

Acquisition Size and Institutional Ownership: Evidence from China

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ABSTRACT

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What's the firm's proper acquisition size? It is still an unresolved question for both academics and practitioners. The extant literatures mention little about the determinants of the firm's acquisition scale at the micro economic level, especially for Chinese firms. With recent available data of acquisitions in Chinese stock market (Shanghai and Shenzhen) during the period 2003-2008, we first estimate the expected acquisition size. In a two-way fixed effect model, our results indicate that the firms' acquisition size is significantly positively associated with the firm size, Q, leverage ratio, cash holding level and internal capital expenditure. Acquisition size is also found to be positively related to some governance characteristics such as board size, independency of board and activity of board, but negatively related to CEO duality. However, annual dividend, management holding, intangible asset, ownership concentration and the identity of ownership seems unrelated to the acquisition size. The further investigation focuses on the monitoring effect of different institutional ownership of QFII, social security fund, security firms and security investment funds on the acquisition of listed firms. We find that only social security funds have significant monitoring effects on the firm's strategic investment-acquisition.

JEL codes: L25, G23, G34

Keywords: acquisition size, corporate governance, institutional ownership

Introduction

What's the firm's proper acquisition size? It is still an unresolved question for both academics and practitioners. The extant literatures rarely have a full coverage of determinants of the firm's acquisition size. While as far as our knowledge concerned, few literatures link the characteristics of bidder with the expected acquisition size. This paper aims to fill this gap using recent available data from Chinese stock market (Shanghai and Shenzhen) over the period 2003-2008.

Sheleifer and Vishny (2003) and Rhodes-kropf and Viswanathan (2004) conclude that merger waves are due to managerial timing of market overvaluation of their firms. However, neoclassical explanations (Gort, 1969; Mitchell and Mulherin, 1996) argue that merger waves are results of shocks to an industry's economic, technological, or regulatory environment. Harford (2005), in the debate about the cause of merger waves, tests both hypothesis and supports the neoclassical explanations. Furthermore, he adds that the shocks on their own are not enough, without sufficient capital liquidity. For us, the explanations for merger waves require both economic motivation (low transaction costs) and industry shocks. In a firm-level test, these two factors could be reflected in the year and industry dummies.

Some literatures focus on the financial and corporate governance characteristics of the acquiring firms in the context of M&A. Roll (1986) hypothesizes that managers of bidding firms may suffer from hubris, so they overpay. Managers of large firms are more prone to hubris, probably because they are more important socially, have succeeded in growing the firm, or simply face fewer obstacles in making acquisitions. Moeller et al. (2004) provide evidence that managers of large firms pay more for acquisitions. The premium paid increases with firm size after controlling for firm and deal characteristics. Therefore, size of the firm is an important factor in determining expected acquisition size. Rubin (1973) develops a model of firm investment - expansion based on resource theory and argues that firm may choose to acquire if the bidder own a strong expertise, such as R&D department or financial department. His argument shows the off-balanced resource owned by acquirer would influence the decision to invest. We use intangible asset as the proxy for the non-tangible resources.

Jensen's (1986) free cash flow theory argues that managers with large free cash flows are more likely to undertake a takeover which is often low benefit or value-destroying. Consistent with free cash flow theory, Hoshi et al. (1991) empirically find that in the presence of financing constraints, the sensitivity of investment to liquidity (availability of internal funds) is stronger. Chapman et al. (1996) present similar evidence on the relationship of investment behavior and cash flow. The investment of firms will exhibit greater sensitivity to cash flows for financially constrained compared to financially unconstrained. The role of cash flow as a determinant of investment in a firm level when controlling other incentives variables have been a consensus.

Moreover, Lang et al. (1991) use Q to distinguish firms with good investment opportunities from those that do not.¹ High Q firms are likely to have more positive NPV (net present value) projects. For these firms, bidder's return should be positively related to free cash flow. Low Q firms are less likely to have positive NPV projects. They are not recommended to undertake acquisition which will likely destroy firm value. Bidder's return is supposed to be inversely related to cash flow since cash flow will have greater role in management decision when cash flow is large. They empirically test the implication of free cash flow hypothesis and conclude that bidder's return impacted by increase in cash flow depends on Q. We interpret, in the context of M&A, that when controlling Q, the acquisition size will increase in free cash flow.

Jensen and Meckling (1976) argue that increasing debt may reduce the expropriation by managers. Myers (1977) demonstrates that the excessive debt would reduce the projects with positive NPV, and result in underinvestment. Jensen (1986) continues his argument that debt would exercise a hard constraints on manager's investment, and the financial leverage is negatively related with the over investment. Maksimovic and Phillips (2001) show that probability of an acquisition hinge on the company's access to external finance since the financially unconstrained companies are more likely to participate in M&A.

M&A is strategic investment and must be approved by the board of director before any action was taken. The literature on the relationship between board characteristics, board composition decisions and their impact on firm performance and value seems to reach consensus. Corporate boards can better represent stockholders' interests and reduce agency costs when boards are smaller and contain more outside independent directors.² Besides, there are some other characteristics related to board we are interested in, including annual board meeting times, CEO duality, the identity of largest shareholder (state or private).

Overall, the relationship between CEO duality³ and firm performance is mixed. Pi and Timme (1993), Baliga et al. (1996) report better performance for firms that have split titles than those have joint titles. Brickley et al. (1997) find opposite results, with joint position firms outperforming split position firms among large firms. However,

¹ Tobin's Q is developed by James Tobin in 1969 as the ratio between the market value and replacement cost of total asset. It reflects the capital market expectation to the asset. Q's implication is very comprehensive, as proxy of the firm's investment opportunity, market evaluation and firm valuation, growth opportunity and management capability.

² See Yermack (1996) for evidence on board size; Weisbach (1988), Byrd and Hickman (1992), Lee et al. (1992), Brickley et al. (1994) and Borokhovich et al. (1996) for evidence on board composition.

³ CEO duality refers to combining the title of CEO and Chairman of the Board into a person, so there is only one single leader.

Daily and Dalton (1992) and Howard (1996) document the comparable performance between two groups firms.

Lipton and Lorsch (1992) show that more board meeting times will lead to enhanced effectiveness of the board. Nevertheless, Vafeas (1999) find that the frequency of board meeting is negatively associated with the firm value. And management power hypothesis suggests that the bigger the board is, the easier the board to be manipulated by management and less effective. They argue that the board meeting is formalistic and most of the meeting time is spent on routine work and board members have no time to discuss the strategic decision and performance of managers.

One different characteristic of Chinese listed firm from other public firm is that a large proportion shares owned by the Chinese governments at different levels. Chen et al (2008) argue that Chinese state owned enterprises (SOE) confront risks of managerial entrenchment, and managerial agent issue is different from other firms owned by private shareholders. Hence, the investment behavior differs significantly. Thus, the nature of owner in Chinese listed firms will be an interesting factor to be taken into consideration.

All above literatures relates to the impacting factors of expected acquisition size. Another stream of literature focuses on the monitoring activity of institutional investors. Shleifer and Vishny (1986) argue that large stockholders have greater incentives to monitor management than small because the benefits of monitoring are more likely to exceed the costs of monitoring for large shareholders. Agrawal and Mandelker (1990) support the active monitoring hypothesis by finding statistically significant positive relationship between institutional ownership and stock holder wealth effects of various antitakeover amendments. Furthermore, Hartzell and Starks (2003) also find that institutions serve as a monitoring role in mitigating agency problem between shareholders and managers.

However, the incentives to monitor among institutional investors are different. Brickley et al. (1988) explore the different monitoring incentives between outside large shareholders that have potential business ties to the firm and those do not. They find that affiliated institutional investors are more likely to vote for management than unaffiliated ones. Affiliated large shareholders are defined as banks, insurance companies and nonbank trusts. Consistent with view that large shareholders' incentives to monitor management vary with their relationship with the firm, Borokhovich et al. (2006) examine the stock price reaction to the proposal of antitakeover amendments and find positive reaction for firms when unaffiliated shareholders holdings exceed affiliated shareholders holdings. Kahn and Winton (1998) argue that institution shareholders can either exerting monitoring effect on management (intervention) in an attempt for shared gains or trading for private gains (speculation), depending on the payoff of the two strategies. Furthermore, Bushee (1998) find institutional investors with high portfolio turnover and momentum

trading tend to encourage myopic investment behavior. Parrino et al (2003) find some institutional shareholders vote with their feet by selling their shares as long as they are not satisfied with the performance of the management. Gaspar et al (2005) find institutional investors with high-turnover portfolios exert little influence on managers with regard to acquisition decision. Davis and Kim (2007) suggest closer business ties between mutual fund and investing company prevent from voting against management.

The role of public pension funds has been discussed in Black (1990) who suggests the institutional shareholder activism is very prominent in PPFs (public pension funds) due to its size and independence, which cannot be shared by most corporate pension fund. Qiu (2008) also shows that public pension funds reduce the likelihood of bad M&A, but no effect on good M&A. Some other characteristics also encourage its monitoring effect in corporate governance. First, PPFs retain effective voting control of their assets. In 1993, PPFs in US retained voting control over 98.9% of the stock they owned, compared to only 66.4% for the average institutional investor (Brancato, 1993). Furthermore, indexing strategies are common among PPFs. Davis and Steil (2001) document that indexation takes 54% of public pension funds' domestic equity and only 24% of that of corporate fund. Gillan and Starks (2000) suggest selling constraints imposed by indexing strategies provide a motivation for shareholder activism. On the other hand, some disagree with the conclusion that PPFs are effective monitors. Romano (1993) documents that political pressure is not always consistent with profit maximization rule. Murphy and Van Nuys (1994) find more conservative behavior by state pension fund. Woidtke (2002) finds the negative relationship between firm relative values and public pension ownership.

Will Chinese institutional investors monitor the managers in the decision of acquisition size? That's the concern we aim to address in this paper. With recent available data of 1750 acquisition firm-years in Chinese stock market (Shanghai and Shenzhen) during the period 2003-2008, we estimate the expected acquisition size using a two-way fixed effect model. We hypothesize that there should be a proper acquisition size based on the characteristics of the acquiring firm. After obtaining the expected size, we try to analyze the monitoring effect of different types of institutional investors. We find that only social security fund will restrict acquisition size in over-acquisition scenario. The remainder of this paper is organized as follows. Section II describes data selection and methodology. In Section III, we apply a two-step specification on the acquisition equation and the institutional ownership equation. Section IV presents the results and discusses institutional ownership impact on acquisition size. Section V concludes the paper.

Data and Methodology

In this section, we outline our sample selection procedure and describe our data. Our sample consists of bidder firms on the Shanghai and Shenzhen Stock Exchange between 2003 and 2008. Firms which are subject to special treatment (reporting two consecutive annual losses) and financial firms (Global Industry Standard Classification between 401010 and 403030) are excluded from our sample. Fiscal year end financial statement, ownership, and governance information are extracted from the CCER (China Center for Economic Research) database. The final sample period covers 2140 firm-year observations. However, only 1750 firm-year observations are used in the analysis since any observation with one missing value will not enter the final model.

Table 1 shows the year distribution of 2140 firm-year observations. The pattern of the deal is time varying, with more frequent deals in 2007 and 2008 compared to earlier sample period. M&A cluster which is characterized by five M&A waves since early 20th century. Changing business environment will motivate firms to restructure as a response. The deal size is increasing year by year except 2005. The increase extent in terms of size is greater compared to increase in frequency.

Table 1: Year distribution of acquisition size and frequency

Year	Number of Observations	Deal Size (unit ¥ billion)
2003	299	50.8
2004	298	77.7
2005	240	36.8
2006	295	79
2007	485	327
2008	523	302
Total	2140	873

In terms of industry distribution (table 2), the deals are mainly concentrated in raw materials (18.39%), industrial (19.99%) and non-daily consumption (21.36%), which takes up 59.74% of all acquisitions. Mitchell and Mulherin (1996) and Andrade et al. (2001) report clustering of takeover by industry during the takeover waves in the 1980s and 1990s. Specific shocks such as deregulation, oil price shocks, foreign competition, and financial innovations explain a significant proportion of takeover activity in the 1980s. We assume that these shocks could fit to the interpretation of the industry clustering of acquisition in China.

Table 2: distribution of acquisition based on industry (Global Industry Standard Classification)

Industry	Number of Observations	Percentage (%)	Deal Size (unit ¥ billion)
Energy	61	2.88	50.20
Raw materials	390	18.39	172.00
Industrials	424	19.99	214.00
Non-daily consumption	453	21.36	87.80
Daily Consumptions	144	6.79	19.60
Medical and health care	158	7.45	27.10
Real estate	215	10.14	213.00
IT	157	7.40	16.90
Telecommunication	5	0.24	10.00
Public utility	114	5.37	58.50
Total	2121	100.00	869.00

Our methodology originates from Richardson (2006), who analyzes the over-investment given the free cash flow. We decompose the acquisition size ($I_{A,t}$) into two parts: expected acquisition size ($I_{E,t}$) and abnormal (or unexpected) acquisition size ($I_{U,t}$), which could be expressed as follows:

$$I_{A,t} = I_{E,t} + I_{U,t} \quad (1)$$

The difference between actual acquisition size and expected acquisition size cannot be captured by the model. Negative (positive) values correspond to under- (over-) acquisition. Our estimate for expected acquisition size is as follows. Because it is possible that some acquirers bid more than once in a year, the estimated size from the model is year based.

$$I_{it} = \alpha_{it} + \beta_{1i}Q_{it} + \beta_{2i}Leverage_{it} + \beta_{3i}Cash_{it} + \beta_{4i}CapExp_{it} + \beta_{5i}Sales_{it} + \beta_{6i}Intangible_{it} + \beta_{7i}CashDiv_{it} + \beta_{8i}Magholding_{it} + \beta_{9i}Inddprop_{it} + \beta_{10i}BoardSize_{it} + \beta_{11i}Meetingtimes_{it} + \beta_{12i}Owner_{it} + \beta_{13i}Duality_{it} + \beta_{14i}(Nation * Duality)_{it} + \sum YearIndicator + \sum IndustryIndicator \quad (2)$$

where α_i is the constant of the model Q_{it} (Tobins' Q ratio, book value of total assets deflated by market value of total assets, indicating the growth opportunity); $Leverage_{it}$ (book value of total debt deflated by the book value of total asset); $Cash_{it}$ is the natural logarithm of annual cash holding, including cash and tradable financial assets; $Capexp_{it}$ is the natural logarithm of capital expenditure, the cash payment on purchasing fixed and intangible asset minus the cash received by selling fixed and intangible asset, a measure of internal investment; $Sales_{it}$ is natural logarithm of annual sales, a proxy for firm size; $Intast_{it}$ is natural logarithm of intangible asset of the firm; and $CashDiv_{it}$ is annual cash dividend payout.

The other independent variables include corporate governance characteristics.

Magtholding_{it} is the shares percentage holding by senior management. BoardSize_{it} is the number of directors of a company. Meetingtimes_{it} is the board meeting times per annum. Inddprop_{it} is portion of number of independent directors among board members. Owner_{it} is dummy representing the status of the largest share-holder. We designate 1 as state owned company and 0 for all others. Duality_{it} is CEO duality, representing leadership structure of board. 0 represents the situation that CEO holds the position of Chair of the board of Directors, while 1 refers to splitting two positions between two different individuals. (Nation*Duality)_{it} is dummy, with value 1 or 0. 1 refers to the situation that the company is state owned and CEO and chairman is separate, 0 otherwise. Year_t dummies capture time dynamics (t= 2003...2008) while Industry_j is a vector of indicator variables to capture industry fixed effect (j=1...63) according to Global Industry Standard Classification. ε_{it} is a random error.

However, there are still some factors influencing acquisition size, known but hard to quantify. These factors include, but not limited to, some details of deal such as, attitude of targets, acquisition timing and payout methods (cash, stock, or combination of both), whether there is any third party to contest. Due to agency cost problem, behaviors by management deviate from shareholder's interest, such as excessively over payment, bad timing to acquire, and blurred acquisition motivation. All elements mentioned above are reflected in the residual error which cannot be captured by our model.

We standardize data with absolute value (compared to values expressed by percentage) by taking natural logarithm, so that the coefficient before each variable could be interpreted as percentage change of independent variables caused by 1% of independent variables given the other variables constant. The statistics of the variables are shown in table 3. The variables correspond to the independent factors entering the model. The missing values for management holding identified by -95 in database will reduce the sample by 1/3. We replace those missing values with average of remaining management holding.

Table 3: Variable Statistics Description

Variable	# of Obs	Mean	SD	Min	Max
Acquisition Size	1750	17.83	1.80	0.69	24.19
Q	1750	1.14	2.58	-0.39	9.21
Leverage	1750	0.50	0.18	0.02	1.81
Cash	1750	19.47	1.37	-8.52	23.63
CapExp	1750	18.30	1.80	8.71	25.06
Sales	1750	20.93	1.31	12.15	27.67
Intangible	1750	15.96	6.54	-9.21	22.63
CashDiv	1750	0.09	0.14	0.00	3.00
Magtholding	1750	0.03	0.09	0.00	0.78

Inddprop	1750	0.55	0.15	0.00	1.50
BoardSize	1750	6.31	1.63	2.00	14.00
Meetingtimes	1750	9.20	3.60	2.00	36.00
Owner	1750	0.65	0.48	0.00	1.00
Duality	1750	0.90	0.30	0.00	1.00
Nation*Duality	1750	0.59	0.49	0.00	1.00

Empirical Results

We adopt stepwise method to examine the sensitivity of variables. Therefore, four different equations are established to quantify the expected acquisition size. All four models include year and industry dummies. Table 4 demonstrates the results from these models. The number in each column displays the coefficients, corresponding p-statistics of each variable and respective significance level reflected by asterisks are displayed underneath, if there is one.

Variables in model 1 only include the firm finance variables, without taking account of the governance impact on acquisition size. Q, leverage, cash-holding, capital expenditure, sales, intangible asset and cash dividend payment are on the right hand side of the model. This version shows that variables cash-holding, capital expenditure, and sales are positively significantly related to the expected size at 1% level. It is possible that Chinese listed company does not suffer financial constrains as public firms do in other countries. It is also likely that Chinese listed companies are better financially supported in terms of acquisition. No significant relation could be found between intangible asset and acquisition size possibly implies that resources which acquirer based to purchase target is still the tangible asset such as cash and firm size, rather than the intangible asset such as R&D, branding.

Based on the first equation, extra variables concerning governance characteristics are added into the 2nd model to examine whether and how certain governance mechanisms impact the acquisition size. These governance characteristics include management holding, board size, the portion of independent directors in board, board activity. The third column of table 4 shows that, the same variables remain the significant impact on acquisition size, consistent with results they behave in model 1. All added governance characteristics are found to be significantly positively related to the acquisition size.

We further explore another two governance variables (owner and duality) impact on acquisition size. Both of these two variables are dummies. For variable owner, it takes value of 1 if the company is state owned enterprise, and 0 otherwise. For variable duality, it takes value of 1 if the CEO and Chair are held by different

individuals and 0 otherwise. The interpretation of these coefficients is different from other coefficients. The coefficient for variable CEO duality -0.34, significant at 1% level, indicating that controlling for all other factors, the company with CEO duality will have about 34% lower acquisition size compared to the same company except separation of CEO and chairman. It possibly suggests that CEO duality mechanism works in restricting over-acquisition. The insignificant coefficient of owner indicates that whether the largest shareholder is stated owned or not has no significant impact on expected acquisition size. The insignificance finding is not consistent with argument that SOEs seem to acquire more because of the external driving forces exercised by Chinese government at different levels.

The last (4th) model continues to examine the relation of the identity and separation of duality with regard to expected acquisition size. We design an interaction term by multiplying owner and duality, identifying the impact of the situation that firm is state owned and CEO duality does not exist on acquisition size. No significant coefficient found for this cross variable eliminates the possibility that identity could contaminate the conclusion and confirms our finding that separation of duality significantly impact expected acquisition size.

Table 4: Regression analysis of expected acquisition size

Variables	Predicted Sign	Model			
		1	2	3	4
Q	+	0.029 (0.070) *	0.030 (0.059) *	0.030 (0.058) *	0.030 (0.056) *
Leverage	-	0.519 (0.045) **	0.451 (0.079) *	0.439 (0.087) *	0.439 (0.088) *
Cash	+	0.149 (0.000) ***	0.149 (0.000) ***	0.146 (0.000) ***	0.146 (0.000) ***
CapExp	+	0.142 (0.000) ***	0.136 (0.000) ***	0.136 (0.000) ***	0.135 (0.000) ***
Sales	+	0.184 (0.000) ***	0.162 (0.002) ***	0.166 (0.001) ***	0.167 (0.001) ***
Intangible		0.001 (0.896)	0.001 (0.898)	0.000 (0.981)	0.000 (0.978)
CashDiv	+	0.026	0.080	0.080	0.080

		(0.932)	(0.793)	(0.792)	(0.791)
Magtholding	-	-0.966 (0.050) **	-0.982 (0.045) **	-1.039 (0.040) **	-1.032 (0.041) **
Inddprop	+		0.786 (0.012) **	0.815 (0.009) ***	0.824 (0.009) ***
BoardSize			0.067 (0.021) **	0.072 (0.014) **	0.072 (0.013) **
Meetingtimes			0.052 (0.000) ***	0.052 (0.000) ***	0.053 (0.000) ***
Owner				-0.032 (0.737)	-0.235 (0.376)
Duality				-0.337 (0.010) ***	-0.485 (0.029) **
Nation*Duality					0.226 (0.412)
Year Indicators		Yes	Yes	Yes	Yes
Industry Indicators		Yes	Yes	Yes	Yes
Observations		1,750	1,750	1,750	1,750
Adjusted R-squared		0.174	0.186	0.188	0.188
F		6.577	6.790	6.712	6.627

Notes: The dependent variable in the regression is acquisition size, defined as natural logarithm of acquisition deal for each company in one year. Q is the market value of assets over the book value of assets at the end of year. Leverageit is book value of total debt deflated by the book value of total asset. Cashit is the natural logarithm of annual cash holding, including cash and tradable financial assets. Capexpit is the natural logarithm of capital expenditure, calculated as the cash payment on purchasing fixed and intangible asset minus the cash received by selling fixed and intangible asset, a measure of internal investment. Salesit is natural logarithm of annual sales, a proxy for firm size. Intastit is natural logarithm of intangible asset of the firm at the end of year. CashDivit is annual cash dividend payout. Magtholdingit is the shares percentage holding by senior management. BoardSizeit is the number of directors of a company. Meetingtimesit is the board meeting times per annum. Inddpropit is fraction of independent directors among board members. Ownerit is dummy variable equal to one for all firm-years when largest share-holder is state. Dualityit is also dummy variable equal to one if positions of CEO and Chair of the board of Directors are split between two different individuals. Industries are defined based on Global Industry Standard Classification. The corresponding p-value is

reported in the parentheses below each coefficient. ***,**,* below each p-value indicate significance at the 1%, 5%, and 10% level, respectively.

By deducting the expected acquisition size from the actual acquisition size, we find the difference which we term as discretionary acquisition size. Our expected acquisition is based on model 4 in that this model has the highest adjusted R square. The further investigation focuses on the monitoring effect of different institutional investors including QFII (qualified foreign institutional investors), social security funds, security companies and security investment fund on the unexpected acquisition size of listed firms. We intend to indentify whether any particular or in general, institutional investors will restrict or increase the acquisition size. Our evidence shows that only social security fund has significant restriction effects on the firm's acquisition size. To the best information as far as we concerned, this paper is one of scare empirical papers investigating in this area.

In general, the positive difference is considered as under-acquisition and negative difference is treated as over-acquisition. However, all acquisition will be defined as either over-acquisition or under-acquisition as long as the difference is not zero. Since the expected acquisition size model is innovative and none theory could confirm the determinants of the acquisition size. We relax the range of over-acquisition and under-acquisition. We rank the difference (discretionary acquisition) from smallest to largest and find the 25 percentile and 75 percentile are -0.821 and 1.534. The under-acquisition will be defined as difference larger than 1.534, and under-acquisition will be all observations with difference smaller than -0.821.

Currently, there are eleven different types of institutional investors in Chinese capital market. They are social security funds, qualified foreign institutional investors (QIFF), insurance firms, occupational funds, trust firms, securities firms, securities investment funds, brokers set financial plans, individuals, and others. Among them, we are only interested in four type institutional investors since they are most typical institutional investors, which are social security funds, qualified foreign institutional investors (QIFF), securities firms, and securities investment funds.

We regress the holding of shares by institutional investors and control variable on abnormal acquisition size. Therefore, the model to test the impact of institutional investors on discretionary acquisition could be expressed in the following:

$$asr_{it} = \alpha_{it} + \beta_{1it} insti - holding_{it} + \beta_{2it} control\ var\ iables_{it} + \varepsilon_{it} \quad (3)$$

where asr_{it} is the unexpected acquisition, natural logarithm of discretionary acquisition. $Insti-holding_{it}$ represents the annual share held by one kind of institutional investor, i.e. social security funds, QFII, securities firms and securities investment funds. The control variable is the shareholding holding of remaining top 5 shareholders. Table 5 shows the regression results based on three different samples.

Among three regressions, only coefficients before social security fund displays significance on 10% level for over-acquisition sample. We conclude that social security fund, as the only identified institutional investors, could effectively restrict the acquisition size.

Table 5: Regression analysis of abnormal acquisition size

Variables	All-acquisition	Over-acquisition	Under-acquisition
QFII	0.002 (0.894)	-0.024 (0.161)	-0.014 (0.507)
SSF	0.057 (0.559)	-0.170 (0.096) *	0.075 (0.635)
SF	0.005 (0.823)	-0.018 (0.592)	0.007 (0.774)
SIF	0.008 (0.521)	-0.020 (0.198)	-0.016 (0.390)
Top5	0.001 (0.945)	0.012 (0.295)	0.003 (0.804)
Year Indicators	Yes	Yes	Yes
Industry Indicators	Yes	Yes	Yes
Observations	1,750	264	491
Adjusted R-squared	-0.036	0.075	0.001
F	0.0239	1.411	1.010

The corresponding p-value is reported in the parentheses below each coefficient. ***,**,* below each p-value indicate significance at the 1%, 5%, and 10% level, respectively.

This table tests the monitoring of institutional investors by regressing different institution's holding percentage plus control variables on the unexpected acquisition size, which is the different of actual and expected acquisition size from table 4. The second column reports the results of all acquisition; the third column is based on over-acquisition sample, defined by asr larger than 1.534; the four column is for under-acquisition sample, defined by asr smaller than -0.821. QFII, SSF, SF, and SIF represents the annual proration of stocks holding respectively for qualified foreign institutional investors, social security funds, securities firms, and securities investment funds. Top5 indicates the annual fraction of stock holding by largest 5 shareholders, irrespective of the nature of the institutions.

Conclusion

What's the firm's proper acquisition size? Our evidence indicates that after controlling for industry fixed effect and year dynamics, on average the firms' acquisition size is significantly positively associated with the firm size, Tobin' q, leverage ratio, cash holding level, internal capital expenditure. Furthermore, acquisition size is found to be positively related to some governance characteristics of firms such as management holding, board size, independency of board, activity of board, and negatively related to the leadership structure of board, i.e. the duality of chairman and CEO. However, other factors such as annual dividend, management holding, intangible asset, ownership concentration and the identity of ownership (whether the actual owner of the firm is SOE or not) seems unrelated to the acquisition size. Furthermore, we also find that social security fund, as only institutional investors, could restrict over-acquisition.

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