Connected Stocks: Evidence from Tehran Stock Exchange

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Hypothesis 1: Simple measures of institutional connnectedness statistically and economically improve forecasts of cross-sectional variation in the correlation. The effect is stronger when pairs are in the same business groups

	Dependent Variable: Future Monthly Correlation of 4F+Industry Residuals								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FCA*	0.00320***	0.00235***			0.00154	0.00105	0.00103	0.000548	0.000948
	(4.05)	(3.90)			(1.73)	(1.51)	(1.12)	(0.80)	(1.37)
Same Group			0.0194***	0.0183***	0.0176***	0.0172***	0.0111***	0.00952**	0.00829*
			(9.72)	(6.03)	(7.15)	(5.09)	(3.53)	(2.73)	(2.25)
(FCA*) × SameGroup							0.00679*	0.00744**	0.00734**
							(2.41)	(3.32)	(3.30)
Observations	436735	434850	436735	434850	436735	434850	436735	434850	434850
Group Effect	No	No	No	No	No	No	No	No	Yes
Controls	No	Yes	No	Yes	No	Yes	No	Yes	Yes
R^2	0.000306	0.0360	0.000496	0.0363	0.000719	0.0364	0.000909	0.0366	0.0432

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 1: one of these tables

	Future Monthly Correlation of 4F+Industry Residuals					
	(1)	(2)	(3)	(4)	(5)	(6)
(FCA > $Median$[FCA])		-0.00168	-0.00337**	0.00855**		-0.00513***
		(-1.45)	(-2.89)	(2.76)		(-4.32)
SameGroup	0.0122***		0.0135***			0.00574*
	(5.81)		(6.48)			(2.02)
(FCA > $Median$[FCA]) × SameGroup						0.0181***
						(5.91)
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	0.000439	0.000485	0.0136	0.0135	0.000513

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

	Future Monthly Correlation of 4F+Industry Residuals					
	(1)	(2)	(3)	(4)	(5)	(6)
Common Ownership		-0.00350**	-0.00445***	0.00651*		-0.00527***
		(-3.30)	(-4.22)	(2.48)		(-4.72)
SameGroup	0.0122***		0.0140***			0.00607*
	(5.81)		(7.01)			(2.09)
Common Ownership × SameGroup						0.0157***
						(5.51)
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	0.000456	0.000504	0.0135	0.0135	0.000528

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hypothesis 3: Return of business group improve forecasts of cross-sectional variation in stocks' return.

| | $\text{Return}_i - r_f = R_i$ | | | | |
	(1)	(2)	(3)	(4)	(5)
R_M	0.216***	0.181***	0.124***	0.173***	0.118***
	(12.43)	(11.10)	(9.91)	(11.07)	(9.98)
$R_{Industry}$		0.119***	0.119***	0.130***	0.130***
		(6.41)	(6.41)	(7.62)	(7.62)
$R_{Businessgroup}$				0.0549***	0.0549***
				(14.81)	(14.81)
SMB			0.0194**		0.0193**
			(2.95)		(3.11)
UMD			0.00751		0.00681
			(1.31)		(1.27)
HML			0.0105*		0.0105*
			(1.98)		(2.22)
Constant	0.0155	-0.00383	-0.00387	-0.000620	-0.00107
	(0.66)	(-0.18)	(-0.39)	(-0.03)	(-0.11)
Observations	207552	207552	207552	207552	207552
R^2	0.000	0.054	0.054	0.133	0.133

t statistics in parentheses

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

Channels:

	Future Monthly Corr. of 4F+Ind. Residuals					
	(1)	(2)	(3)	(4)	(5)	(6)
FCA*	0.00105	0.00105	0.000959		0.000925	0.00143
	(1.51)	(1.51)	(1.37)		(1.32)	(1.97)
Same Group	0.0172***	0.0174***	0.0104*	0.0114**	0.0104*	0.00890*
	(5.09)	(4.96)	(2.55)	(2.93)	(2.54)	(2.14)
Low Imbalance		0.000588	-0.00129	-0.00141	-0.00130	-0.000485
		(0.67)	(-1.26)	(-1.36)	(-1.27)	(-0.16)
Low Imbalance × SameGroup			0.0253***	0.0255***	0.0218**	0.0220**
			(5.24)	(5.29)	(3.21)	(3.21)
Low Imbalance × SameGroup × FCA*					0.00268	0.00232
					(0.63)	(0.52)
Observations	434850	434850	434850	434850	434850	434850
Group Effect	No	No	No	No	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.0364	0.0366	0.0369	0.0367	0.0370	0.0436

t statistics in parentheses

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

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Table 2: Estimate regression for each stock across trading days

	Dependent Variable: $\Delta\text{TurnOver}_i$			
	(1)	(2)	(3)	(4)
$\Delta\text{TurnOver}_{\text{Market}}$	0.448***	0.387***	0.445***	0.353***
	(5.61)	(7.80)	(11.13)	(10.18)
$\Delta\text{TurnOver}_{\text{Group}}$		0.231**	0.234*	0.245***
		(2.67)	(2.07)	(8.22)
$\Delta\text{TurnOver}_{\text{Industry}}$	0.0993	-0.0558	-0.0970	0.0365
	(1.55)	(-0.61)	(-0.84)	(0.68)
$\ln(\text{size})_{i,t}$	-0.00571	-0.0136***	-0.0210**	-0.0119**
	(-0.03)	(-5.21)	(-3.06)	(-3.24)
Constant	-0.303	0.380***	0.610**	0.334**
	(-0.05)	(5.03)	(2.86)	(3.11)
Observations	293264	184699	184699	184699
Group Weight	-	MC × CR	MC	Equal
R^2	0.111	0.213	0.215	0.124

t statistics in parentheses

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

Table 3: first table:Estimate regression for each stock across trading days

	Dependent Variable: ΔAmihud_i					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta\text{Amihud}_{\text{Market}}$	0.324***	0.549*	0.373***	0.343***	0.391***	0.361***
	(6.46)	(2.23)	(13.09)	(12.01)	(13.09)	(12.14)
$\Delta\text{Amihud}_{\text{Group}}$			0.165**	0.153*	0.143*	0.129*
			(2.60)	(2.57)	(2.07)	(1.98)
$\Delta\text{Amihud}_{\text{Industry}}$	0.0567	0.121	-0.00390	-0.00670	-0.00322	-0.00430
	(1.21)	(1.36)	(-0.06)	(-0.10)	(-0.04)	(-0.06)
Observations	293264	291933	184699	183301	184699	183301
Weight	-	-	MC × CR	MC × CR	MC	MC
Control	No	Yes	No	Yes	No	Yes
R^2	0.0976	0.132	0.194	0.220	0.199	0.224

t statistics in parentheses

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

	Dependent Variable: ΔAmihud_i		
	(1)	(2)	(3)
$\Delta\text{Amihud}_{\text{Market}}$	-0.0583***	-0.0653***	-0.0647***
	(-3.61)	(-3.41)	(-3.40)
$\Delta\text{Amihud}_{\text{Group}}$		-0.0293***	-0.0345***
		(-11.88)	(-13.45)
$\Delta\text{Amihud}_{\text{Industry}}$	-0.0125***	-0.00403	-0.00426
	(-4.19)	(-1.03)	(-1.10)
$\ln(\text{size})_{i,t}$	0.000656	0.000703	0.000725
	(0.58)	(0.54)	(0.55)
Constant	-0.00394	0.00366	0.00243
	(-0.11)	(0.09)	(0.06)
Observations	474298	285841	285841
Weight	-	MC × CR	MC
R^2	0.0125	0.0309	0.0303

t statistics in parentheses

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

Common Ownership Time Series

Common Ownership Time Series

Common Ownership Time Series

Group affiliated firms' Time Series

Group affiliated market caps' Time Series

Correlation Time Series

Correlation Time Series