups	116	108	147	216	241	243
No. of Firms in Groups	249	268	300	336	346	375
Average Number of Members	7	7	7	8	9	9
Med. of Number of Members	5	5	5	6	6	5
Average Of each Blockholder's ownership	21	22	22	21	22	23
Med. of Owners' Percent	7	8	8	8	8	9
Average Number of Owners	5	5	5	5	5	5
Med. Number of Owners	4	4	4	4	5	4
Average Block. Ownership	76	77	75	75	75	71
Med. Block. Ownership	82	82	81	80	80	77

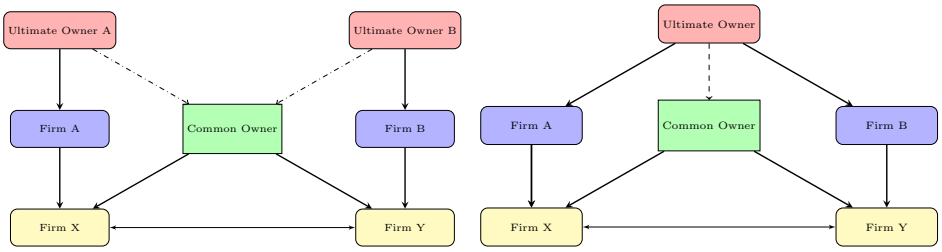
Table 2: This table reports summary statistics of ownership features for total pairs. At this table by group, we mean business groups.

year	1393	1394	1395	1396	1397	1398
No. of Pairs	20876	21187	27784	41449	47234	67232
No. of Groups	37	40	42	43	39	43
No. of Pairs not in Groups	11452	11192	15351	26530	29182	43433
Number of Pairs not in the same Group	7962	8731	10971	12916	15366	20745
Number of Pairs in the same Group	923	955	1099	1260	1536	1774
Average Number of Common owner	1	1	1	1	1	1
Med. Number of Common owner	1	1	1	1	1	1
Average Percent of each blockholder	19	19	19	19	19	20
Med. Percent of each blockholder	13	12	12	12	12	14
Average Number of Pairs in one Group	31	30	30	34	39	44
Med. Number of Pairs in one Group	8	10	8	10	9	10
Average Number of Owners	5	5	5	5	4	5
Med. Number of Owners	5	5	5	5	4	5
Average Block. Ownership	73	73	72	70	70	70
Med. Block. Ownership	73	73	73	71	71	71

Figure 1: Three categories for pairs base on being in business groups



(a) Pair not in the business group



(b) Pair in two distinct business group

(c) Pair in the same business group

2.3 Stock Return co-movement

Table 3: This table reports distribution of calculated correlation base on different models.

	mean	std	min	25%	50%	75%	max
CAPM + Industry	0.021	0.200	-1.0	-0.047	0.016	0.084	1.0
4 Factor	0.032	0.202	-1.0	-0.040	0.025	0.096	1.0
4 Factor + Industry	0.016	0.199	-1.0	-0.051	0.010	0.076	1.0
4 Factor + Industry (With Lag)	0.015	0.198	-1.0	-0.051	0.010	0.076	1.0

2.4 Controls

Table 4: This table reports the number of pairs in the same industry and business group.

	Yes	No
SameIndustry	4541	74837
	(5.7%)	(94.3%)
SameGroup	1834	27157
	(6.3%)	(93.7%)
SameGroup & SameIndustry	696	79378
	(0.9%)	(99.1%)

Table 5: This table shows the summary statistics of specified controls in empirical studies.

	mean	std	min	25%	50%	75%	max
SameIndustry	0.06	0.23	0.00	0.00	0.00	0.00	1.00
SameGroup	0.06	0.24	0.00	0.00	0.00	0.00	1.00
Size1	0.58	0.23	0.01	0.40	0.58	0.77	1.00
Size2	0.30	0.20	0.00	0.13	0.25	0.41	0.99
SameSize	-0.29	0.20	-0.97	-0.41	-0.24	-0.13	-0.00
BookToMarket1	0.54	0.25	0.00	0.36	0.57	0.75	1.00
BookToMarket2	0.55	0.24	0.00	0.36	0.56	0.75	1.00
SameBookToMarket	-0.32	0.20	-0.99	-0.44	-0.27	-0.16	-0.00
CrossOwnership	0.14	2.59	0.00	0.00	0.00	0.00	95.77

2.5 Measurement of common-ownership

Table 6: This table summarizes common ownership measurements in the literature.

Group	Paper	measurment	Flaws
Model Based	Harford et al. (2011)	$\sum_{i \in I^{A,B}} \frac{\alpha_{i,B}}{\alpha_{i,A}+\alpha_{i,B}}$	Bi-directional
	Azar et al. (2018)	$\sum_j \sum_k s_j s_k \frac{\sum_i \mu_{ij}\nu_{ik}}{\sum_i \mu_{ij}\nu_{ij}}$	Industry level
	Gilje et al. (2020)	$\sum_{i=1}^{I} \alpha_{i,A} g(\beta_{i,A}) \alpha_{i,B}$	Bi-directional
Ad hoc	He and Huang (2017); He et al. (2019)	$\sum_{i \in I^{A,B}} 1$	invariant to the level of common ownership
	Newham et al. (2018)	$\sum_{i \in I^{A,B}} min\{\alpha_{i,A}, \alpha_{i,B}\}$	?
	Anton and Polk (2014)	$\sum_{i \in I^{A,B}} \alpha_{i,A} \frac{\bar{\nu}_A}{\bar{\nu}_A+\bar{\nu}_B} + \alpha_{i,B} \frac{\bar{\nu}_B}{\bar{\nu}_A+\bar{\nu}_B}$	Invariant to the decomposition of ownership
	Freeman (2019); Hansen and Lott Jr (1996)	$\sum_{i \in I^{A,B}} \alpha_{i,A} \times \sum_{i \in I^{A,B}} \alpha_{i,B}$	? ?

2.5.1 Modified Anton's measure

Figure 2: Numeric example 1

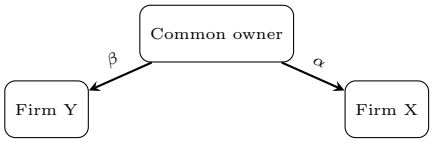


Figure 3: Comparison of three measure for common ownership

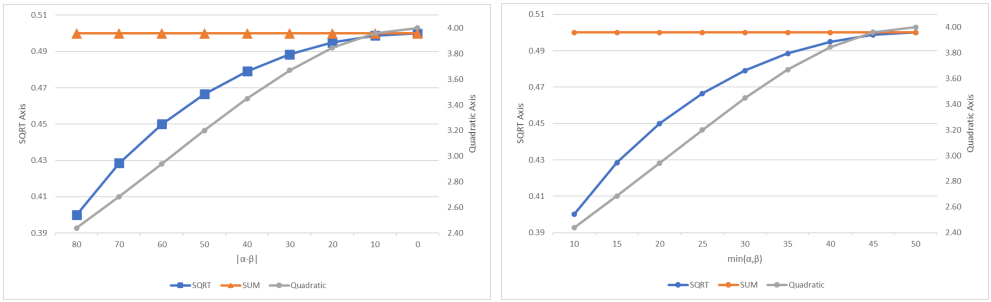


Figure 4: Numeric example 2

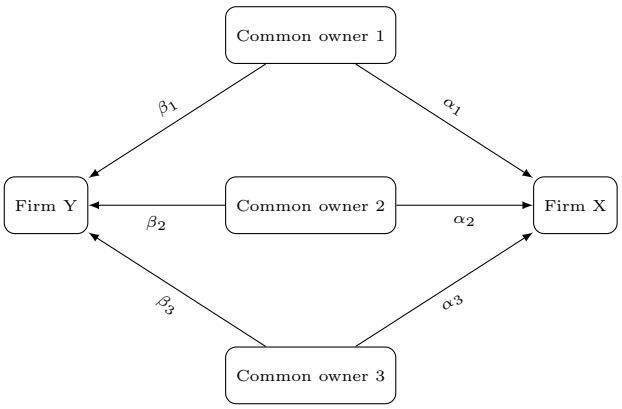


Table 7: text

Ownership	Type I	Type II	Type III	Type IV	Type V	Type VI	Type VII
α_1	1/3	20	10	20	10	5	1
β_1	1/3	10	10	20	10	5	1
α_2	1/3	10	80	20	10	5	1
β_2	1/3	20	80	20	10	5	1
α_3	1/3	70	10	20	10	5	1
β_3	1/3	70	10	20	10	5	1
SQRT	3	2.56	2.33	1.8	0.9	0.45	0.09
SUM	1	1	1	0.6	0.3	0.15	0.03
Quadratic	3	1.85	1.52	8.33	33.33	133.33	3333.33

Figure 5: SQRT measure for fixed aggregate ownership on different relative market cap ratios

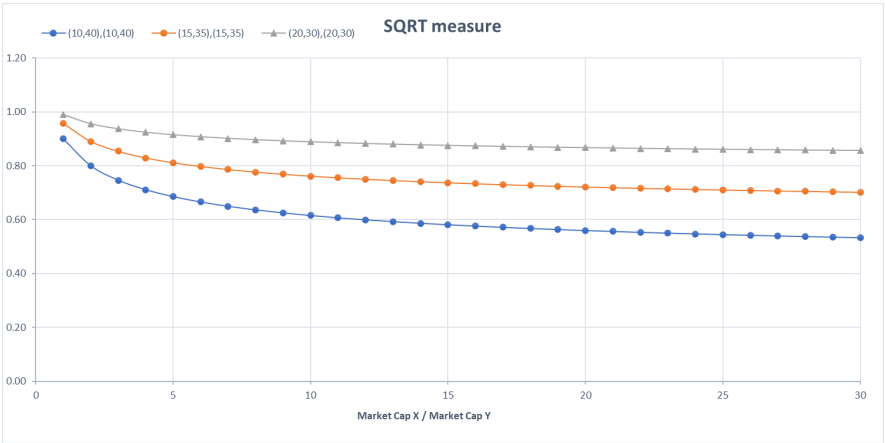


Figure 6: Sum measure for fixed aggregate ownership on different relative market cap ratios

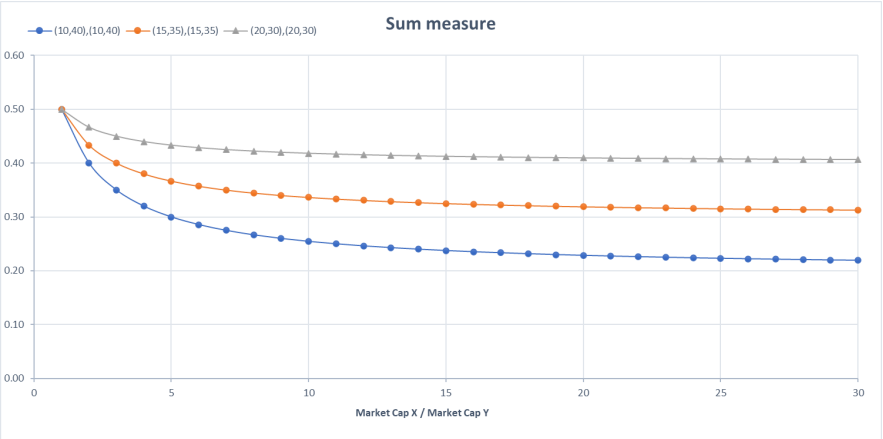


Table 8: text

	$(\alpha_1,\beta_1),(\alpha_2,\beta_2)$					
	(10,40),(10,40)		(15,35),(15,35)		(20,30),(20,30)	
$\frac{\text{MarketCap}_x}{\text{MarketCap}_y}$	SQRT	SUM	SQRT	SUM	SQRT	SUM
1	0.90	0.50	0.96	0.50	0.99	0.50
2	0.80	0.40	0.89	0.43	0.96	0.47
3	0.75	0.35	0.85	0.40	0.94	0.45
4	0.71	0.32	0.83	0.38	0.92	0.44
5	0.69	0.30	0.81	0.37	0.91	0.43
6	0.67	0.29	0.80	0.36	0.91	0.43
7	0.65	0.28	0.79	0.35	0.90	0.43
8	0.64	0.27	0.78	0.34	0.90	0.42
9	0.63	0.26	0.77	0.34	0.89	0.42
10	0.62	0.25	0.76	0.34	0.89	0.42

Table 9: text

	variable	mean	std	min	25%	50%	75%	max
All	FCA	0.158	0.234	0.002	0.031	0.079	0.191	12.650
	FCAP	0.144	0.166	0.002	0.030	0.077	0.193	1.000
Same Group	FCA	0.474	0.478	0.005	0.096	0.367	0.691	6.174
	FCAP	0.346	0.265	0.004	0.081	0.321	0.561	1.000
Not Same Group	FCA	0.087	0.154	0.003	0.020	0.038	0.087	6.184
	FCAP	0.072	0.102	0.003	0.020	0.037	0.078	0.998
Same Industry	FCA	0.274	0.383	0.003	0.044	0.126	0.351	6.262
	FCAP	0.207	0.215	0.003	0.041	0.120	0.314	0.999
Not Same Industry	FCA	0.150	0.217	0.002	0.030	0.077	0.183	12.650
	FCAP	0.140	0.161	0.002	0.029	0.074	0.187	1.000

2.6 Overview of Business Groups in Tehran Stock Exchange

Figure 7

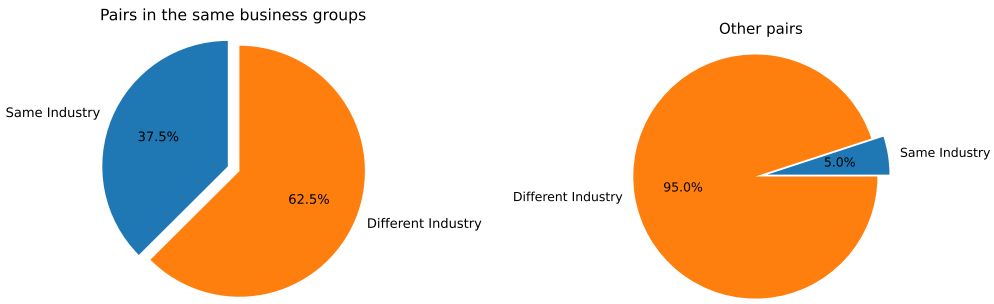
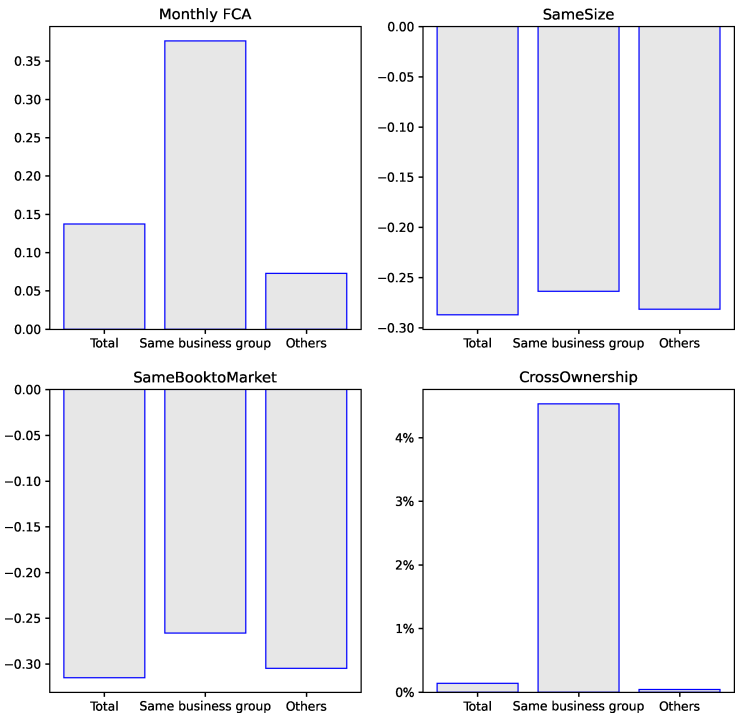


Figure 8


Monthly FCA
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Total
Same business group
Others
SameSize
0.00
−0.05
−0.10
−0.15
−0.20
−0.25
−0.30
Total
Same business group
Others
SameBooktoMarket
0.00
−0.05
−0.10
−0.15
−0.20
−0.25
−0.30
Total
Same business group
Others
CrossOwnership
4%
3%
2%
1%
0%
Total
Same business group
Others

3 Results

3.1 Forecasting Co-movement

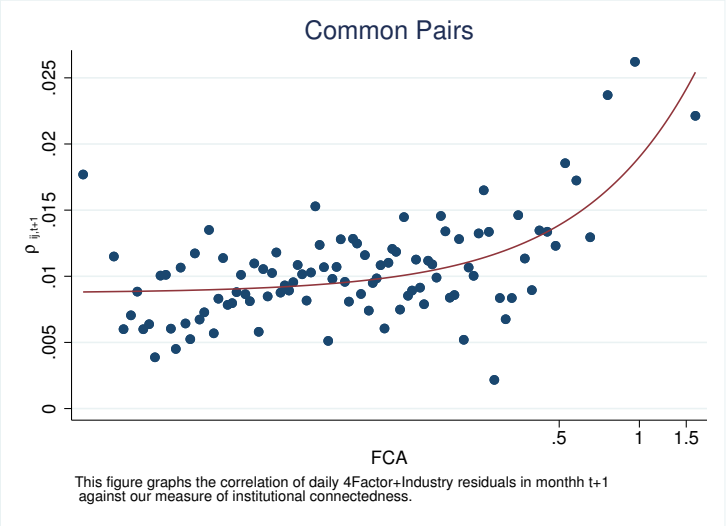


Figure 9: Future monthly correlation for different level of common ownership at this period

Table 10: Connected Co-movement

	Dependent Variable: Future Monthly Correlation of 4F+Industry Residuals								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Same Group	0.0166***	0.0153***			0.0147***			0.00624***	0.00549**
	(8.54)	(7.90)			(6.97)			(2.81)	(2.27)
FCA*			0.00150***	0.00112**	0.000736	0.00944***	0.000397	0.000377	-0.0000113
			(2.90)	(2.11)	(1.33)	(7.24)	(0.68)	(0.65)	(-0.02)
(FCA*) × SameGroup								0.00992***	0.0107***
								(6.49)	(6.97)
Observations	1665996	1665996	1665996	1665996	1665996	58337	1607659	1665996	1665996
Sub-sample	All	All	All	All	All	SameGroup	Others	All	All
Group Effect	No	No	No	No	No	No	No	No	Yes
Controls	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.000180	0.000637	0.000170	0.000652	0.000804	0.0112	0.000577	0.000898	0.00575

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.2 High level of common ownership

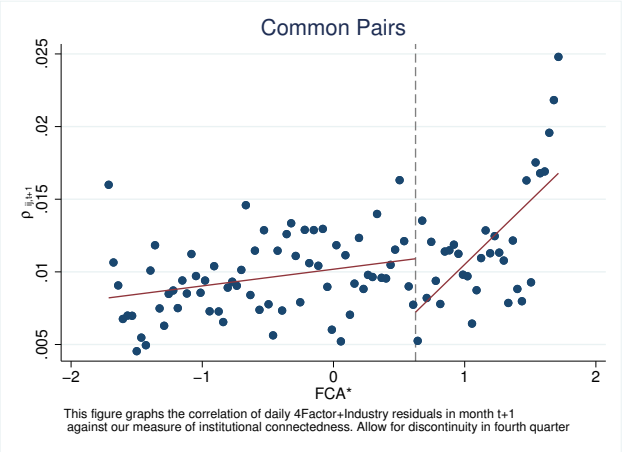


Figure 10: text

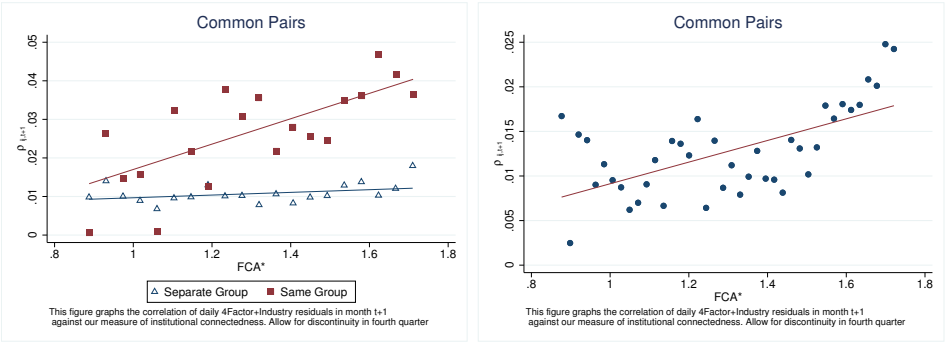


Figure 11: text

Table 11: Estimation results for high level of common ownership

	Dependent Variable: Future Monthly Correlation of 4F+Ind. Res.						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Same Group	0.0229***		0.0220***	0.0206***	0.0195***	-0.0230*	-0.0201
	(9.86)		(8.34)	(7.28)	(7.24)	(-2.21)	(-1.94)
FCA*		0.0122**	0.00516	0.00494	0.00485	0.00270	0.00194
		(3.11)	(1.23)	(1.18)	(1.17)	(0.60)	(0.46)
(FCA*) × SameGroup						0.0287***	0.0269**
						(3.55)	(3.42)
SameIndustry				0.00367	0.00277	0.00232	0.00404
				(1.67)	(1.20)	(0.97)	(1.62)
SameSize					0.00282	0.00233	0.00385
					(0.78)	(0.66)	(1.03)
SameBookToMarket					0.0104***	0.0103***	0.0113***
					(3.55)	(3.54)	(4.04)
CrossOwnership					0.0360	0.0402	0.0487
					(1.46)	(1.62)	(1.99)
Observations	416514	416514	416514	416514	416514	416514	416514
Group FE	No	No	No	No	No	No	Yes
R^2	0.000923	0.000353	0.00124	0.00151	0.00232	0.00253	0.0150

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

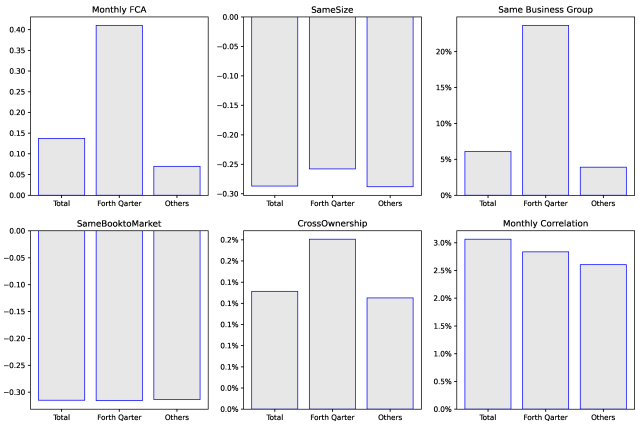


Figure 12: Pairs' characteristics for the pairs with high level of common ownership

3.3 All Pairs

Table 12: Non-connected Co-movement

	Dependent Variable: Future Monthly Correlation of 4F+Industry Residuals													
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
SameGroup	0.0153***		0.0150***			0.0134***	0.0124***		0.0151***				0.0104***	0.00926***
	(9.38)		(9.26)			(7.81)	(7.10)		(9.03)				(6.09)	(5.34)
FCA*		0.000676***	0.000496*	0.00212	0.000427*	0.000408*	0.000116							
		(3.50)	(2.56)	(1.79)	(2.20)	(2.11)	(0.67)							
(FCA*) × SameGroup						0.00247*	0.00321**							
						(2.15)	(2.90)							
(FCA > $Q3$[FCA])								0.00226*	0.000744	0.00226*	0.0122***	-0.0000291	-0.0000725	-0.00110
								(2.63)	(0.97)	(2.63)	(4.40)	(-0.03)	(-0.07)	(-1.32)
(FCA > $Q3$[FCA]) × SameGroup													0.0141***	0.0161***
													(4.65)	(5.54)
Observations	6018646	6018646	6018646	114526	5904120	6018646	6018646	6018646	5851137	6018646	114526	5904120	6018646	6018646
Sub Sample	Total	Total	Total	SameGroups	Others	Total	Total	Total	Total	Total	SameGroups	Others	Total	Total
Group Effect	No	No	No	No	No	No	Yes	No	No	No	No	No	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.000445	0.000392	0.000491	0.00699	0.000338	0.000515	0.00330	0.000372	0.00127	0.000372	0.00721	0.000323	0.000508	0.00330

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3.4 Size effect

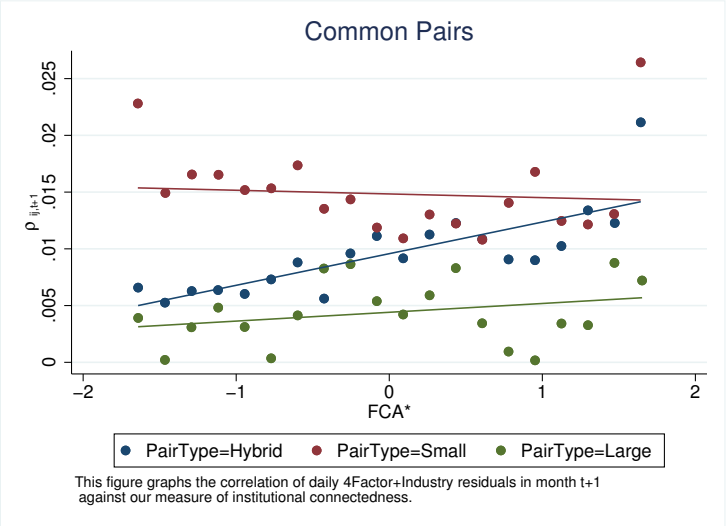


Figure 13: text

Table 13: text

	Dependent Variable: Future Monthly Correlation of 4F+Ind. Res.							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Same Group	0.00624**	0.0102***	-0.00153	0.0117***	0.00661*	0.0366***	0.0268***	0.00750***
	(2.81)	(3.95)	(-0.53)	(3.76)	(2.15)	(10.31)	(6.57)	(3.53)
FCA*	0.000377	0.000698	-0.000175	0.00199***	0.00177**	-0.00151	-0.00177	-0.0000771
	(0.65)	(1.25)	(-0.31)	(3.56)	(3.00)	(-1.58)	(-1.84)	(-0.14)
(FCA*) × SameGroup	0.00992***		0.0134***		0.00599*		0.0123***	0.0105***
	(6.49)		(4.80)		(2.34)		(4.17)	(6.72)
Observations	1665996	346170	346170	693728	693728	626098	626098	1665996
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sub-sample	All Firms	Large Firms	Large Firms	Hybrid Firms	Hybrid Firms	Small Firms	Small Firms	All Firms
Pair Size FE	No	No	No	No	No	No	No	Yes
R^2	0.000898	0.00193	0.00232	0.00135	0.00149	0.00180	0.00198	0.00130

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: text

	Dependent Variable: Future Monthly Correlation of 4F+Ind. Res.							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SameGroup	0.0134***	0.00954***	0.00853***	0.0136***	0.0118***	0.0314***	0.0267***	0.0138***
	(7.81)	(4.63)	(3.71)	(7.35)	(6.46)	(10.19)	(7.93)	(8.27)
FCA*	0.000408*	-0.0000120	-0.000115	0.000514*	0.000401	-0.00143***	-0.00154***	-0.000390**
	(2.11)	(-0.05)	(-0.47)	(2.09)	(1.67)	(-3.86)	(-3.97)	(-2.70)
(FCA*) × SameGroup	0.00247*		0.00178		0.00272		0.00545**	0.00313**
	(2.15)		(1.30)		(1.59)		(3.38)	(2.80)
Observations	6018646	1753614	1753614	2992221	2992221	1272811	1272811	6018646
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sub-sample	All Firms	Large Firms	Large Firms	Hybrid Firms	Hybrid Firms	Small Firms	Small Firms	All Firms
Pair Size FE	No	No	No	No	No	No	No	Yes
R^2	0.000515	0.000796	0.000860	0.000688	0.000735	0.00191	0.00199	0.000829

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3.5 Common Ownership measure

Table 15: Connected Co-movement

	Dependent Variable: Future Monthly Correlation of 4F+Industry Residuals									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Common Ownership Measure	0.00177***	0.00150**	0.00133**	0.00102	0.000936	0.000663	0.000536	0.000377	-0.0000197	-0.0000113
	(3.93)	(2.90)	(2.76)	(1.87)	(1.90)	(1.17)	(1.06)	(0.65)	(-0.04)	(-0.02)
Same Group			0.0156***	0.0157***	0.00774***	0.00813***	0.00575*	0.00624**	0.00503*	0.00549*
			(7.32)	(7.44)	(3.61)	(3.71)	(2.62)	(2.81)	(2.11)	(2.27)
Common Ownership Measure × SameGroup					0.0103***	0.00935***	0.0110***	0.00992***	0.0119***	0.0107***
					(7.76)	(6.72)	(7.47)	(6.49)	(7.94)	(6.97)
SameIndustry							-0.000364	-0.000312	0.000286	0.000339
							(-0.21)	(-0.19)	(0.17)	(0.21)
SameSize							0.0133***	0.0135***	0.0131***	0.0132***
							(4.48)	(4.56)	(4.61)	(4.68)
SameBookToMarket							0.00772***	0.00772***	0.00893***	0.00893***
							(4.55)	(4.58)	(5.05)	(5.09)
CrossOwnership							0.0280*	0.0260	0.0303*	0.0283*
							(2.07)	(1.93)	(2.27)	(2.14)
Observations	1665996	1665996	1665996	1665996	1665996	1665996	1665996	1665996	1665996	1665996
Group FE	No	No	No	No	No	No	No	No	Yes	Yes
Measurement	Sum	Quadratic	Sum	Quadratic	Sum	Quadratic	Sum	Quadratic	Sum	Quadratic
R^2	0.000171	0.000170	0.000348	0.000349	0.000443	0.000437	0.000898	0.000898	0.00575	0.00575

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4 Evidence for correlated trading

4.1 Institutional Imbalance

Table 16: text

	InsImbalance_value							
	count	mean	std	min	25%	50%	75%	max
Grouped								
Ungrouped	20198	0.01	0.630	-1.0	-0.474	0.016	0.479	1.0
Grouped	12022	-0.04	0.581	-1.0	-0.462	-0.009	0.341	1.0

Table 17: text

	IndImbalance_value							
	count	mean	std	min	25%	50%	75%	max
Grouped								
Ungrouped	20198	-0.044	0.265	-1.0	-0.081	-0.0	0.041	1.0
Grouped	12022	-0.027	0.211	-1.0	-0.071	0.0	0.052	1.0

Table 18: text

	InsImbalance_value							
	count	mean	std	min	25%	50%	75%	max
Grouped								
Ungrouped	72	0.624	0.054	0.48	0.601	0.631	0.655	0.735
Grouped	2057	0.503	0.251	0.00	0.337	0.503	0.647	1.414

Table 19: text

	IndImbalance_value							
	count	mean	std	min	25%	50%	75%	max
Grouped								
Ungrouped	72	0.260	0.059	0.12	0.226	0.275	0.304	0.354
Grouped	2057	0.166	0.140	0.00	0.066	0.130	0.227	1.038

Figure 14: text

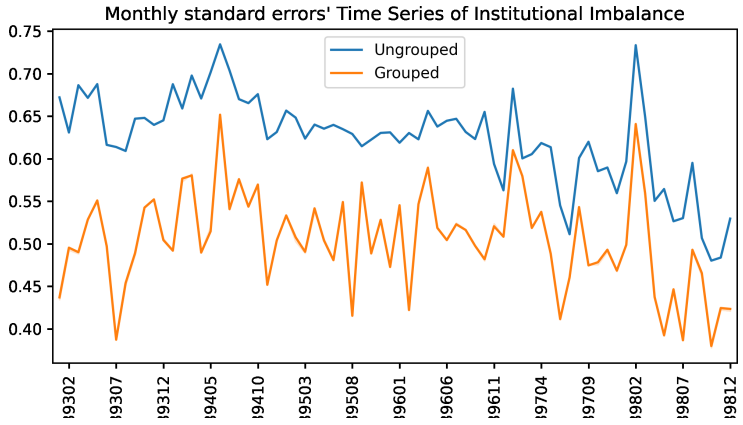


Figure 15: text

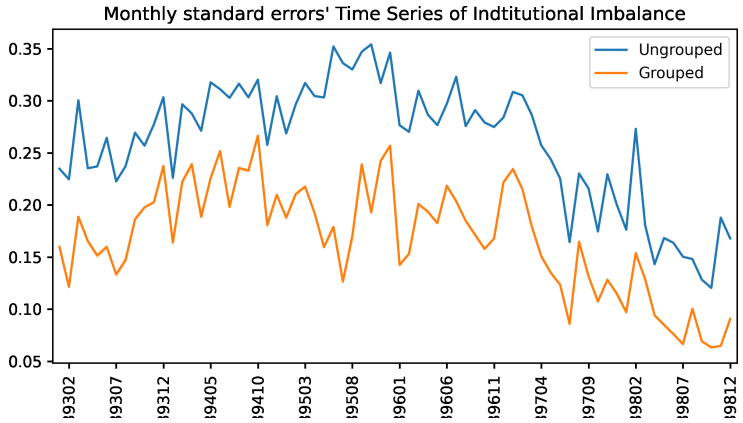


Table 20: text

	Future Monthly Corr. of 4F+Ind. Residuals							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FCA*	0.000308	0.000384	0.000320	-0.0000742	0.00945***	0.0000347	0.000123	0.0000843
	(0.60)	(0.81)	(0.68)	(-0.15)	(6.07)	(0.07)	(0.17)	(0.11)
Same Group	0.0164***	0.0164***	0.00765***	-0.00156		0.00974***	0.00241	0.00154
	(8.68)	(8.68)	(3.64)	(-0.57)		(5.36)	(0.79)	(0.48)
Low Imbalance std		0.00119	0.000325	0.000203	0.0241***	0.000469	0.0000788	0.000481
		(1.29)	(0.35)	(0.22)	(6.15)	(0.52)	(0.08)	(0.31)
Low Imbalance std × SameGroup			0.0238***	0.0245***			0.0142**	0.0142**
			(6.85)	(6.96)			(2.95)	(3.14)
(FCA*) × SameGroup				0.0106***			0.00580**	0.00645**
				(6.16)			(2.77)	(2.94)
Low Imbalance std × (FCA*)							-0.000584	-0.000483
							(-0.77)	(-0.57)
Low Imbalance std × SameGroup × (FCA*)						0.0209***	0.0126***	0.0120***
						(9.69)	(4.44)	(3.91)
Observations	1665996	1665996	1665996	1665996	58337	1665996	1665996	1665996
Group Effect	No	No	No	No	No	No	No	Yes
Pair Size FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sub-sample	Total	Total	Total	Total	Same Groups	Total	Total	Total
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.00120	0.00132	0.00144	0.00154	0.0210	0.00149	0.00166	0.00643

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.2 Turnover

Table 21: cross-sectional average of the time-series coefficients for daily changes in turnover

	Dependent Variable: $\Delta\text{TurnOver}_i$					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta\text{TurnOver}_{\text{Market}}$	0.405***	0.396***	0.360***	0.425***	0.388***	0.448***
	(12.25)	(10.74)	(7.62)	(12.08)	(8.23)	(12.20)
$\Delta\text{TurnOver}_{\text{Group}}$			0.222***	0.229***	0.253**	0.268***
			(3.46)	(4.09)	(3.28)	(3.82)
$\Delta\text{TurnOver}_{\text{Industry}}$	0.120**	0.0205	-0.0156	-0.0237	-0.0833	-0.0999
	(3.25)	(0.24)	(-0.23)	(-0.42)	(-1.04)	(-1.46)
Observations	293264	292179	184699	183442	184699	183442
Weight	-	-	MC × CR	MC × CR	MC	MC
Control	No	Yes	No	Yes	No	Yes
R^2	0.129	0.168	0.246	0.286	0.247	0.286

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 22: cross-sectional variation in β_{Group}

	Dependent Variable: β_{Group}													
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Excess	0.310***	0.417***												
	(3.58)	(4.76)												
ExcessDummy			-0.00418	0.0907*										
			(-0.10)	(2.24)										
ExcessDiff					0.638***	0.840***								
					(4.65)	(6.22)								
ExcessHigh							0.287***	0.323***						
							(4.17)	(4.42)						
Low Imbalance std									0.216***	0.0975*				
									(4.82)	(2.26)				
Position											-0.0103	0.0176		
											(-0.54)	(0.93)		
Centrality													0.618***	0.0662
													(3.31)	(0.37)
Observations	1153	1153	1168	1168	1153	1153	1168	1168	1145	1145	1153	1153	1113	1113
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
R^2	0.0178	0.0884	0.00206	0.0665	0.0313	0.109	0.0278	0.0923	0.0203	0.0687	0.00239	0.0645	0.00825	0.0562

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 23: Pairwise correlation in turnover

	Dependent Variable: Future Monthly Correlation of Delta turnover						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Same Group	0.0349***	0.0217***			0.0227***	0.0182***	0.0176***
	(11.20)	(7.38)			(7.73)	(6.22)	(6.19)
FCA*			0.000871	-0.000438	-0.00110	-0.00134	-0.00171
			(0.63)	(-0.37)	(-0.93)	(-1.08)	(-1.51)
(FCA*) × SameGroup						0.00619*	0.00631*
						(2.45)	(2.42)
Observations	1447955	1341445	1447955	1341445	1341445	1341445	1341445
Group Effect	No	No	No	No	No	No	Yes
Pair Size FE	No	Yes	No	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	Yes	Yes	Yes
R^2	0.000465	0.00431	0.000461	0.00448	0.00471	0.00481	0.0157

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.3 Big business group

5 Conclusion

Table 24: heading

	Dep. Var.: Future Monthly Cor. of 4F+Ind. Res.			
	(1)	(2)	(3)	(4)
Same Group	0.00637*	0.0169*	0.00476	0.0127
	(2.22)	(2.25)	(1.83)	(1.78)
FCA*	-0.000339	-0.000551	-0.000108	-0.00121
	(-0.80)	(-1.14)	(-0.19)	(-1.64)
(FCA*) × SameGroup	0.0120***	0.0120***	0.0121***	0.0115***
	(7.57)	(7.74)	(7.14)	(4.07)
ρ_t(Turnover)	0.00515***	0.00609***	0.00373***	0.00638***
	(8.45)	(5.86)	(3.52)	(6.12)
ρ_t	0.0246***	0.0245***	0.0246***	0.0243***
	(17.07)	(17.07)	(17.07)	(10.96)
SameGroup × ρ_t(Turnover)		-0.0104	0.0236***	-0.0129
		(-0.95)	(5.23)	(-1.19)
BigGroup		-0.00148		
		(-1.67)		
BigGroup × SameGroup		-0.0132*		
		(-2.08)		
BigGroup × ρ_t(Turnover)		-0.00233		
		(-1.35)		
BigGroup × SameGroup × ρ_t(Turnover)		0.0336**		
		(3.15)		
Observations	1459585	1459585	957316	502269
Controls	Yes	Yes	Yes	Yes
Pari Size FE	Yes	Yes	Yes	Yes
SubSample	All	All	Big Groups	Others
R^2	0.00241	0.00284	0.00312	0.00399

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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