Connected Stocks: Evidence from Tehran Stock Exchange

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Effects

Hypothesis 1

Simple measures of institutional connnectedness statistically and economically improve forecasts of cross-sectional variation in the correlation. The effect is stronger for pairs that are in the same business groups.

Table 1: text

	Dependent Variable: Future Monthly Correlation of 4F+Industry Residuals						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Same Group	0.0138***	0.0128***			0.00978***	0.00458	0.00356
	(5.76)	(6.29)			(4.29)	(1.43)	(1.11)
FCA*			0.00405***	0.00375***	0.00296***	0.00258***	0.00273***
			(4.94)	(5.12)	(3.77)	(3.53)	(3.51)
(FCA*) × SameGroup						0.00524**	0.00517**
						(3.21)	(3.18)
Observations	388492	388492	388492	388492	388492	388492	388492
Group Effect	No	No	No	No	No	No	Yes
Controls	No	Yes	No	Yes	Yes	Yes	Yes
R^2	0.000404	0.00200	0.000423	0.00201	0.00229	0.00245	0.00875

t statistics in parentheses

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

Hypothesis 2

Pairs of companies belonging to the same business group have a higher correlation than pairs not in the same group. In addition, Pairs that belong to the same group and have a common ownership co-move more than pairs that don't have common ownership.

Table 2: All pairs

	Future Monthly Correlation of 4F+Industry Residuals					
	(1)	(2)	(3)	(4)	(5)	(6)
(FCA $> Q3$[FCA])		0.00543***	0.00549***	0.00695*		0.00539***
		(4.12)	(4.17)	(2.10)		(4.04)
SameGroup	0.0122***		0.0124***			0.00901*
	(5.81)		(5.97)			(2.62)
(FCA $> Q3$[FCA]) $\times$ SameGroup						0.00392
						(1.20)
FCA*					0.00174*	
					(2.43)	
Observations	5148109	5148109	5148109	76240	76240	5148109
Sub Sample	Total	Total	Total	SameGroups	SameGroups	Total
Controls	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.000455	0.000457	0.000501	0.0133	0.0135	0.000512

t statistics in parentheses

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

Hypothesis 3

Stock returns of group affiliated firms exhibit robustly positive comovement even after controlling for both market and industry effects. Group betas ($\beta_{Businussgroup}$) are highly significant across all models.

Table 3: Cross-sectional average of the time-series coefficients

	$\text{Return}_i - r_f = R_i$				
	(1)	(2)	(3)	(4)	(5)
R_M	0.801***	0.643***	0.701***	0.257***	0.280***
	(29.99)	(10.68)	(11.05)	(8.84)	(9.02)
$R_{Industry}$		-2.085	-1.878	-0.150	-0.148
		(-0.92)	(-0.93)	(-0.48)	(-0.50)
$R_{Businessgroup}$				0.493***	0.493***
				(11.36)	(11.34)
SMB			0.104***		0.0770***
			(3.52)		(5.24)
UMD			0.0282		0.0218
			(1.23)		(1.94)
HML			0.102***		0.0395***
			(6.05)		(6.39)
Constant	0.0442	0.0145	-0.0297	0.0499***	0.0198
	(1.92)	(0.53)	(-0.83)	(3.87)	(1.25)
Observations	207552	207552	207552	207552	207552
R^2	0.123	0.196	0.213	0.672	0.679

t statistics in parentheses

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

Channels

Trading

Furthermore, we should show that stocks in groups have a similar daily trading behavior. Accordingly, for each firm we run time-series regressions of the firm's daily change in trading measure, $\Delta\text{Measure}_{i,t}$, on changes in market measure,$\Delta\text{Measure}_{Market,t}$, changes in the industry and business group portfolio's measure,$\Delta\text{Measure}_{Ind,t}$ and $\Delta\text{Measure}_{Group,t}$ and ,as well as control variables.

We compute the daily change of measure by this definition $\Delta\text{Measure}_{i,t} = \ln(\frac{\text{Measure}_{i,t}}{\text{Measure}_{i,t-1}})$. We estimate the following regression for each stock across trading days in given year separately and cross-sectional averages of the estimated coefficients are reported, with t-statistics in parentheses :

$$\begin{aligned}\Delta\text{Measure}_{i,t} = \alpha + \beta_{Market,t}\Delta\text{Measure}_{Market,t} + \beta_{Ind,t}\Delta\text{Measure}_{Ind,t} \\ + \beta_{Group,t}\Delta\text{Measure}_{Group,t} + \delta\text{Controls} + \varepsilon_{i,t}\end{aligned}$$

We use the turnover measure as a daily trading measures. We control for lead and lag changes in the two portfolio and market's measures. In addition, we use size of the firm. [Table 4]

Table 4: 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 5: Pairwise correlation in turnover

	Dependent Variable: Future Monthly Correlation of Delta turnover						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Same Group	0.0134**	-0.00613*			-0.0102***	-0.00763	-0.00600
	(3.13)	(-2.20)			(-3.81)	(-1.75)	(-1.36)
FCA*			0.00784***	0.00308**	0.00389***	0.00410***	0.00304*
			(4.71)	(3.39)	(4.29)	(4.07)	(2.23)
(FCA*) × SameGroup						-0.00244	-0.00104
						(-0.82)	(-0.33)
Observations	378502	370726	378502	370726	370726	370726	370726
Group Effect	No	No	No	No	No	No	Yes
Controls	No	Yes	No	Yes	Yes	Yes	Yes
R^2	0.000603	0.00766	0.00110	0.00774	0.00806	0.00827	0.0236

t statistics in parentheses

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

Figure 1: Time series of average common ownership measure with 95 percent interval for all pairs

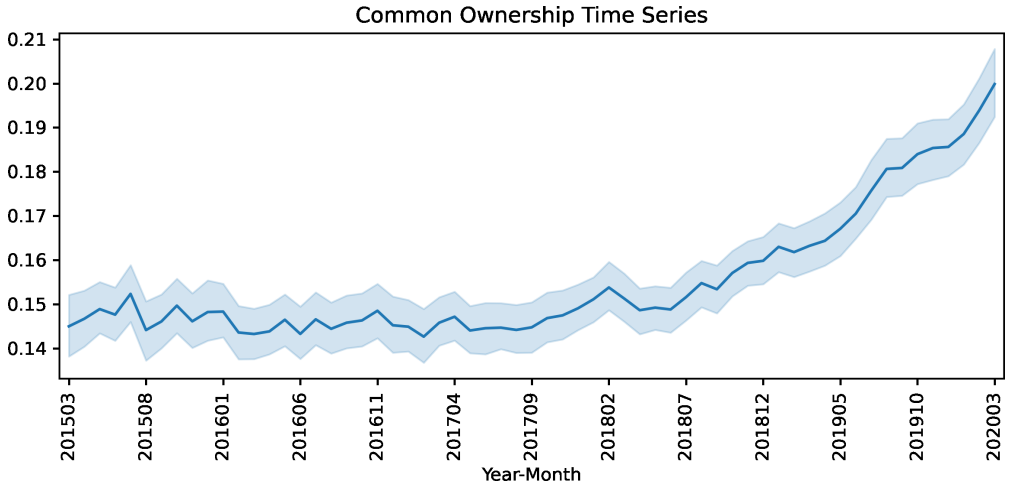

Figure 2: Time series of average common ownership measure with 95 percent interval in pairs in the same business group and others

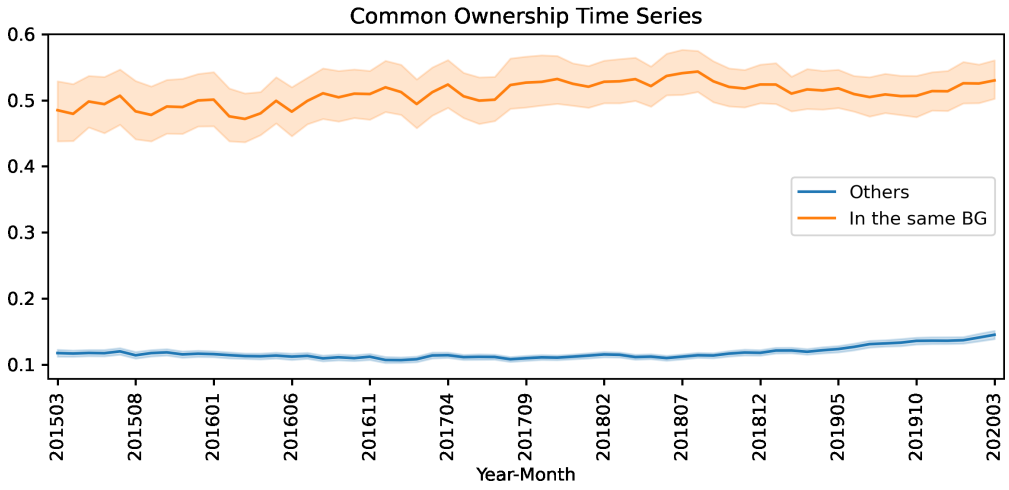

Figure 3: Time series of average common ownership measure with 95 percent interval which is grouped based on pairs' size

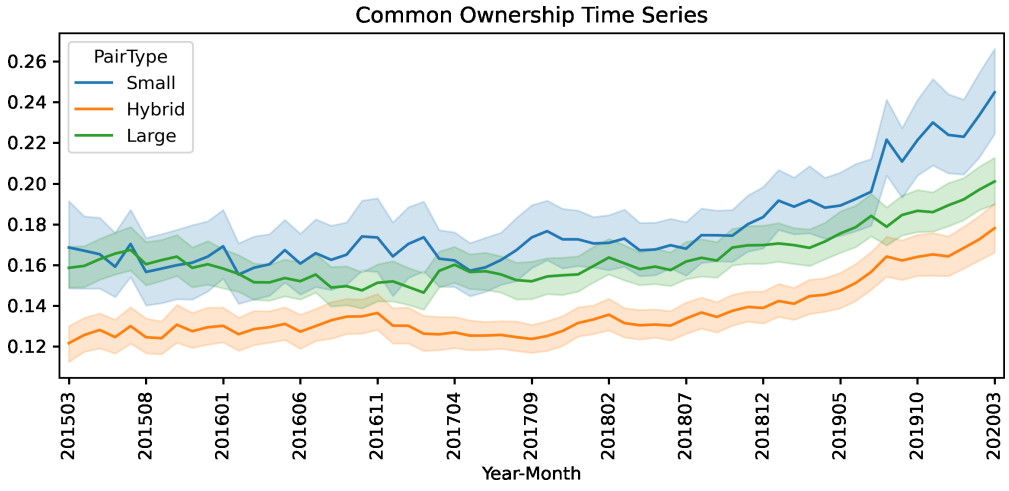

Figure 4: Percent of group affiliated firms from listed firms

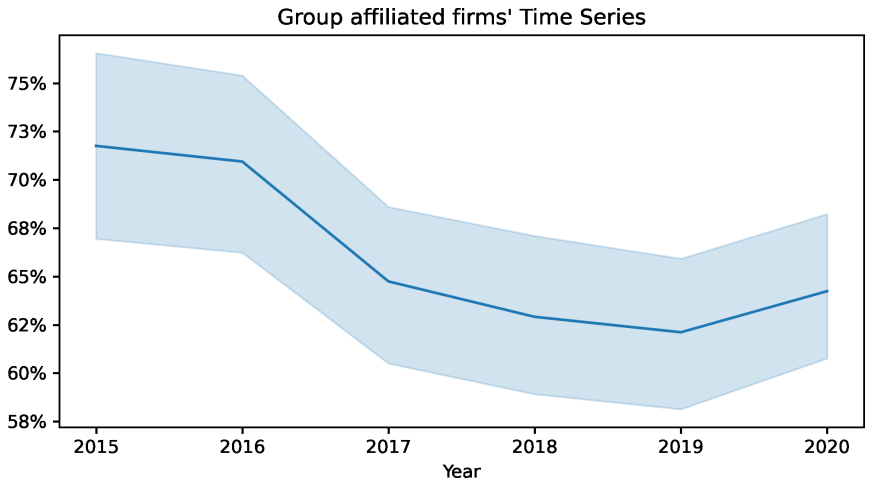

Figure 5: Percent of group affiliated firms from marketcap