Institutional investors connectedness and firm value

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Abstract

This paper investigates the role of the institutional blockholder's prominence, as measured by the number of co-ownership ties to other institutional investors, over the firm value. We proxy the importance of institutional investor recurring to the network centrality measures employed in the social network analysis. Using thirty thousand firm-year observations from the US market, we find that block-holdings from more central institutional investors are associated with higher Tobin's Q. This effect is robust to other alternative specifications of the network centrality's explanatory power. Indeed we show that the institutional connectedness displays an effect over and beyond the investor portfolio characteristics, such as the size of funds managed, the weight of the shareholding, the degree of diversification, as well as the dispersion of multiple block-holdings or the investor type.

JEL Classification: G32; G34.

Keywords: Institutional Ownership, Firm value, Social Network, Blockholders.

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1. Introduction

Over the last decade, there has been a growing body of literature that analyzes the role of large shareholders. Against the common belief that US corporations are diffusely held, Holderness (2009) reports that ninety-six percent of US firms have blockholders, i.e. shareholders owning more that five percent of the company, owning in aggregate a 39 percent of common equity. Within this shareholding, he also reports that outside ownership (mainly, institutional investors) is prevalent in respect to inside ownership.[1]

Starting from Hirshman (1970) the literature has theorized and empirically investigated the role of the size and the number of blockholders over the firm value. In short, blockholders can exert a virtuous effect over the management through either intervention (Admati, Pfleiderer, and Zechner (1994), Maug (1998), and Kahn and Winton (1998)) or simply by trading the firm's stocks (Admati and Pfeiderer, (2009) and Edmans (2009)). In the former case blockholders proactively engage themselves to force the management to behave so to maximize shareholders' value whilst, in the second case the mere threat of exit produces the desired disciplinary effect. Blockholders may also lead to a negative result on the company value, strengthening rather than lessening the agency costs (Bhojraj and Sengupta (2003), Shleifer and Vishny (1997), Edmans (2014)). The extraction of private benefits, the reduction of managerial initiative or stock liquidity are all possible examples (Aghion and Tirole (1997), Burkart et al. (1997), Bolton and von Thadden (1998)).

More recently some studies have shifted the focus of the investigation from the role of block-ownership to the one of co-ownership. Companies can be connected if large investors (namely, institutional investors) mutually take a position in both stocks. Several studies show that the

[1] In one sample firm, outside blockholders own 67% of the stock. On average, outside blockholders hold 11% of the stock (median 7%)

effect of institutional co-ownership affects return predictability and correlations (Gao, Moulton, and Ng (2014), Anton and Polk (2014), Pareek (2012)).

However, quite surprisingly, no prior investigation has been devoted in understanding the role of co-ownership over the firm value. In this paper we use the metrics employed in social network analysis to compute the degree of connectedness (centrality) of blockholders in the network of institutional investors. A more connected (central) blockholder is an investor having more co-ownership relationships with other institutional investors. We argue that the network centrality can measure an important and so far unexplored facet of the relation between ownership composition and firm performance.

We find that, controlling for a number of other potential explanations, more connected institutional investors are able to increase firm value (as measured by Tobin's Q). We argue that the positive effect of the number of connections (through co-ownership) originates *via* two main channels. In the one hand, a larger centrality (i.e. greater number of co-ownership relationships) allows the institutional investor to exercise more efficaciously its power of *voice* or *exit*, being able to more easily contact and persuade other investors to either vote or trade in the same direction (*corporate governance effect).* In the other hand, a more widespread investor network makes it more likely the possibility to foster firm performance through new business opportunities originated within the network (*growth opportunity effect).*

A legitimate concern is that institutional investor centrality may capture other effects that have been shown playing a role upon the firm performance. First, more central investors are also likely to be larger-than-average. Larger institutional investors have indeed more funds to manage, more stakes in listed companies and accordingly more ties to other investors. Second, Konijin et al. (2011) show that the block-ownership dispersion is negatively associated to the firm value. Institutional investors with higher network centrality are likely to have

invested in firms with multiple blockholders, thus showing more co-ownership relationships. Faccio, Marchica, and Mura (2011) and Ekholm and Maury (2014) empirically study the concentration of a stock in an investor's portfolio. Larger and presumably more connected institutional investors are less incline to over-weight a single stock and unbalance their portfolios. Moreover, more co-ownership relationships necessarily require a most spread and diversified portfolio so to maximize the likelihood of observing co-investments with other blockholders. Edmans and Manso (2011) argue that the type of large shareholder is likewise important. Passive blockholders, such as mutual funds, are more successful at governing through exit than voice, whereas the opposite is true for activists and venture capitalists. Whilst they do not postulate an association between investor type and firm performance, they suggest that the optimal number of blockholders might be divergent. In the former case a large number of investors is preferable whilst in the latter scenario a more concentrated ownership is efficient.

Although we detect some correlation between the centrality measures and the other mentioned rationales, investor connectedness displays a highly significant explanatory power over and beyond (a) the size of the managed funds, (b) the block-ownership dispersion, (c) the concentration of a stock in the portfolio or the degree its diversification, (d) the investor's type.

We argue that the paper's contribution is twofold. First, to the best of our knowledge, no prior study has looked at the role of institutional investor connectedness as a mechanism to enhance firm performance and value. Our findings are robust to different alternative specifications and show that block-holdings from more central investors are positively associated with greater firm value. Second, whilst few studies have investigated the role of single attributes of institutional portfolios, we offer a comprehensive examination of a larger set of portfolio characteristics. Our results confirm that the composition of the institutional portfolio is equally critical to explain the relationship between block-holdings and firm value.

The remainder of the paper is organized as follows. The next section illustrates the related literature. Section 3 describes our research methodology and the way the control variables have been constructed. Section 4 presents our main findings and some robustness checks. Finally, section 7 concludes.

2. Literature review

The theoretical literature provides conflicting predictions on whether closely held or diffuse ownership is better for firm value. The classical view is that concentrated ownership may enhance effective governance, as only large investors have monitoring (over the management) incentives and ways to intervene to correct value-destructive actions. However, many firms show an ownership structure with multiple small blockholders (Faccio and Lang 2002; Laeven and Levine 2007; Holderness 2009). Whilst in the neoclassical view this should be detrimental for the company as a potential free-riding problem may lead to a lack of monitoring, more recent theories have offered new potential explanations and avenues though which a set of small blockholders may be able to maximize the firm value. In short, blockholders can exert governance through two main mechanisms. The first is direct intervention within a firm, otherwise known as *voice* (Hirshman (1970) Admati, Pfleiderer, and Zechner (1994), Maug (1998), and Kahn and Winton (1998)). This avenue passes through proposing shareholder proposals or voting against the directors. This mechanism is mostly associated with the presence of a large blockholder. But, blockholders can also trade the firm's stocks. This second mechanisms is known as *exit* or *voting with your feet* ((Admati and Pfleiderer (2009), Edmans (2009), Edmans and Manso (2011)). If managers shirk, blockholders can react by selling their shares, depressing the stock value and harming the manager if she receives any type of stock-based compensation. In order to be an effective mechanism of governance the blockholder does not have to necessarily sell their shares as the mere threat may induce the manager to maximize the firm's value. McCahery,

Sautner, and Starks (2010) resort to survey evidence to show that institutional investors employ *exit* as their main governance mechanism. Edmans, Fang, and Zur (2012) and Bharath (2013) use an exogenous shock to liquidity to identify a threat of exit. Gallagher et al. (2011) confirms that institutional investors can exert governance by trading the firm's stocks. In particular, they show that order sequences submitted by institutional investors are associated with enhanced price informativeness and firm performance. Similarly, Kandel, Massa, and Simonov (2011) present evidence that multiple small shareholders trading in the same direction produce positive effect on firm value.

Edmans and Manso (2011) argue that the optimal number of blockholders depends on the tradeoff between intervention (*voice*) and trading (*exit*). If a more limited number of blocks (presumably, larger) favors intervention, the opposite maximize trading. The internal solution of the tradeoff also derives from the type of institutional involved. Passive investors, such as mutual funds are more likely to operate through trading than intervention; to the opposite, venture capitalists and activists are more incline to use their *voice*. Everything else constant, in the former case a greater number of blocks is more efficient; whilst in the latter fewer larger shareholdings represents a better governance mechanism.[2]

Interestingly, blockholders may produce a negative effect on the company value, strengthening rather alleviating the agency costs (Bhojraj and Sengupta (2003), Shleifer and Vishny (1997), Edmans (2014)). Indeed, blockholders may extract private benefits (for instance, by forcing the firm to buy goods or services at inflated prices from other company that they own) or their presence may simply reduce managerial initiative (Aghion and Tirole (1997), Burkart et al. (1997)) or stock liquidity (Bolton and von Thadden (1998), Edmans (2009).

Edmans, Levit and Reilly (2014) argue that a common limitation of previous studies relies on the analysis of simple observation of the

[2] Cronqvist and Fahlenbrach (2009) show fixed effects in corporate (investment, financial and compensation) policies among large US blockholders and significant effects on firm performance.

shareholding that each blockholder owns in a given firm or the portfolio composition of the blockholder (namely, institutional investors). For instance, Faccio, Marchica, and Mura (2011) and Ekholm and Maury (2014) empirically investigate the concentration of a stock in the investor's portfolio.

However, many institutional investors hold blocks in multiple firms. The effect of institutional co-ownership has been investigated but only to study return predictability and correlations. Gao, Moulton, and Ng (2014) evidence significant return predictability among economically unrelated stocks with mutual institutional ownership. Anton and Polk (2014) document excess stock comovement during the 2003 mutual fund trading scandal–which led to mutual fund outflows–characterized by common ownership. Similarly, Jotikasthira, Lundblad, and Ramadorai (2012) show that liquidity shocks to mutual funds trigger comovement between the markets they invest in. Pareek (2012) investigates the effect of information diffusion through the networks of institutional investors on stock returns and volatility. He evidences that stocks with a lower network density show stronger return momentum whilst centralized information networks are associated to a higher volatility of individual stocks.

This paper is also related to a number of other studies using the metrics used in social network analysis to render the concept of network centrality. Similarly to this paper, Pareek (2012) gauges the degree of co-participation to the company's equity through the network centrality measures. However, this paper differs from Pareek (2012) as we look at the effect of institutional (ownership) connectedness as an avenue to strengthen the governance mechanism and, in turn, the firm value rather than assess the degree of stock price co-movements. A number of other studies have investigated corporate financial phenomena through the concept of network centrality. In the strategic venture capital (VC) case, Hochberg *et al.* (2007) find that VC firms which are better connected have higher performances and that, at the same time, also the portfolio

companies of these networked venture capitalists are more likely to survive to subsequent financing and exit stages.

3. Data and methodology

We examine the impact of institutional blockholder connectedness on firm value over the period 2001 through 2013. Our analysis uses institutional holdings information in 2001-2013 from 13f filings [3] available from Thomson Reuters. We apply the following screens to create our final sample. Firstly, institutional ownership data are reported quarterly, hence, we consider the equity stake of each institutional investor as resulting at the last quarter each year. Secondly, as a block-holder is generally defined as 5% shareholder, we include in our sample only institutional investors holding each year a participation of at least 5% in the firm. This restriction have produced a universe of 3,027 institutional investors having a block in a total of 10,374 firms. We start from this universe of institutional block-holders to calculate network centrality measures based on co-ownership ties.

Our primary focus is on the impact of institutional connectedness on firm performance. However, based on the literature, we also use various accounting variables as determinants and controls in our valuation models. Accounting data are derived from Compustat, while market information for the construction of liquidity measures from CRSP. The list of explanatory and control variables employed in the analysis is reported in Appendix. Financial and public utility firms (SIC codes = 60-69, 48-49) are excluded from the analysis because of their special asset composition, high leverage and stricter government regulation. The final sample was

[3] Institutional investors with $100 million or more under management in exchange-traded or NASDAQ-quoted equity securities are required to file 13F reports within 45 days of the end of the calendar quarter. Institutions are required to report all equity positions greater than either 10,000 shares or $200,000 in market value. Because 13F reporting is aggregated across different units within an institution, the number of institutions reflects the number of unrelated institutions buying or selling the security.

47,406 firm-year observations. Regressions contain fewer observations due to missing variables for some observations.

4. Main findings

4.1 Univariate results

[INSERT TABLE 1 ABOUT HERE]

4.2 Multivariate results

[INSERT TABLE 2 ABOUT HERE]

[INSERT TABLE 3 ABOUT HERE]

5. Conclusions

Appendix - Variables description

Variable	Description	Source
Tobin Q	Tobin's Q, defined as the ratio of book value of assets (at) minus book value of equity (ceq) plus market value of equity (prcc_c * csho) to book value of total assets (at)	COMP
Firm size	Log (total assets – at)	COMP
Leverage	Ratio of long-term debt (dltt + dlc) to total assets (at)	COMP
Capex	Capital expenditures (capx) scaled by total assets (at)	COMP
Intangibles	Ratio of intangible assets (intan) to total assets (at)	COMP
Sales growth	Annual sales growth (percent change in sale)	COMP
Sales/assets	Ratio of sales (sale) to total assets (at)	COMP
Turnover	Ratio of annual average of daily trading volume (vol) to shares outstanding	CRSP
Bid-Ask	Ratio of annual average of daily |Ask (ask) – Bid (bid)| to Price (prc)	CRSP
Amihud	Amihud (2002) liquidity measure: annual average of daily $\|R_i\|$/(Volume (vol)* Price (prc)). $\|R_i\|$ is the daily return impact associated with one dollar of trading volume. The measure is multiplied by 1,000,000.	CRSP
Number	The number of institutional blockholders in the firm	
Herfindhal	Blockholder dispersion – Herfindahl Index (scaled) calculated on the ownership stakes of all institutional blockholders in the firm	
Shareholding	Sum of the ownership stakes of all institutional blockholders in the firm	
Degree	Degree centrality of the largest blockholder: the number of other institutional blockholders that the largest institutional blockholder in the firm has connections with via common ownership. This measure is normalized by dividing it by the maximum number of connections (*N-1*).	
Eigenvector	Eigenvector of the largest blockholder: the degree to which the largest institutional blockholder in the firm is connected via common ownership with other well-connected institutional blockholders. This measure is normalized by dividing it by the maximum possible eigenvector element value for an N actor network.	
Top 25_degree	Dummy variable: it takes the value one if the largest institutional blockholder belongs to the top 25% in terms of degree centrality	
Top 10_degree	Dummy variable: it takes the value one if the largest institutional blockholder belongs to the top 10% in terms of degree centrality	
Top 5_degree	Dummy variable: it takes the value one if the largest institutional blockholder belongs to the top 5% in terms of degree centrality	
Top 25_eigen	Dummy variable: it takes the value one if the largest institutional blockholder belongs to the top 25% in terms of eigenvector	
Top 10_eigen	Dummy variable: it takes the value one if the largest	

	institutional blockholder belongs to the top 10% in terms of eigenvector
Top 5_eigen	Dummy variable: it takes the value one if the largest institutional blockholder belongs to the top 5% in terms of eigenvector
Size	Log (total holdings) of the institutional blockholder
Ptf Herf	Institutional portfolio dispersion: Herfindahl Index (scaled) calculated on the global portfolio holdings of each institutional blockholder
Ind Herf	Institutional industry dispersion: Herfindahl Index (scaled) calculated on the global portfolio holdings of each institutional blockholder grouped by industry codes
Ptf weight	Ownership stake of the largest institutional blockholder, in percent of her size
Block own	Ownership stake of the largest institutional blockholder, in percent of shares outstanding
Bank	Dummy variable: it takes the value one if the largest
Insurance	institutional blockholder is a bank
Inv_comp	Dummy variable: it takes the value one if the largest institutional blockholder is an insurance company
	Dummy variable: it takes the value one if the largest institutional blockholder is an investment company
Inv_adv	Dummy variable: it takes the value one if the largest institutional blockholder is an investment advisor
Others	Dummy variable: it takes the value one if the largest institutional blockholder belons to all others categories (Pension Funds, University Endowments, Foundations)

References

Admati AR, Pfleiderer P. "The 'Wall Street Walk' and shareholder activism: exit as a form of voice". *Review of Financial Studies.* 22 (7): 2445-85.

Antón, Miguel, and Christopher Polk. "Connected Stocks." *The Journal of Finance* 69, no. 3 (June 2014): 1099–1127.

Bharath, S T, S Jayaraman, and V Nagar. "Exit as Governance: An Empirical Analysis." *Journal of Finance* 68, no. 6 (2013): 2515–47.

Cronqvist, H, and R Fahlenbrach. "Large Shareholders and Corporate Policies." *Review of Financial Studies* 22, no. 10 (2009): 3941–76.

Edmans, A., "Blockholder trading, market efficiency, and managerial myopia". *Journal of Finance* 64 (6): 2481-513.

Edmans, A. "Blockholders and Corporate Governance." *Working Paper*, 2014, 1–48.

Edmans, Alex, Doron Levit, and Devin Reilly. "Governance and Comovement Under Common Ownership." *ECGI Discussion Paper*, no. August (2014).

Edmans, A, and G Manso. "Governance through Trading and Intervention: A Theory of Multiple Blockholders." *Review of Financial Studies* 24, no. 7 (2011): 2395–2428.

Ekholm, AG, and Benjamin Maury. "Portfolio Concentration and Firm Performance." *Journal of Financial and Quantitative Analysis*, 2014, 1–62.

Faccio, Mara, Maria-Teresa Marchica, and Roberto Mura. "Large Shareholder Diversification and Corporate Risk-Taking." *Review of Financial Studies*, 2011.

Gallagher, David R, Peter A Gardner, and Peter L Swan. *Governance through Trading: Institutional Swing Trades and Subsequent Firm Performance*. Vol. 48. 02, 2013.

Hochberg, Y. V., Ljungqvist A., Lu Y., 2007, Whom You Know Matters: Venture Capital Networks and Investment Performance, *Journal of Finance,* Vol. 62, No. 1 (February), pp. 251–301.

Holderness, C G. "The Myth of Diffuse Ownership in the United States." *Review of Financial Studies* 22, no. 4 (2009): 1377–1408.

Konijn, S J J, R Kräussl, and A Lucas. "Blockholder Dispersion and Firm Value." *Journal of Corporate Finance* 17, no. 5 (2011): 1330–39.

Norli, O., C. Ostergaard, and I. Schindele. "Liquidity and Shareholder Activism." *Review of Financial Studies* 28, no. 2 (October 2014): 486–520.

Pareek, Ankur. "Information Networks : Implications for Mutual Fund Trading Behavior and Stock Returns." *AFA 2010 Atlanta Meetings Paper*, no. February (2012).

Table 1 - Descriptive statistics. This table reports summary statistics for variables used in the study. Detailed variable definitions are in the Appendix.

Panel A – Firm characteristics						
	N	Mean	Min	Max	Median	Sd
Tobin Q	43273	2.21	0.60	13.77	1.57	2.12
Total Assets	45778	2186.54	1.54	37306	314.9485	5784.289
Leverage	45566	0.22	0	1.17	0.15	0.24
Capex	45460	0.05	0	0.37	0.03	0.06
Intangibles	44759	0.16	0	4.53	0.08	0.21
Sales growth	42717	0.18	-0.72	4.81	0.07	0.62
Sales/assets	45612	1.06	0	101.99	0.89	1.00
Turnover	22835	0.01	0.00	0.29	0.01	0.01
Bid-Ask	22828	0.01	0.00	0.38	0.00	0.02
Amihud	22835	2.15	0.00	1909.37	0.01	22.86
Panel B – Blockholder presence and dispersion						
	N	Mean	Min	Max	Median	Sd
Number	30874	2.68	1	20	2	1.56
Herfindal	30874	0.54	0.07	1	0.50	0.30
Shareholding	30874	0.23	0.05	0.69	0.20	0.14
Panel C – Largest Blockholder characteristics						
	N	Mean	Min	Max	Median	Sd
Degree	30452	0.18	0.00	0.52	0.11	0.16
Eigenvector	30452	0.12	0.00	0.29	0.11	0.09
Size ($mil)	30874	159,000	6,41	1,210,000	33,700	226,000
Ptf Herf	30874	0.04	0.00	1	0.01	0.09
Ind Herf	30874	0.13	0.05	1	0.07	0.15
Ptf weight	30860	0.02	0.00	1	0.00	0.09
Block own	30874	0.11	0.05	0.47	0.10	0.06
Top 25_degree	30452	0.27	0	1	0	0.44
Top 10_degree	30452	0.12	0	1	0	0.33
Top 5_degree	30452	0.11	0	1	0	0.31
Top 25_eigen	30452	0.25	0	1	0	0.43
Top 10_eigen	30452	0.13	0	1	0	0.33
Top 5_eigen	30452	0.12	0	1	0	0.32
Bank	47406	0.2	0	1	0	0.15
Insurance	47406	0.01	0	1	0	0.09
Inv_comp	47406	0.00	0	1	0	0.05
Inv_adv	47406	0.12	0	1	0	0.33
Others	47406	0.49	0	1	0	0.50

Table 2 – Tobin'Q and network centrality of the largest institutional blockholder. This Table reports the coefficients of an unbalanced panel for Tobin's Q. All our specifications include fixed effects in the form of time dummies and industry dummies based on the 2-digit Standard Industrial Classification (SIC) code. Network centrality of the largest institutional blockholder is measured by *Degree* calculated as the number of other institutional blockholders that the largest institutional blockholder in the firm has connections with via common ownership. *Leverage* is the ratio of long-term debt to total assets. *Capex* is capital expenditures scaled by total assets. *Intangibles* is the ratio of intangible assets to total assets. *Firm size* is the natural logarithm of total assets. *Sales growth* is annual sales growth, in percent. *Sales/assets* is the ratio of sales to total assets. *Turnover* is the ratio of annual average of daily trading volume to shares outstanding. *Top 25_degree* and *Top 10_degree* are dummy variables taking the value one if the largest institutional blockholder belongs to the top 25% and 10% in terms of degree centrality, respectively. To reduce the weight of outliers, accounting variables are winsorized at 1% level. Standard errors are in parentheses. ***, ** and * denote significance at the 1, 5, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)
Degree	0.203***	0.279***	0.114***		
	(4.62)	(6.90)	(2.79)		
Leverage		-0.168***	-0.385***	-0.387***	-0.388***
		(-3.52)	(-7.59)	(-7.63)	(-7.64)
Capex		1.237***	1.112***	1.109***	1.105***
		(7.37)	(6.00)	(5.98)	(5.96)
Intangibles		-1.090***	-0.978***	-0.977***	-0.979***
		(-18.05)	(-15.28)	(-15.27)	(-15.30)
Firm size		-0.211***	-0.176***	-0.175***	-0.174***
		(-21.33)	(-16.56)	(-16.47)	(-16.43)
Sales growth		0.251***	0.298***	0.298***	0.298***
		(20.79)	(19.75)	(19.74)	(19.73)
Sales/assets		0.086***	0.100***	0.100***	0.100***
		(10.73)	(13.44)	(13.46)	(13.49)
Turnover			18.020***	18.064***	18.075***
			(19.88)	(19.93)	(19.94)
Top 25_degree				0.027*	
				(1.83)	
Top 10_degree					0.032*
					(1.81)
Constant	1.842***	3.001***	2.741***	2.743***	2.745***
	(4.31)	(7.56)	(5.79)	(5.80)	(5.81)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.129	0.161	0.19	0.19	0.19
Observations	30379	28860	21774	21774	21774

Table 3 – Robustness analysis. This Table reports the coefficients of an unbalanced panel for Tobin's Q. All our specifications include fixed effects in the form of time dummies and industry dummies based on the 2-digit Standard Industrial Classification (SIC) code. Network centrality of the largest institutional blockholder is measured by *Degree* calculated as the number of other institutional blockholders that the largest institutional blockholder in the firm has connections with via common ownership. *Leverage* is the ratio of long-term debt to total assets. *Capex* is capital expenditures scaled by total assets. *Intangibles* is the ratio of intangible assets to total assets. *Firm size* is the natural logarithm of total assets. *Sales growth* is annual sales growth, in percent. *Sales/assets* is the ratio of sales to total assets. *Turnover* is the ratio of annual average of daily trading volume to shares outstanding. *Top 25_degree* and *Top 10_degree* are dummy variables taking the value one if the largest institutional blockholder belongs to the top 25% and 10% in terms of degree centrality, respectively. *Size* is the natural logarithm of total holdings of the institutional blockholder reported in 13F files. *Herfindhal* is the Herfindahl Index (scaled) calculated on the ownership stakes of all institutional blockholders in the firm. *Block own* is the ownership stake of the largest institutional blockholder, in percent of shares outstanding. *Ptf weight* is the ownership stake of the largest institutional blockholder, in percent of her Size. *Ptf Herf* is the institutional portfolio dispersion, measured by the Herfindahl Index (scaled) calculated on the global portfolio holdings of each institutional blockholder. *Bank, Insurance, Inv_comp, Inv_adv* are dummy variables taking the value one if the largest institutional blockholder is a bank, an insurance company, an investment company or an investment advisor, respectively. To reduce the weight of outliers, accounting variables are winsorized at 1% level. Standard errors are in parentheses. ***, ** and * denote significance at the 1, 5, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Degree	0.200***	0.183***	0.193***	0.377***	0.312***	0.306***
	(4.82)	(4.40)	(4.61)	(8.60)	(7.05)	(6.88)
Leverage	-0.362***	-0.360***	-0.360***	-0.336***	-0.356***	-0.348***
	(-7.14)	(-7.11)	(-7.10)	(-6.67)	(-7.05)	(-6.89)
Capex	1.069***	1.080***	1.078***	1.053***	1.103***	1.087***
	(5.78)	(5.85)	(5.83)	(5.73)	(5.98)	(5.90)
Intangibles	-0.965***	-0.970***	-0.971***	-0.962***	-0.963***	-0.963***
	(-15.14)	(-15.23)	(-15.23)	(-15.18)	(-15.15)	(-15.18)
Firm size	-0.199***	-0.193***	-0.200***	-0.216***	-0.202***	-0.204***
	(-18.44)	(-17.88)	(-18.49)	(-19.91)	(-18.68)	(-18.93)
Sales growth	0.297***	0.294***	0.295***	0.285***	0.291***	0.291***
	(19.73)	(19.56)	(19.64)	(19.00)	(19.39)	(19.42)
Sales/assets	0.099***	0.098***	0.098***	0.098***	0.098***	0.098***
	(13.37)	(13.29)	(13.32)	(13.27)	(13.28)	(13.32)
Turnover	17.393***	17.235***	17.188***	16.787***	17.004***	16.985***
	(19.19)	(19.04)	(18.94)	(18.60)	(18.79)	(18.78)
Size	0.054***	0.055***	0.055***	0.087***	0.074***	0.083***
	(10.73)	(10.86)	(10.74)	(15.84)	(13.50)	(14.34)
Herfindhal		0.214***		0.191***	0.191***	0.192***
		(8.56)		(7.44)	(7.44)	(7.47)
Block own			-2.055***	-1.395***	-1.400***	-1.441***
			(-5.33)	(-3.54)	(-3.55)	(-3.65)
Block own^2			4.821***	1.884*	2.443**	2.583**
			(4.80)	(1.84)	(2.38)	(2.52)
Ptf weight				1.645***		
				(14.56)		
Ptf Herf					0.979***	0.995***
					(9.13)	(9.28)
Bank						0.239***
						(-6.59)
Insurance						0.079
						(1.45)
Inv_comp						-0.023
						(-0.27)
Inv_advisor						-0.007
						(-0.42)
Constant	2.866***	2.686***	3.039***	2.923***	2.804***	2.827***
	(6.11)	(5.73)	(6.46)	(6.30)	(6.01)	(6.09)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.198	0.201	0.197	0.223	0.214	0.226

Observations	21774	21774	21774	21763	21774	21774

Note: Further specifications of our model also include alternative measure of liquidity (Bid-Ask, Amihud), the dummy Top 5_*degree,* Number, Shareholding, and Ind Herf as control variables. The coefficient's sign as well as the statistical significance of the network centrality of the largest institutional blockholder (*Degree*) remain largely unaffected. The results are also the same using a different measure of institutional connectedness (*Eigen*).