

Large Shareholders and Firm Value: Interaction between Power and Incentive to Expropriate

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Abstract

This study examines the relationship between large shareholders and firm value and how this relation varies with the large shareholders' power and incentive to expropriate a firm's wealth. We find this relation is U shaped with the turning point at around 45% and 65% for the largest shareholders and total blockholders, respectively. The higher the power (or higher control right) means the more the expropriation or lower firm value. However, in firms with controlling blockholders (beyond 50% control right approximately), blockholders have enough power to manipulate firm's activities but their incentive to expropriate decreases due to private benefits being lower. This study also finds that firms in high investor protection countries are associated with higher values than those in low investor protection countries for any blockholding level, but the difference in firm value between weak investor protection countries and strong investor protection countries is highest when expropriation by blockholders is largest.

Keywords: Ownership concentration; blockholders; Tobin's Q; firm value.

JEL code: G32, G34.

1. Introduction

Large shareholders have both the power and incentive to expropriate minority shareholders, (Shleifer and Vishny, 1997) but the power and incentive differ across the level of shareholding. We develop further arguments for the relationship between firm value and large shareholders based on the interaction between power and incentive of blockholders to expropriate.

Previous studies (such as Burkart et al., 1998; Holderness and Sheehan, 1988; La Porta et al., 2002) argue that higher ownership lowers large shareholder's incentive to extract private benefits because the benefits between shareholders and the firm are more aligned. Burkart et al. (1998) state that expropriation is costly and thus that higher levels of ownership determine the alignment between a firm's wealth and that of its shareholders. Based on this argument, La Porta et al. (2002), when examining the relationship between ownership of controlling shareholders and firm value across countries, supports a hypothesis that greater ownership by the controlling shareholder¹ is associated with higher firm value. Holderness and Sheehan (1988, p.318) also claim that the ownership interest of majority shareholders (owning at least half of the common stocks) "internalizes most of the wealth effects of their management decisions"; thus, their incentive to expropriate wealth should be lower. However, these arguments are inconsistent with empirical findings by several papers (such as Morck et al., 1988 or McConnell and Servaes, 1990) which provide evidence that the relationship between managerial ownership and firm value is nonlinear, or this relationship is negative for

some ranges of ownership.

Then we add further arguments that the expropriation depends not only on the incentive of the large shareholders but also on their power to do it. For very large shareholders, for example shareholders with more than 50% control rights, they have the power to expropriate a firm's wealth. However, this large shareholder has a strong alignment with firm value and their expropriation is lower when their ownership is greater².

The issue will be more complicated in firms with large minority or medium-sized shareholders where the alignment of benefits is rather low. For example, if a shareholder holds a low proportion of ownership, such as 5% or 10%, their incentive to extract private benefits is very strong but the blockholders may not be able to realize their incentive because their power is constrained. But the higher the control right (but still large minority or medium-sized), the more the power for a large shareholder to expropriate a firm's wealth. Thus if the ownership of the large shareholder is low enough so that the alignment between the firm's wealth and his personal wealth is still low, the higher the ownership (and control right, respectively) the higher expropriation is likely to be. We thus predict that the relationship between block holding and firm value is U shaped.

We examined our prediction using 20883 observations in 37 countries from 2006 to 2009. The ownership data is obtained from the ORBIS database where we can access the large shareholders of small, medium, and large firms in many countries. While previous studies usually focus on large firms and thus on firms with

a low level of ownership (for example, the median value of ownership in Morck et al. (1988) or McConnell and Servaes (1990) is about 5 to 6%) because the firm size and ownership is negatively related, our sample includes firms with a wide range of ownership levels. Thus, we are able to investigate the effect of a low and high level of blockholding on firm value. Furthermore, our broad sample allows us to investigate how investor protection has impact on the relationship between firm value and large shareholders at different levels of blockholding.

Our empirical results are consistent with our prediction that the relationship between firm value and blockholding is U shaped. The firm value decreases and then rises as the control rights of blockholding increase. Tobin's Q is negatively related to the control rights of the largest shareholder (all blockholders at 5% cut-off), but when the control rights of the largest shareholder are beyond 45% (65%), an increase in control rights leads to an increase in firm value. We also find a U-shaped relationship with various robustness tests. We then do further tests by dividing the sample into two sub-samples that are firms in low investor protection countries and firms in high investor protection countries. We predict that a strong legal system will reduce the expropriation behavior of blockholders, especially when that behavior is the most serious.

We use the anti-self-dealing index and anti-director rights index (ADRI) used by Djankov et al. (2008) as proxies for investor protection. A country with an anti-self-dealing index of less than 0.56 or an ADRI of less than 4 is

classified as a country with low investor protection, and a country with strong investor protection otherwise. We find that firms in countries with high investor protection have higher value than those in countries with low investor protection. Furthermore, the difference in firm value between two firm groups is the highest when the blockholders' entrenchment is the highest (or the distance around the two focus points of the two U shaped curves is the largest).

Our study offers contributions to the existing debate regarding the relationship between blockholding and firm performance. We provide evidence to further explain the constitution of the entrenchment effect for the lower levels of blockholding and the alignment effect for the higher levels of blockholding. The U-shaped relationship between firm value and blockholding is able to reflect the interactions between the power and incentives of large shareholders with respect to firm performance. Furthermore to our knowledge, this study is the first paper that attempts to examine the non-linear relationship among investor protection, blockholding, and firm value. We are able to provide further evidence for the effect of the legal system on the relationship between blockholding and firm value.

The structure of the remainder of this paper is organized as follows. Section 2 contains both the data sources and the construction of ownership concentration. The empirical results that examine the relationship between ownership concentration and firm performance are presented in Section 3. Section 4 contains the empirical results for the relationship among

investor protection, blockholding, and firm performance, and Section 5 presents the robustness test. Finally, Section 6 concludes the paper.

2. Research methodology

2.1 Data and sample selection

Our study examines the relationship between firm performance and ownership concentration across 37 countries. Firm performance is measured by Tobin's Q as the ratio of a firm's market value to the replacement cost of its total assets. We collect these data from *Worldscope* and *Datastream*. We also obtain the control variables, including firm size, age, long-term debt, capital expenditure to tangible assets, price volatility, idiosyncratic risks, and other information, from this source. Data pertaining to investor protection are obtained from the work of La Porta et al. (1998) and Djankov et al. (2008). We select only non-financial firms (SIC codes 6000-6999 are excluded from the samples).

For the ownership data, information from the ORBIS database is used. We select all publicly listed firms except financial firms for each year in the period from 2006 to 2009. The ORBIS database provides ownership information for each firm. However, although the ORBIS database has a wide range of information providers, the ownership information for many firms is not sufficient. While ownership information has been available since 2001, we find the ownership information is more complete in later years than the earlier years and thus we exclude observations before 2006. For this sample, we then further delete firms having insufficient ownership information.

According to ORBIS, information is provided by more than 40 different information providers, all of who are experts in their regions or disciplines. Information is also derived from company financial reports, market research, country reports, and many other reports and data. Although information on ownership from ORBIS is extensive, with more than 34 million active and archived links, the ORBIS database is not able to provide information on all shareholders for a total of 100% holdings for any firm. Rather, the database provides detailed information on any available shareholders that have direct or total control rights in each firm.

This ORBIS database classifies firms into four main groups using a BVD (Bureau VanDijk) indicator: A, B, C, D, and U. The BVD *Independence Indicator* is attached to each firm to measure the degree of independence of a company with respect to its large shareholders. Firms in category A are those with known recorded shareholders in which none have more than 25% of direct or total ownership.³ B-indicator firms have one or more shareholders with a direct or total control right above 25% but no shareholders have more than a 50% control right. Firms are classified into Category C (or Category D) if a source indicates that they have a total (or a direct) ownership of over 50%. The remaining firms are in Category U. Furthermore, in each category, ORBIS also divides firms into sub-categories⁴(A+, A, or A- for category A; B+, B, or B- for category B; C+ or C for category C). A+ (B+ or C+) sub-category is attached to firms that have more sufficient and reliable ownership information than an A (B or C) sub-indicator. A- (or B-) is assigned to firms that ORBIS is less likely to assure the degree of

independence of as a company with respect to its shareholders than other sub-indicators.

We use these finely defined sub-categories to exclude firms having less reliable ownership information. We remove firms with U indicators and firms in A-, A, B- and B sub-categories because the ownership information for these firms is incomplete. Furthermore, we select only firms whose total shareholdings (we calculated ourselves from ORBIS data) exceed 50% and are less than 97% using a similar method to that of Claessens et al. (2000). In several cases, the holding is not identified but is described by initials such as MO (majority owned) or NG (negligence). We replace these initials with the percentage of holdings⁵. From this sub-sample, when calculating blockholding, we exclude three types of shareholders: “public,” “unnamed private shareholders, aggregated,” and “other unnamed shareholders, aggregated,” who are considered unable to exert control over a company. We then add the holdings of all blockholders at the threshold of 5% to calculate the variable denoting blockholding.

The ORBIS database also provides information of the ultimate owner at 25% and 50% for the year 2009 (because the ultimate owner information is available for the latest year⁶). We assume that the ultimate owners are stable for the period from 2006 to 2009. A firm is defined as either widely held or controlled by the ultimate owner. The ultimate owner (UO) is an entity that controls a firm directly or indirectly at the threshold of 25% or 50% for the largest shareholder. The approach to identify the ultimate owner in the ORBIS database is similar to

the method used by La Porta et al. (1999). We collect control right and types of the ultimate owner of the sampled firms. If the database cannot trace the ultimate owner and these firms are given the B, C, or D indicators, we classify these firms having ultimate owners at 25% (all these firms) or 50% (for C and D groups). However, as the types of ultimate owners are not identified in the database, we classify them as unknown type groups.

2.2. Ownership variable definition

Empirical research uses different measures to investigate the relationship between ownership structure and firm performance. The primary study of Demsetz and Lehn (1985) uses alternative measures, including the percentages of the five largest and 20 largest shareholders and the Herfindahl as a proxy for ownership concentration. In addition, most papers use managerial or insider ownership as measures (e.g., Morck et al., 1988; McConnell and Servaes, 1990; Hermalin and Weisbach, 1988; Loderer and Martin, 1997; Cho, 1998) to capture the agency conflict between managements and other shareholders and between insiders and outsiders. Other papers use measures based on the presence or dispersion of blockholders (Konijn et al., 2011), the largest shareholder (Claessens et al., 2002), and the controlling shareholder (La Porta et al., 2002; Lins, 2003; Wiwattanakantang, 2001). Demsetz and Vilalonga (2001) argue that the holdings of the five largest shareholders are considered a measure to control professional management, whereas management’s holding represents the ability of professional management to ignore shareholders.

In this study, we use the control rights of the largest shareholder and the total blockholding, in which a blockholder is defined as a shareholder with at least 5% control rights. Similar to the measure of the percentage of the five largest shareholders used by Demsetz and Lehn (1985) and Demsetz and Villalonga (2001), our variables measure both the ability to control the professional management in a firm and the agency conflict between large shareholders and minority shareholders. However, because blockholders are not homogeneous in terms of their incentives and power, we divide large shareholders into different groups: families and individuals, financial companies (banks, insurance companies, and financial companies), funds (pension fund/mutual fund/trusts), ventures (private equity firms and venture capital), corporations, states, and other entity types. We then examine the relationship between firm value and each type of shareholder⁷.

In addition to the continuous variables, we also use dummy variables to further test the relationship between blockholders and Tobin's Q. Firms are classified into widely held firms and firms with blockholders, which are defined at the thresholds of 5%, 25%, and 50%. Specifically, we use dummy variables for three groups of firms: widely held firms, firms with blockholders with more than 25% control rights, and firms with blockholders with more than 50% control rights. Similar to the continuous variables, we also test the relationship between firms that have a specified type of blockholder (families/financial institutions/corporations/states) and firm performance. The types of blockholders are based on the type of the ultimate owner rather than the type of the

largest immediate blockholder, and the type of ultimate owner is traced from the largest blockholder. All variable definitions are explained in Appendix 1.

2.3. Descriptive statistics of ownership variables

Table 1 provides summary statistics of Tobin's Q and the ownership variables, including the control rights of the largest shareholder, total blockholding, and the dummy variables for firms with blockholding and widely held firms at the 5%, 25% and 50% cut-off levels by countries for 20,883 firm-year observations. The average of the total blockholding and the holdings of the largest shareholder of the entire sample are 57% and 32%, respectively. On average, firms in countries with low levels of investor protection have higher total blockholding (62%) than in other countries, and the holdings of the largest shareholder (38%) are also higher on average than firms in countries with high investor protection (49% and 24%, respectively). This result is consistent with most current research findings that firms in countries with high investor protection countries are more diffused than their counterparts. Similar to the continuous ownership variables, the dummy variables show that firms in countries with low investor protection are generally more diffused than those in countries with high investor protection. These results are consistent with the findings of other current studies (e.g., La Porta et al., 1999; Claessens et al., 2000; Faccio and Lang, 2002; Carney and Child, 2013).

The average Tobin's Q by country ranges from 1.13 to 1.90, and the average for the entire sample is 1.59. The mean value of Q for

Table 1: Tobin's Q and ownership variables

Country	Nfirms	Q	Control rights of		Proportion of firms with blocks at		
			LarBlock	TotBlock	5-25%	25.01-50%	Over 50%
Argentina	45	1.13	63.27	70.30	0.02	0.07	0.91
Australia	976	1.78	26.11	63.15	0.58	0.28	0.14
Austria	135	1.39	41.51	58.50	0.25	0.25	0.49
Belgium	178	1.49	38.76	57.28	0.28	0.39	0.33
Brazil	27	1.40	66.04	70.52	0.15	0.04	0.81
Canada	487	1.52	36.63	55.48	0.45	0.27	0.28
Chile	82	1.37	56.81	68.28	0.10	0.20	0.71
Denmark	176	1.89	34.32	60.94	0.31	0.34	0.35
Finland	262	1.66	24.08	47.31	0.58	0.25	0.15
France	1112	1.46	40.75	62.91	0.26	0.37	0.37
Germany	1064	1.49	39.70	59.06	0.27	0.30	0.40
Greece	458	1.25	41.44	67.22	0.18	0.48	0.34
High	12930	1.71	24.25	49.12	0.65	0.19	0.14
Hong Kong	110	1.22	47.44	69.13	0.09	0.31	0.60
India	802	1.80	35.40	57.01	0.39	0.28	0.32
Ireland	60	1.70	21.29	50.02	0.78	0.10	0.12
Israel	84	1.86	39.18	55.83	0.30	0.31	0.38
Italy	295	1.35	43.09	61.75	0.18	0.34	0.48
Japan	1174	1.25	50.42	61.80	0.23	0.20	0.56
Low	7953	1.39	37.75	62.42	0.32	0.34	0.34
Malaysia	656	1.29	38.11	61.67	0.25	0.47	0.29
Mexico	60	1.68	50.88	55.84	0.17	0.15	0.67
Netherland	212	1.57	27.71	61.25	0.60	0.19	0.21
New Zealand	129	1.42	34.97	58.98	0.42	0.24	0.33
Norway	226	1.51	33.18	64.42	0.30	0.40	0.31
Pakistan	59	1.90	57.92	68.00	0.17	0.17	0.66
Philippines	156	1.33	50.16	78.14	0.04	0.52	0.44
Portugal	77	1.25	39.51	67.53	0.30	0.26	0.44
Singapore	565	1.35	40.38	62.36	0.28	0.38	0.35
South Africa	345	1.62	32.32	57.48	0.48	0.32	0.18
South Korea	1139	1.18	20.10	66.89	0.57	0.40	0.02
Spain	116	1.79	27.63	68.65	0.58	0.16	0.26
Sweden	384	1.60	28.32	52.56	0.48	0.35	0.16
Taiwan	1150	1.63	22.43	42.69	0.66	0.29	0.04
Thailand	95	1.21	44.63	59.18	0.13	0.48	0.37
Turkey	180	1.28	53.19	68.15	0.03	0.41	0.56
UK	1774	1.59	18.94	54.32	0.75	0.20	0.05
US	6033	1.83	19.11	41.86	0.78	0.11	0.09
Low	7953	1.39	37.75	62.42	0.32	0.34	0.34
High	12930	1.71	24.25	49.12	0.65	0.19	0.14
All	20883	1.59	29.39	54.19	0.52	0.25	0.22

Note: Table 1 shows the average of Tobin's Q and the ownership variables by countries and by groups of countries for the period from 2006 to 2009. The ownership variables include continuous variables that are TotBlock (the total control rights of all blockholders at a 5% cut-off); LarBlock (the control rights of the largest blockholder at a 5% cut-off); and the proportion of firms that have at least one block with control rights from 5% to 25%, 25.01% to 50%, and greater than 50%. High includes countries with high investor protection (whose anti-self-dealing index is not less than 0.5), and Low includes the remaining countries. NFirms is the number of firms covered in each country.

countries with low investor protection is 1.39, whereas the corresponding number for countries with high investor protection is 1.71. Thus, firms in countries with high investor protection are associated with more diffused ownership and higher valuation in the preliminary analysis.

3. Model specification and empirical results

3.1. Firm performance and blockholding

3.1.1. Continuous variables

We firstly investigate the relationship between firm performance and ownership concentration using the control rights of the largest blockholder and the total blockholding at a 5% cut-off level for the period from 2006 to 2009. These two variables reflect the interaction between the ability of blockholders to control professional managers and the ability of blockholders to extract private benefits from small shareholders. Although the blockholders can reduce the entrenchment of management by monitoring the activities of management, the blockholders can also extract a corporation's wealth at the expense of minority shareholders.

We use both OLS regression and 2SLS regression to examine the relationship between ownership concentration and firm performance. The model for the OLS regression is as follows:

$$Q_{i,t} = \beta \text{Ownership}_{i,t} + \psi x_{i,t} + \lambda_t + \delta_{k(i)} + c_{j(i)} + \varepsilon_{i,t} \quad (1)$$

$$Q_{i,t} = \beta \text{Ownership}_{i,t} + \text{Ownership}_{i,t}^2 + \psi x_{i,t} + \lambda_t + \delta_{k(i)} + c_{j(i)} + \varepsilon_{i,t} \quad (2)$$

Where Q_t is the Tobin's Q of a firm in year t ; Ownership_{t-1} represents the ownership concentration variables, which consist of either the total blockholding (TotBlock) or the holdings of

the largest shareholder (LarBlock); $x_{i,t}$ denotes firm characteristics, such as firm size, firm age, sales growth, long-term debt, capital expenditure, and the annualized monthly volatility of the stock price; λ_t : year fixed effects; $\delta_{k(i)}$: industry fixed effects; and $c_{j(i)}$: country fixed effects.

Table 2 provides the results from the OLS regression. We find that blockholdings are significantly related to Tobin's Q for both variables. For the linear relationship between Q and firm value for the entire sample, OLS regression reveals that the relationship between the largest blockholders or the total blockholding and firm performance is negative (-0.071 or -0.275, respectively). We test the non-linear relationship between firm value and ownership concentration by adding the squared value of the control rights of the largest blockholder or all blockholders, and we find a U-shaped relationship. These results are consistent for both measures, including the total blockholding and the holdings of the largest shareholder. The curve slopes downward until the control rights of the largest blockholder reach approximately 45%, and the curve then slopes upward. Moreover, the shape of the curve is similar when we use the total blockholding as a measure of ownership concentration, although the turning point is higher, at approximately 65%.

Using the AIC and BIC (a report is available upon request) to choose between the linear model and the non-linear model, we find that the non-linear model is preferred for both total blockholding and the holdings of the largest shareholder variables, as the AIC and BIC of this model are smaller than those in the linear model. In addition, we find that the non-linear

Table 2: Tobin's Q and the continuous ownership variable

Variable	Largest blockholder		Total blockholding	
	(1)	(2)	(3)	(4)
LarBlock	-0.071** (-1.98)	-0.792*** (-6.21)		
LarBlock ²		0.880*** (5.89)		
TotBlock			-0.275*** (-8.58)	-1.401*** (-11.51)
TotBlock ²				1.084*** (9.59)
SalesGrowth	-0.000 (-0.09)	-0.000 (-0.11)	-0.000 (-0.04)	-0.000 (-0.09)
CapExNs	0.003 (0.41)	0.003 (0.39)	0.003 (0.37)	0.003 (0.38)
Leverage	-0.480*** (-11.33)	-0.470*** (-11.11)	-0.464*** (-10.96)	-0.452*** (-10.69)
Size	0.003 (0.67)	0.000 (0.03)	-0.004 (-0.87)	-0.009** (-2.06)
Age	-0.008*** (-11.18)	-0.008*** (-11.39)	-0.008*** (-11.61)	-0.008*** (-11.67)
CapExPpe	0.018*** (3.88)	0.018*** (3.84)	0.017*** (3.71)	0.017*** (3.61)
Volatility	0.014 (0.60)	0.019 (0.83)	0.017 (0.75)	0.022 (0.93)
Constant	1.514*** (9.71)	1.634*** (10.40)	1.752*** (11.22)	2.067*** (12.98)
Obs.	20,883	20,883	20,883	20,883
AdjRsqr	14.7	14.9	15.0	15.4

*Note: This table shows the results of the OLS regressions that examine the relationship between ownership concentration and Tobin's Q for the 2006-2009 period. TotBlock is the total control rights of all blockholders at a 5% cut-off, and LarBlock is the control rights of the largest blockholder at a 5% cut-off. The firm-level control variables include firm size (Size), firm age (Age), sales growth (SalesGrowth), the ratio of capital expenditure to sales (CapExNs), the ratio of long-term debt to total assets (Leverage), the ratio of capital expenditure to tangible assets (CapExPpe), and stock price volatility (Volatility). All equations also include country, year, and industry dummies. T-values are reported in parentheses. *, **, and *** denote the level of significance at the 1%, 5%, and 10% level.*

model is more consistent among the sub-samples and variables.

The U shaped relationship provides evidence for the alignment of interests between firms and large shareholders only when their ownership is sufficiently large. Greater ownership

implies greater power for a large shareholder to extract private benefits, but the shareholder should have no more incentive to obtain greater control rights if he/she has obtained 50% of the voting rights. Meanwhile, greater holdings (or higher levels of control rights) imply a stron-

ger alignment of benefits between the large shareholders and firm wealth and thus are associated with higher firm value. However, for the minority-to-medium large shareholders, the higher holdings are associated with the lower firm value. Because the alignment of interests between firms and these large shareholders is rather low, their incentive to extract private benefits is strong while their ability to realize the expropriation is limited by their control right. Thus the greater ownership of the large shareholders leads to higher power to extract private benefits and thus is the lower firm value. These findings overall are consistent with the arguments in Morck et al. (1988)

Other papers (La Porta et al., 2002; Claessens et al., 2002; Lins, 2003) find that the holdings of the largest shareholder are positively related to firm performance in the world in general and in emerging countries in particular. Indeed, the findings of a U-shaped relationship between blockholding and firm value in our paper are partly similar to these studies given the proposition that greater control rights for blockholders implies stronger alignment benefits between large shareholders and firms or minority shareholders⁸.

Our results are inconsistent with those of some other studies such as McConnell and Servaes (1990) or Anderson and Reeb (2003). The first possible reason is the measurement of ownership variables. Our study focuses on the control right of blockholders but not on family ownership or insider ownership. Basu et al. (2016) find that the effect of ownership and power on firm performance is different. Furthermore, the well-known inverted U-shaped

relationship between insider ownership and performance (McConnell and Servaes, 1990) or between family ownership and firm performance (Anderson and Reeb, 2003) cannot explain the incentive of shareholders to have fractional holdings that exceed 50%.

Although we do not exclude the holdings of managers and CEOs from these two measures, the results are not biased by these holdings. Demsetz and Villalonga (2001) provide evidence from their sample indicating that few professional managers or CEOs hold sufficient shares or rights to be considered blockholders. In our sample, the percentage of firms whose largest shareholders are managers or CEOs is small (i.e., less than 1%). We also perform a regression with a dummy variable (a report is available upon request) that equals 1 if the largest shareholder is a CEO or manager, and we find that the relationship is negative but not significant.

3.1.2. Dummy variables

We use other variables to examine the effect of ownership concentration on firm performance by investigating how firm performance varies with the level of control by the largest shareholder at the thresholds of 5%, 25%, and 50%. The following alternative dummy variables represent ownership concentration:

$$Q_{i,t} = \beta Block525_{i,t} + \psi x_{i,t} + \lambda_t + \delta_{k(i)} + c_{j(i)} + \varepsilon_{i,t} \quad (3)$$

$$Q_{i,t} = \beta Block2550_{i,t} + \psi x_{i,t} + \lambda_t + \delta_{k(i)} + c_{j(i)} + \varepsilon_{i,t} \quad (4)$$

$$Q_{i,t} = \beta Block50_{i,t} + \psi x_{i,t} + \lambda_t + \delta_{k(i)} + c_{j(i)} + \varepsilon_{i,t} \quad (5)$$

$$Q_{i,t} = \alpha Block525_{i,t} + \gamma Block50_{i,t} + \psi x_{i,t} + \lambda_t + \delta_{k(i)} + c_{j(i)} + \varepsilon_{i,t} \quad (6)$$

Where $Block525_{i,t}$ is a dummy variable that equals 1 if a firm has a blockholder with con-

trol rights of at least 5% to 25% and equals 0 otherwise; $Block2550_{i,t}$ is a dummy variable that equals 1 if a firm has a blockholder with control rights of more than 25% but no greater than 50% and equals 0 otherwise; $Block50_{i,t}$ is a dummy variable that equals 1 if a firm has a blockholder with control rights of more than 50% and equals 0 otherwise; $x_{i,t}$ denotes firm characteristics, such as firm size, firm age, sales growth, long-term debt, capital expenditure, and the annualized monthly volatility of the stock price; λ_t : year fixed effects; $\delta_{k(i)}$: industry fixed effects; and $c_{j(i)}$: country fixed effects.

Table 3 shows that the coefficient of $d525$ is positive. Thus, firms that have blockholders with levels of ownership between 5% and 25% have higher Tobin's Q than all other firms. Moreover, the coefficients of $Block2550$ (for a firm with a blockholder with control rights from more than 25% to 50%) are significantly negative, and the coefficient of $Block50$ (for a firm with a blockholder with control rights greater than 50%) is negative but not significant. In column (4), when we add all three dummy variables together, the firms with blockholders at any cut-offs are negative and significant. These results are consistent with the continuous variables in that blockholdings are found to be negatively related to Tobin's Q. Firms with blockholders that hold 25.01% to 50% have the lowest value, and this result is consistent with the U-shaped relationship between blockholding and firm performance. In addition, we perform further tests (the results will be reported upon request) by comparing the firm performance of firms with no blockholders that have control rights greater than 25% (the first group), firms with blockholders

that have control rights from 25.01% to 50% (the second group), and firms with majority shareholders who have more than 50% control rights (the third group). We find that the second group has the lowest value in terms of firm performance. The values of Q of both the first and third groups are significantly higher than the corresponding value of the second group.

Our finding that the value of firms with majority (exceeding 50% control rights) shareholders is not significantly different from other firms is consistent with the results presented by Holderness and Sheehan (1988), who find that firm performance is not significantly different between firms with majority (greater than 50% control rights) shareholders and other firms. However, by dividing other firms into two groups, namely, firms with blockholders that have control rights of 25.01% to 50% and widely held firms (no blockholder at a 25% cut-off), we find that firms with majority shareholders have higher values of Tobin's Q compared with firms that are controlled by blockholders (25.01% to 50%).

Whereas other papers (La Porta et al., 2002; Claessens et al., 2002; Lins, 2003) also find that the holdings of the largest blockholder or the ultimate owner are positively related to firm performance in the world or in emerging countries, we find that the largest shareholders are associated with higher values of Q only when these shareholders reach a certain level of control rights. In our sample, when we exclude the firms that have the largest shareholders with control rights of less than 15% and perform an OLS regression, we find a positive and significant relationship between Q and the control

Table 3: Tobin's Q and ownership dummy variables

Variable	Block (5-25%) (1)	Block (25.01-50%) (2)	Block (Over 50%) (3)	All (4)
Block525	0.057*** (3.72)			-0.273*** (-4.24)
Block2550		-0.071*** (-4.47)		-0.359*** (-5.46)
Block50			-0.011 (-0.60)	-0.320*** (-4.84)
SalesGrowth	-0.000 (-0.09)	-0.000 (-0.07)	-0.000 (-0.08)	-0.000 (-0.09)
CapExNs	0.003 (0.39)	0.003 (0.42)	0.003 (0.42)	0.003 (0.39)
Leverage	-0.477*** (-11.27)	-0.476*** (-11.24)	-0.481*** (-11.36)	-0.471*** (-11.12)
Size	0.002 (0.48)	0.003 (0.65)	0.004 (0.95)	-0.000 (-0.01)
Age	-0.008*** (-11.18)	-0.008*** (-11.22)	-0.008*** (-11.10)	-0.008*** (-11.33)
CapExPpe	0.018*** (3.83)	0.018*** (3.84)	0.018*** (3.90)	0.017*** (3.80)
Volatility	0.015 (0.64)	0.017 (0.72)	0.013 (0.57)	0.017 (0.74)
Constant	1.755*** (9.15)	1.755*** (9.15)	1.746*** (9.05)	2.107*** (10.29)
Obs.	20,883	20,883	20,883	20,883
AdjRsqr	14.8	14.8	14.7	14.9

Note: This table shows the results of the OLS regressions that examine the effect of the ownership dummy variables on Tobin's Q. Block525 (Block2550, Block50) is a dummy variable that is equal to one if a firm has at least one blockholder with control rights from 5.01% to 25% (and 25.01% to 50% or greater than 50%, respectively) and equals 0 otherwise. The firm-level control variables include firm size (Size), firm age (Age), sales growth (SalesGrowth), the ratio of capital expenditure to sales (CapExNs), the ratio of long-term debt to total assets (Leverage), the ratio of capital expenditure to tangible assets (CapExPpe), and stock price volatility (Volatility). All equations also include country, year, and industry dummies. T-values are reported in parentheses. *, **, and *** denote the level of significance at the 1%, 5%, and 10% level.

rights of the largest shareholder. However, with a non-linear test, the cut-off level in our sample is approximately 45% for the control rights of the largest shareholder.

3.2. Investor protection, firm performance, and blockholding

La Porta et al. (2002) provide evidence that firms have higher value in countries with high

levels of investor protection than in those with low investor protection. Although these authors do not find that ownership of large shareholders is significantly associated with higher firm value in countries with high investor protection, they support the hypothesis of the expropriation of minority shareholders by large shareholders. We provide further evidence about this

effect with a sample of 37 countries, including 11 emerging countries and 28 developed countries. Furthermore, while other papers investigate the impact of investor protection based on the assumption of a linear relationship between ownership and firm value, this study finds a U shaped relationship and thus examines the effect of investor protection on different ranges of ownership of large shareholders.

We examine the relationship among investor protection, firm performance, and blockholding by dividing the sample into two sub samples: countries with low investor protection and countries with high investor protection and then compare whether the relationship between firm value and blockholding differs between these two groups. The anti-self-dealing index or the revised anti-director rights index by Djankov et al. (2008) is used to define countries with low or high levels of investor protection. Higher values on these indices (the anti-self-dealing index ranges from 0 to 1, and the ADRI ranges from 0 to 6) are associated with greater protection for shareholders. When the anti-self-dealing index is equal to or greater than 0.55 or the RADRI is greater than 3.5 (medium values), the country is considered to have a high level of investor protection; otherwise, it is designated as having low investor protection⁹.

Thus, Table 4 (Panel A for all blockholders and Panel B for the largest shareholder) shows that countries with high investor protection are generally associated with higher firm value than countries with low investor protection. The U shaped relationship between firm value and blockholding still holds in both weak investor protection countries and strong investor

protection countries. The coefficients of LarBlock (control right of the largest shareholder) and LarBlock² are - 0.883 and 0.889 in strong investor protection countries while these numbers are -1.721 and 1.632 in weak investor protection countries, respectively. The pattern is similar when total blockholding is used in regressions.

The effect of investor protection on the relationship between firm value and blockholding in Table 6 is illustrated in Figure 1. The figure shows that the U shaped curve of firms in low investor protection countries lies below the curve of firms in strong investor protection countries (for both variables of largest shareholders and total blockholders). Interestingly, the highest distance between the two curves (for firms in low investor protection countries and firms in high investor protection countries) occurs at around the two focus points. This can be interpreted that strong investor protection has the highest impact when the expropriation is the most popular.

3.3. Robustness check

3.3.1. Two-stage least-squares regression

Endogeneity is a challenging issue in studying the relationship between ownership structure and firm performance. Many studies ignore this problem, other papers acknowledge the endogenous ownership issue, and some even attempt to address this issue. Endogenous ownership is a major determinant of the effect of ownership structure on firm value (Demsetz and Villalonga, 2001). The pioneering empirical study of the endogeneity problem is the work of Demsetz and Lehn (1985). In addition, a number of studies control for endogenous

Table 4: Blockholding, firm value, and investor protection

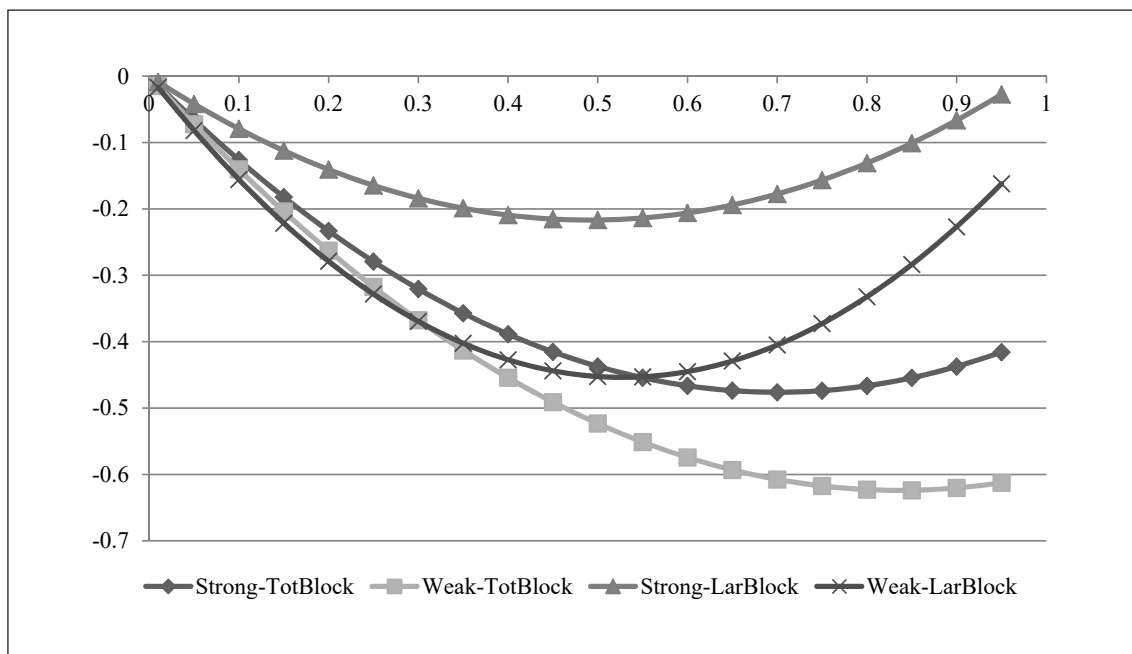
Panel A:		Control rights of all blockholders			
		Strong investor protection		Weak investor protection	
Variables		(1)	(2)	(3)	(4)
High	0.350*** (23.86)				
TotBlock		-1.360*** (-6.11)	-0.274*** (-5.46)	-1.493*** (-9.52)	-0.607*** (-14.52)
TotBlock ²		0.971*** (5.01)		0.893*** (5.86)	
SalesGrowth	-0.000 (-0.15)	0.000 (0.18)	0.000 (0.21)	0.001 (0.58)	0.001 (0.59)
CapExNs	0.003 (0.37)	0.005 (0.60)	0.005 (0.63)	-0.039 (-1.04)	-0.039 (-1.04)
Leverage	-0.372*** (-8.70)	-0.249*** (-3.32)	-0.255*** (-3.41)	-0.265*** (-5.01)	-0.272*** (-5.15)
Size	0.007* (1.69)	0.001 (0.17)	0.005 (0.83)	-0.029*** (-4.96)	-0.025*** (-4.40)
Age	-0.007*** (-9.91)	-0.007*** (-6.27)	-0.007*** (-6.17)	-0.005*** (-5.53)	-0.005*** (-5.49)
CapExPpe	0.018*** (3.95)	0.069*** (6.53)	0.069*** (6.56)	0.001 (0.12)	0.001 (0.20)
Volatility	-0.025 (-1.07)	-0.077** (-2.11)	-0.077** (-2.12)	0.084*** (2.64)	0.079** (2.48)
GNIpercapita		0.000 (0.16)	0.000 (0.28)	0.000*** (7.77)	0.000*** (7.68)
Constant	2.230*** (18.74)	1.907*** (19.05)	2.230*** (18.74)	2.320*** (20.82)	2.112*** (19.96)
Obs.	20,883	9,012	9,012	10,510	10,510
AdjRsq	14.7	0.110	0.108	0.132	0.129

*Note: This table contains the results of an OLS that examines the relationship among blockholding, firm value, and investor protection for the 2006-2009 period. High is a dummy variable that equals 1 for firms in countries with high investor protection (whose anti-self-dealing index is not less than 0.5) and 0 otherwise. TotBlock is the total control rights of all blockholders at a 5% cut-off. The firm-level control variables include firm size (Size), firm age (Age), sales growth (SalesGrowth), the ratio of capital expenditure to sales (CapExNs), the ratio of long-term debt to total assets (Leverage), the ratio of capital expenditure to tangible assets (CapExPpe), and stock price volatility (Volatility). GNIpercapita is the GNI per capita. All equations also include country, year, and industry dummies. T-values are reported in parentheses. *, **, and *** denote the level of significance at the 1%, 5%, and 10% level.*

Panel B:				
Control rights of the largest shareholder				
	Strong investor protection		Weak investor protection	
Variables	(1)	(2)	(3)	(4)
LarBlock	-0.137*** (-2.87)	-0.883*** (-4.42)	-0.408*** (-8.72)	-1.721*** (-10.37)
LarBlock ²		0.899*** (3.84)		1.632*** (8.24)
SalesGrowth	0.000 (0.14)	0.000 (0.11)	0.001 (0.61)	0.001 (0.72)
CapExNs	0.006 (0.69)	0.006 (0.67)	-0.048 (-1.27)	-0.044 (-1.17)
Leverage	-0.255*** (-3.39)	-0.246*** (-3.27)	-0.306*** (-5.76)	-0.291*** (-5.50)
Size	0.008 (1.26)	0.005 (0.80)	-0.013** (-2.25)	-0.018*** (-3.23)
Age	-0.007*** (-5.93)	-0.007*** (-6.15)	-0.005*** (-4.68)	-0.005*** (-5.35)
CapExPpe	0.070*** (6.60)	0.069*** (6.52)	0.002 (0.43)	0.003 (0.48)
Volatility	-0.087** (-2.38)	-0.082** (-2.23)	0.076** (2.37)	0.080** (2.51)
GNIpercapita	0.000 (0.25)	-0.000 (-0.14)	0.000*** (7.28)	0.000*** (7.04)
Constant	1.745*** (18.54)	1.904*** (18.53)	1.771*** (17.08)	2.022*** (18.76)
Obs.	9,012	9,012	10,510	10,510
AdjRsq	0.105	0.107	0.118	0.124

*Note: This table contains the results of an OLS that examines the relationship among blockholding, firm value, and investor protection for the 2006-2009 period. High is a dummy variable that equals 1 for firms in countries with high investor protection (whose anti-self-dealing index is not less than 0.5) and 0 otherwise. LarBlock is the control rights of the largest blockholder at a 5% cut-off. The firm-level control variables include firm size (Size), firm age (Age), sales growth (SalesGrowth), the ratio of capital expenditure to sales (CapExNs), the ratio of long-term debt to total assets (Leverage), the ratio of capital expenditure to tangible assets (CapExPpe), and stock price volatility (Volatility). GNIpercapita is the GNI per capita. All equations also include country, year, and industry dummies. T-values are reported in parentheses. *, **, and *** denote the level of significance at the 1%, 5%, and 10% level.*

Figure 1: Ownership concentration and firm value across investor protection regime



ownership (Hermalin and Weisbach, 1988; Loderer and Martin, 1997; Cho, 1998; Himmelberg et al., 1999; Demsetz and Villalonga, 2001; Villalonga and Amit, 2006; Masulis et al., 2011; Aggarwal et al., 2010).

Many of these papers obtain different results when controlling for endogeneity. For example, Cho (1998) confirms the non-monotonic relationship found by Morck et al. (1988), but when he employs a three-equation model, he finds that Q affects ownership structure but that ownership structure does not affect Q. Minguez-Vera and Martin-Ugedo (2007) find no relationship between the ownership of the largest shareholders and firm performance in Spain, but endogenous treatment reveals a positive relationship between ownership concentration and firm performance. Demsetz and Villalonga

(2001) find a significantly positive relationship between ownership concentration and performance in OLS regressions but find no relationship when endogenous treatment is used.

Although the methodology to address this problem is heterogeneous and although 2SLS is one of the most popular methods, finding appropriate instruments that are related to ownership structure but not to firm performance is a demanding task. Most of the papers that address this issue use one or more firm characteristic variables, and the lag values of ownership are also used as instruments. Hermalin and Weisbach (1988) use the lag values of managerial ownership and board composition as instruments in their two-stage least-squares regression. Loderer and Martin (1997) employ a simultaneous equation model and use Q, the

Table 5: Regressions with 2SLS

Variable	Total blockholding		Largest blockholder	
	(1)	(2)	(3)	(4)
TotBlock	-6.986*** (-3.74)	-1.015 (-0.90)		
TotBlock ²	9.095*** (3.02)			
LarBlock			-5.235*** (-3.74)	-0.761 (-0.90)
LarBlock ²			9.724*** (3.02)	
SalesGrowth	-0.000 (-1.27)	0.000 (0.14)	0.000 (0.21)	-0.000 (-0.33)
CapExNs	0.008 (0.94)	0.002 (0.20)	0.007 (0.83)	0.002 (0.23)
Leverage	-0.537*** (-3.89)	-0.422*** (-3.36)	-0.428*** (-4.13)	-0.472*** (-4.55)
Size	0.033 (0.75)	-0.025 (-0.77)	0.028 (1.13)	-0.011 (-0.63)
Age	-0.005** (-1.97)	-0.010*** (-5.71)	-0.007*** (-5.37)	-0.009*** (-8.36)
CapExPpe	0.022** (2.14)	0.014 (1.50)	0.020** (2.20)	0.017* (1.88)
Volatility	0.020 (0.54)	0.029 (0.79)	0.062 (1.53)	0.020 (0.54)
Constant	1.377 (0.95)	2.578** (2.08)	0.281 (0.24)	2.156*** (2.78)
Obs.	20,716	20,716	20,716	20,716
AdjRsqr (%)	14.9	14.8	14.9	14.8

Note: Table 5 contains the results of 2SLS regressions that examine the effect of ownership concentration on Tobin's Q for the 2006-2009 period. Equations 1 to 4 are 2SLS regressions in which idiosyncratic risk (IdioRisk) and the squared value of idiosyncratic risk are used as instruments for the ownership variables. TotBlock is the total control rights of all blockholders at a 5% cut-off; LarBlock is the control rights of the largest blockholder at a 5% cut-off. The firm-level control variables include firm size (Size), firm age (Age), sales growth (SalesGrowth), the ratio of capital expenditure to sales (CapExNs), the ratio of long-term debt to total assets (Leverage), the ratio of capital expenditure to tangible assets (CapExPpe), and stock price volatility (Volatility). All equations also include country, year, and industry dummies. T-values are reported in parentheses. *, **, and *** denote the level of significance at the 1%, 5%, and 10% level.

log of sales, daily standard deviation, and the variance of stock returns as instruments. Cho (1998) uses three equations for regression in which insider ownership depends on Q, investment, and control variables; Q depends on insider ownership, investment, and control

variables; and investment depends on Q, insider ownership, and instruments. Demsetz and Villalonga (2001) use firm size, market risk, and firm-specific risk as instrument variables. Villalonga and Amit (2006) use fixed and random effects panel models and a treatment ef-

Table 6: Regression with firm fixed effects

Variable	Total blockholding		Largest blockholder	
	(1)	(2)	(3)	(4)
TotBlock	-0.448*** (-3.52)	-0.096** (-2.52)		
TotBlock ²	0.335*** (2.90)			
LarBlock			-0.287 (-1.58)	0.134** (1.97)
LarBlock ²			0.546** (2.50)	
SalesGrowth	0.000 (0.59)	0.000 (0.59)	0.000 (0.55)	0.000 (0.54)
CapExNs	-0.003 (-0.28)	-0.003 (-0.30)	-0.003 (-0.33)	-0.003 (-0.32)
Leverage	-0.318*** (-3.92)	-0.318*** (-3.92)	-0.322*** (-3.98)	-0.325*** (-4.01)
Size	-0.564*** (-22.49)	-0.563*** (-22.47)	-0.560*** (-22.32)	-0.561*** (-22.35)
Age	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
CapExPpe	0.011*** (2.86)	0.011*** (2.88)	0.011*** (2.92)	0.011*** (2.95)
Volatility	0.108*** (4.50)	0.108*** (4.50)	0.107*** (4.48)	0.107*** (4.46)
Constant	9.216*** (21.19)	9.135*** (21.04)	9.052*** (20.82)	9.011*** (20.74)
Obs.	20,883	20,883	20,883	20,883
AdjRsq (%)	8.52	8.52	8.52	8.52

Note: This table contains the results of OLS with firm fixed effects. TotBlock is the total control rights of all blockholders at a 5% cut-off; LarBlock is the control rights of the largest blockholder at a 5% cut-off. The firm-level control variables include firm size (Size), firm age (Age), sales growth (SalesGrowth), the ratio of capital expenditure to sales (CapExNs), the ratio of long-term debt to total assets (Leverage), the ratio of capital expenditure to tangible assets (CapExPpe), and stock price volatility (Volatility). All equations also include country, year, and industry dummies. T-values are reported in parentheses. *, **, and *** denote the level of significance at the 1%, 5%, and 10% level.

fect model to address the endogeneity issue.

In this paper, we use 2SLS regression to control for endogenous ownership structure. Similar to Himmelberg et al. (1999), Villalonga and Amit (2006), and Masulis et al. (2011), we use firm-specific risks as the instruments. For non-linear regressions, we use the square value of firm-specific risk as the instrument for the square value of the ownership variable¹⁰. For

2SLS, which is used to control for the endogenous ownership variable, we have two regression equations. In the first equation, we regress the lagged ownership concentration variable on the instruments, including the idiosyncratic risk, and the industry, country, and year dummies to obtain a fitted value of the ownership concentration variable. In the second equation, we run a regression of Tobin's Q on both the

obtained fitted value of the ownership concentration variable and the control variables. These control variables include the industry, country, and year dummy variables, and the firm characteristic variables are the same as in the OLS regression.

Our results provide evidence that ownership concentration is a function of firm value. However, the question of whether and how firm value affects ownership concentration is unresolved. Demsetz and Villalonga (2001) argue that firm performance affects ownership concentration as much as ownership concentration affects firm value. The first argument is that insiders, who have better information, vary their holdings based on their expectations regarding future performance. Management compensation with stock options is another venue through which firm performance can affect ownership structure.

We find that in the OLS and first-stage equation in 2SLS in which the total blockholding and the holdings of the largest shareholder are the dependent variables, idiosyncratic risk and other control variables act as independent variables. The lag of Q is negatively related to both ownership variables, and this relationship is significant. Our results are largely similar to the results of Demsetz and Villalonga (2001), who argue that the negative relationship between Q and ownership concentration shows that management people or insiders “choose to hold fewer shares when firms seem to be doing well, perhaps selling shares during good times in the expectation that today’s good performance will be followed by poorer performance.”

However, Table 5 shows that after controlling

for endogeneity, we still find a significant relationship between ownership concentration and firm performance that is even stronger than in the previous results that did not account for endogeneity. Indeed, Demsetz and Villalonga (2001) find that the coefficients of ownership concentration in the Q equation are no longer significant. Our findings provide evidence that Q and ownership concentration affect one another.

3.3.2. Firm fixed effects and propensity score matching

An additional test that we employ to mitigate the endogeneity issue involves employing regressions with firm fixed effects. These regressions provide results that are not driven by omitting firm characteristic variables in case these variables are related to the ownership variables. Table 6 shows the U-shaped results from the regressions with firm fixed effects generally remain the same, except that the coefficient of the control rights of the largest shareholder in the non-linear case is still negative but not significant¹¹. In addition, the sign of the coefficient of the largest shareholder in the linear case is still positive but becomes significant at the 5% level.

We also perform additional testing using the propensity scoring method. First, we estimate the first-stage equation in which is an indicator that equals one if a firm has a blockholder. We then obtain the propensity scores from this model, obtain the distribution of propensity scores for the set of companies that have a blockholder, and calculate the score that marks the lower 10% cut-off. We then re-run the models using a sample that excludes any non-blockhold-

Table 7: Propensity score

Variable	(1) all q	(2) all q	(3) all q	(4) all q
TotBlock	-0.261*** (-8.05)	-1.368*** (-10.78)		
TotBlock ²		1.055*** (9.03)		
LarBlock			-0.060* (-1.67)	-0.718*** (-5.55)
LarBlock ²				0.799*** (5.29)
SalesGrowth	-0.000 (-0.04)	-0.000 (-0.09)	-0.000 (-0.09)	-0.000 (-0.11)
CapExNs	0.003 (0.37)	0.003 (0.37)	0.003 (0.41)	0.003 (0.39)
Leverage	-0.457*** (-10.78)	-0.447*** (-10.56)	-0.471*** (-11.11)	-0.463*** (-10.93)
Size	-0.005 (-1.13)	-0.009** (-2.13)	0.001 (0.26)	-0.001 (-0.25)
Age	-0.008*** (-11.57)	-0.008*** (-11.54)	-0.008*** (-11.18)	-0.008*** (-11.35)
CapExPpe	0.017*** (3.70)	0.016*** (3.60)	0.018*** (3.87)	0.018*** (3.83)
Volatility	0.020 (0.84)	0.023 (1.01)	0.016 (0.71)	0.021 (0.91)
Constant	1.753*** (11.22)	2.056*** (12.89)	1.527*** (9.79)	1.632*** (10.39)
Obs.	20,761	20,761	20,761	20,761
AdjRsqr (%)	14.9	15.2	14.6	14.8

Note: This table contains the results of OLS with propensity score matching. TotBlock is the total control rights of all blockholders at a 5% cut-off; LarBlock is the control rights of the largest blockholder at a 5% cut-off. The firm-level control variables include firm size (Size), firm age (Age), sales growth (SalesGrowth), the ratio of capital expenditure to sales (CapExNs), the ratio of long-term debt to total assets (Leverage), the ratio of capital expenditure to tangible assets (CapExPpe), and stock price volatility (Volatility). All equations also include country, year, and industry dummies. T-values are reported in parentheses. *, **, and *** denote the level of significance at the 1%, 5%, and 10% level.

er-backed companies whose propensity scores are below this 10% cut-off. Table 7 shows the results of the propensity scores matching and the U-shaped relationship. This additional test gives us greater confidence that sample selection issues do not affect our results.

3.3.3. Sub-samples: developed and emerging

countries or US firms and non-US firms¹²

We also divide the sample into two sub-samples that include developed countries and emerging countries. Our results are largely consistent with the results for the entire sample. We continue to find the U-shaped relationship between ownership concentration and firm value.

Table 8: Lagged ownership

Variable	(1) all afterq	(2) all afterq	(3) all afterq	(4) all afterq
TotBlock	-0.164*** (-4.34)	-0.818*** (-5.71)		
TotBlock ²		0.638*** (4.73)		
LarBlock			-0.027 (-0.61)	-0.454*** (-2.90)
LarBlock ²				0.530*** (2.85)
SalesGrowth	-0.000 (-0.02)	-0.000 (-0.07)	-0.000 (-0.02)	-0.000 (-0.03)
CapExNs	-0.007 (-0.64)	-0.007 (-0.62)	-0.007 (-0.61)	-0.007 (-0.60)
Leverage	-0.168*** (-3.36)	-0.161*** (-3.23)	-0.178*** (-3.56)	-0.173*** (-3.46)
Size	0.010** (1.97)	0.007 (1.40)	0.014*** (2.80)	0.013** (2.49)
Age	-0.005*** (-5.39)	-0.005*** (-5.39)	-0.004*** (-5.18)	-0.005*** (-5.28)
CapExPpe	0.017** (2.15)	0.016** (2.06)	0.017** (2.17)	0.017** (2.17)
Volatility	-0.071** (-2.27)	-0.069** (-2.22)	-0.072** (-2.29)	-0.070** (-2.23)
Constant	1.247*** (6.67)	1.415*** (7.44)	1.089*** (5.83)	1.147*** (6.11)
Obs.	11,262	11,262	11,262	11,262
AdjRsqr (%)	9.7	9.9	9.5	9.6

*Note: This table contains the results of OLS regressions that use a lagged value of the ownership variables and control variables on Tobin's Q. The ownership variables are based on the period from 2006 to 2008, whereas Tobin's Q is based on the period from 2007 to 2009. TotBlock is the total control rights of all blockholders at a 5% cut-off; LarBlock is the control rights of the largest blockholder at a 5% cut-off. The firm-level control variables include firm size (Size), firm age (Age), sales growth (SalesGrowth), the ratio of capital expenditure to sales (CapExNs), the ratio of long-term debt to total assets (Leverage), the ratio of capital expenditure to tangible assets (CapExPpe), and stock price volatility (Volatility). All equations also include country, year, and industry dummies. T-values are reported in parentheses. *, **, and *** denote the level of significance at the 1%, 5%, and 10% level.*

However, with the OLS and linear regression restricted to emerging countries, the holding of the largest shareholder is revealed to be positively related to Q, which is consistent with the findings of Lins (2003). This result again provides evidence that the U-shaped relationship

between ownership concentration and Tobin's Q is more robust than the linear relationship.

Furthermore, we test the association between blockholding and firm performance for sub-samples of US and non-US firms. We find that the relationship for US firms is almost qual-

itatively similar to that for non-US firms. For the linear relationship in the OLS regression, the results are not consistent between the two samples. The holdings of the largest shareholder are not linearly related to firm performance in either sample. The total blockholding for US firms are significantly and negatively related to firm value, whereas this relationship is negative but not significant for non-US firms. When we test the non-linear relationship between firm value and ownership concentration, we obtain results that are more consistent between the two samples. U-shaped relationships are found for both US and non-US firms.

3.3.4. An alternative model specification

We also use the sample of ownership variables for the years from 2006 to 2008 and Tobin's Q for the years from 2007 to 2009 to run regressions of the lagged value of ownership with Tobin's Q. Table 8 shows that the U-shaped relationship holds consistently across equations. However, it may be argued that using a lagged (one-year) value of the ownership variables to eliminate the endogenous issue is inadequate, as the relationship between blockholding and firm value is likely to be more complex than expected. Large shareholders vary their holdings based on firm performance, which is evaluated on the basis of several years of performance, and they determine the expected future firm performance based on this evaluation. Thus, although we conduct this test for a robustness check, we continue to base the main empirical tests for interpretation on the regressions.

4. Conclusion

We use a sample of 20,883 firm-year observations for the period from 2006 to 2009 in 37 countries to examine the relationship between blockholders and firm value and how this relationship varies across investor protection regimes. We find a U-shaped relationship between blockholding and firm value. Our results indicate that blockholding is negatively related to firm value up to a certain level of control rights, after which blockholding is then positively related to firm performance. The findings are consistent with our prediction that the relationship between firm value and blockholding depends on the interaction between incentive and power of blockholders to manipulate firm's operations for private benefits. Furthermore, we find that although firms in countries with high investor protection are associated with higher value than firms in countries with low investor protection, the relationship among blockholding, firm value, and investor protection is not monotonic. We find that the legal system has the most effect when the blockholders' expropriation is highest.

However, our study is not able to measure cash flow rights of blockholders to reflect their alignment interests between firm value and blockholders. Instead, we assume that the higher voting right is the higher cash flow right and thus the higher voting right is the higher alignment of interest between blockholders and the firm. It is also possible to investigate the non-linear relation but differentiating long run value and short term performance, the method employed by Kang et al. (2017).

APPENDIX

Appendix 1: Definitions of the variables

Acronym	Definition	Data Source
<i>LarBlock</i>	Control rights of the largest blockholder	ORBIS
<i>TotBlock</i>	Total control rights of all blockholders	ORBIS
<i>Block525</i>	Dummy variable that equals 1 if the firm has at least one block with control rights from 5% to 25%	ORBIS
<i>Block2550</i>	Dummy variable that equals 1 if the firm has at least one block with control rights from 25.01% to 50%	ORBIS
<i>Block50</i>	Dummy variable that equals 1 if the firm has at least one block with control rights greater than 50%	ORBIS
Q	Tobin's Q, which is the ratio of market value to the book value of total assets	
<i>Size</i>	Log of total assets denominated in US dollars.	Worldscope
<i>Age</i>	Log of the number of years since incorporation	Worldscope
<i>CapExNs</i>	Ratio of capital expenditure to sales	Worldscope
<i>CapExPpe</i>	Ratio of capital expenditure to the sum of property, plant, and equipment	Worldscope
<i>SalesGrowth</i>	This variable is the sales growth measured by an increase in sales relative to the previous year	Worldscope
<i>Leverage</i>	Ratio of long-term debt to total assets	
<i>Volatility</i>	An annualized monthly standard deviation of the stock price of a firm	Worldscope
<i>IdioRisk</i>	Idiosyncratic risk of a firm, measured by the method used in Jin and Myer (2006).	Worldscope
<i>Anti-self-dealing</i>	Anti-self-dealing index in Djankov et al. (2008)	Djankov et al. (2008)
<i>ADRI</i>	Revised anti-director index in Djankov et al. (2008)	Djankov et al. (2008)

Appendix 2: Mean values of the control variables

Country	Obs.	Size	Age	Sales Growth	CapEx Ns	CapEx Ppe	Lev	Volatility	Idio Risk
Argentina	45	13.10	13.53	0.35	0.12	0.16	0.12	0.39	0.09
Australia	976	11.84	12.02	8.85	0.31	0.38	0.15	0.55	0.32
Austria	135	13.48	14.47	0.17	0.08	0.27	0.16	0.41	0.17
Belgium	178	13.15	16.21	0.38	0.11	0.28	0.17	0.38	0.15
Brazil	27	13.65	15.41	0.11	0.07	0.16	0.17	0.55	0.19
Canada	487	13.50	17.46	0.30	0.22	0.20	0.16	0.52	0.25
Chile	82	13.72	16.88	0.10	0.12	0.14	0.18	0.30	0.07
Denmark	176	12.76	19.02	0.17	0.16	0.36	0.15	0.40	0.15
Finland	262	13.08	12.31	0.16	0.05	0.35	0.15	0.36	0.11
France	1112	12.93	13.21	0.20	0.07	0.93	0.13	0.40	0.16
Germany	1064	12.49	13.60	0.38	0.08	0.40	0.12	0.43	0.16
Greece	458	12.23	11.34	1.28	0.11	0.35	0.16	0.50	0.19
Hong Kong	110	13.98	18.11	1.29	0.14	0.21	0.10	0.51	0.22
India	802	12.72	14.20	0.22	0.20	0.31	0.17	0.64	0.20
Ireland	60	14.20	18.78	0.08	0.07	0.23	0.17	0.41	0.15
Israel	84	13.45	12.57	0.06	0.08	0.28	0.18	0.46	0.24
Italy	295	13.82	11.29	0.18	0.14	0.26	0.16	0.37	0.12
Japan	1174	12.97	16.04	0.15	0.05	0.22	0.08	0.40	0.16
Malaysia	656	11.88	12.55	0.82	0.09	0.18	0.10	0.44	0.25
Mexico	60	14.75	12.97	0.16	0.09	0.17	0.19	0.38	0.15
Netherland	212	13.69	19.70	0.17	0.08	0.30	0.16	0.42	0.15
New Zealand	129	11.99	12.33	1.63	0.81	0.22	0.19	0.39	0.13
Norway	226	13.12	12.85	0.33	0.24	0.35	0.24	0.45	0.17
Pakistan	59	12.69	14.95	0.94	0.11	0.23	0.11	0.42	0.14
Philippines	156	11.82	14.33	2.79	0.13	0.19	0.09	0.51	0.29
Portugal	77	13.85	14.10	0.15	0.14	0.19	0.27	0.40	0.15
Singapore	565	11.62	10.04	0.43	0.11	0.36	0.08	0.61	0.38
South Africa	345	12.46	15.60	0.19	0.09	0.32	0.10	0.51	0.26
South Korea	1139	12.73	14.10	0.12	0.09	0.22	0.09	0.58	0.22
Spain	116	14.23	14.44	0.31	0.15	0.20	0.21	0.29	0.08
Sweden	384	12.86	12.97	0.15	0.05	0.30	0.15	0.46	0.17
Taiwan	1150	11.99	8.74	0.09	0.10	0.19	0.07	0.49	0.17
Thailand	95	12.73	14.11	0.04	0.41	0.66	0.11	0.39	0.12
Turkey	180	13.09	16.16	0.15	0.09	0.19	0.10	0.53	0.17
UK	1774	12.68	18.89	3.34	0.08	0.28	0.14	0.45	0.21
US	6033	13.63	18.41	0.22	0.10	0.26	0.19	0.47	0.28
All	20883	12.94	15.35	0.96	0.12	0.31	0.15	0.47	0.22

Note: This table presents the average firm characteristics by country for the four years from 2006 to 2009. Size is the firm size, which is measured by the natural log of the book value of the total assets of a firm. Age is the firm age as measured by the natural log of the years since incorporation. SalesGrowth is the sales growth as measured by an increase in sales relative to the previous year. CapExNs is the ratio of capital expenditure to sales. Lev is the long-term debt, which is a fraction of the book value of total assets. CapExPpe is the ratio of capital expenditure to tangible assets (property, plants, and equipment). Volatility is the annualized monthly standard deviation of the stock price of a firm. IdioRisk is the idiosyncratic risk of a firm, which is measured by the method used in Jin and Myer (2006).

Appendix 3: A summary of selective studies examining firm value and ownership

Demsetz and Lehn (1985) offer the main empirical study examining the effect of ownership concentration on firm performance, and they find no significant relationship between these two factors for a sample of 511 firms in 1981. After this pioneering study, many empirical studies explore the connection between blockholding and Tobin's Q for both US firms and non-US firms. Although research on the relationship between ownership concentration and firm value is quite voluminous, most of these works focus on the US and other individual countries, and the results are mixed.

Several papers report that firm performance is a function of ownership concentration in the US or in other individual countries (for the US, see Morck et al., 1988; McConnell and Servaes, 1990; Hermalin and Weisbach, 1988; for Japan, see Kang and Shivdasani, 1995; for Germany, see Gorton and Schmid, 2000; for the UK, see Short and Keasey, 1999; or for Spain, see Miguez et al., 2007). Morck et al. (1988) examine the relationship between management holdings of shares and Tobin's Q of 371 Fortune 500 firms in 1980 and find that this relationship is non-monotonic and positive for a number of holdings between 0% and 5%, negative for holdings between 5% and 25%, and positive for holdings greater than 25%. McConnell and Servaes (1990) find a curvilinear relationship between insider ownership and Q for two samples of more than 1,000 Compustat firms in 1976 and 1986, but they find no significant relationship between blockholders and Q. Hermalin and Weisbach (1988) find a significant non-monotonic relationship between firm value and managerial ownership for panel data that cover a five-year period. In addition, several non-US studies find a significant positive relationship between ownership concentration and firm value in countries such as Japan (Kang and Shivdasani, 1995) and Germany (Gorton and Schmid, 2000). Other studies find that managerial ownership has a non-linear relationship with firm performance in countries such as the UK (Short and Keasey, 1999) or Spain (Miguez et al., 2004). Recently, several studies report a significant relationship between firm performance and family-owned firms (Anderson and Reeb, 2008; Masulis et al. 2011), between firm performance and foreign institutional blockholders (Aggarwal et al., 2010), and between performance and multi-blockholders (Konijn et al., 2011).

However, many other papers claim that ownership structure has no effect on firm performance or on accounting profitability. Holderness and Sheehan (1988) find that firm performance or the accounting rate of profit between diffusely held firms and majority-owned firms (greater than 50%) are not significantly different. In addition, Mehran (1995) finds no relationship between firm performance and blockholding or between firm performance and types of blockholders (individual, institutional, or corporate). Holderness et al. (1999) replicate the study of Morck et al. (1988) and find that the piecewise linear pattern generally holds. Claessens et al. (2000) study Czech firms and find that managerial equity holdings have no effect on firm value. Himmelberg et al. (1999) conclude that changes in ownership holdings do not significantly affect firm performance when controlling for endogeneity and firm characteristics. Demsetz and Villalonga (2001) claim that there is no systematic relationship between ownership concentration and firm value. Furthermore, some papers find reverse causation between ownership concentration and firm performance. Loderer and Martin (1997) report that insider ownership does not affect Tobin's Q and that Q is actually a negative predictor of insider ownership. Similarly, Cho (1998) runs a regression of a system of three equations and finds that although Q has an effect on ownership structure, this structure has no significant relationship with Q.

Notes:

1. The sample used by La Porta et al. (2002) includes only firms with controlling shareholders at a 10% cut-off level while Lins (2003) studies the relationship of blockholding at 5% cut-off, firm value, and investor protection in emerging countries.
2. In this study, we use control rights rather than ownership, although control rights are expected to be positively related to ownership.
3. We do not distinguish among voting rights, control rights, and block ownership and use them interchangeably.
4. According to the ORBIS guidebook, the definitions of firm sub indicators in A group are as follows: **AA+**: Companies with six or more identified shareholders (of any type) whose ownership percentage is known; **AA**: As above, but includes companies with four or five identified shareholders; **AA-**: As above, but includes companies with one to three identified shareholders.

The logic behind these qualifiers is that the probability of having missed an ownership percentage over 25% is the lowest when the greatest number of shareholders is known, and hence, the company's degree of independence is more certain.

The qualification **A+** is also attributed to **A** companies in which the summation of direct ownership links (all categories of shareholders are included), which are all under 25%, is at least 75.01%. Indeed, this category indicates that the company surely does not qualify under Independence Indicator **B** (because it cannot have an unknown shareholder with 25.01% or higher ownership). BvD gives an **A-** notation to a company that is mentioned by a *source* (Annual Report, Private Communication or Information Provider) as being the *Ultimate Owner* of another company, even when its shareholders are not mentioned.

The further qualification as **B+**, **B** and **B-** is assigned according to the same criteria, which are related to the number of recorded shareholders as for indicator **A**.

Moreover, the qualification **B+** is attributed to **B** companies in which the summation of direct ownership percentages (all categories of shareholders are included) is at least 50.01%. Indeed, this category indicates that the company surely does not qualify under Independent Indicator **C** (because it cannot have an unknown shareholder with at least 50.01%).

The qualification **C+** is attributed to **C** companies in which the summation of direct ownership percentage (all categories of shareholders are included) is at least 50.01%. Indeed, this category signifies that the company surely does not qualify under Independent Indicator **D** (because it cannot have an unknown direct shareholder with at least 50.01%).”

5. When the stake of a shareholder is described by the following initials, we replace it with the appropriate number as follows: **MO**, majority owned, is replaced by “75%”; **JO**, jointly owned, is replaced by “50%”; **NG**, negligence, is replaced by “0%”; **CQP1,---**, is replaced by “50.01%”; **BR**, branch, is replaced by “5.01%”; and if the holding of a shareholder is wholly owned (**WO**), then we delete the firm from the sample, as this firm should not be considered a publicly traded company.
6. We collect data early in the year 2010 and thus ultimate owner information is available for the year 2009.
7. The types of blockholding for the continuous variables are based on the first level of shareholders. Although pyramidal and cross-holding ownership is quite popular throughout the world (e.g., La Porta et al., 1999; Claessens et al., 2000; Faccio and Lang., 2002; Carney and Child, in press), our variables are not able to fully capture the effects of different types of shareholders on firm value. We also test

the types of ultimate owners, but the control rights of the ultimate owners in many firms are missing, and the cut-offs of the ultimate owners are only 25% and 50%. Thus, we use dummy variables instead.

8. As the samples used by Lins (2003) and La Porta et al. (2002) exclude widely held firms at the 5% and 10% levels of ownership, respectively, we also run a linear regression by excluding widely held firms from our sample. If we exclude widely held firms with a minimum cut-off of 15%, then we find a positive relationship between the control rights of the largest shareholder and firm value.
9. We test the relationship between investor protection and Tobin's Q and exclude any ownership variable. The coefficient of high (which is equal to 1 for countries with high investor protection) is positive and significant. This result is consistent with La Porta et al. (2002), who find that firms in countries with high investor protection have higher firm performance than those in countries with low investor protection. We also perform additional tests by excluding firms with no blockholding at 5% or 10%, as the sample used by La Porta et al. (2002) includes only firms that have an ultimate owner at 10%. The results remain qualitatively similar.
10. According to McFadden (1999), the method of instrumental variables in non-linear models, particularly for models that are non-linear in the variables only, have this feature: if the instrument is uncorrelated with the error term (ϵ), then any non-linear transformation of the instrument (z) will be uncorrelated with the error term (ϵ). This method is a "practical thing to do and will often give a more precise IV estimator than if one just uses the raw instruments". However, this method does not generally yield the most efficient IV estimator.
11. However, the use of a regression with firm fixed effects cannot eliminate the endogenous issue related to the causal relationship between blockholding and firm value.
12. We do not tabulate the results in this paper but will provide them upon request.

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