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December 2011

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Abstract

This paper aims to investigate the role that institutional shareholders play in acquisition decision using micro data in the Chinese stock market during 2003-2008. Acquisition decision is the selection and coordination process of shareholders as strategic alliances, which is determined by corporate acquisition ability, composition of institutional shareholders and concentration of tradable share (TS) in China. We use Heckman selection model to surmount the selection biases in acquisition decision. We find that institutional shareholders including qualified foreign institutional investors (QFII), social security funds (SSF), security firms (SF) and security investment funds (SIF), as well as TS concentration affect acquisition probability rather than annual acquisition scale. SSF, SIF and TS concentration can increase acquisition probability while QFII decreases it. Our paper contributes to the published literature in three ways. First, we offer a model to understand the selection and coordination process of acquisition decision. Second, we investigate whether institutional shareholders could effectively monitor annual acquisition scale. Third, we identify Heckman selection problem that institutional shareholders could affect PLCs' acquisition decision on whether to acquire rather than how much to acquire.

Keywords: Selection, Institutional Shareholders, Acquisition Decision

JEL codes: C52, G32, G34, P41

1. Introduction

Corporate acquisition has become a more and more important phenomenon in the Chinese stock market. All completed deals sum up to about 798 billion RMB Yuan (110 billion US dollar, see more details in Table 1) over the period of 2003-2008.[1] In 2003, about 24% Chinese publicly listed companies (PLCs) acquired total 51 billion Yuan of stocks or assets, as the average annual acquisition scale was about 170 million Yuan. Five years later, the proportion of acquiring PLCs increased to 33% as total acquisition scale increased 5 times (277 billion Yuan). The average annual acquisition scale (536 million Yuan) in 2008 was above 3 times that in 2003. Thus, in absolute and relative sense, more and more Chinese PLCs have been involved into acquisition activities of larger scale than before.

At the same time, shareholders with large investment stakes (institutional shareholders) are becoming the main participant in the Chinese stock market. In the early stages of capital market development in China, the total shares are divided into a major part of non-tradable share (NTS) and a minor part of tradable share (TS). The controlling shareholder (NTS owner) is usually a State-Owned enterprise (SOE), so institutional shareholders can only hold TS as minor shareholders in the ownership structure. At beginning of 2005, about two thirds of the Chinese stock market was composed of NTS (Beltratti *et al*., 2011).[2] Hence, the controlling NTS shareholders would misappropriate the interests of minor TS shareholders through such channels as dividend appropriation or corporate loans to controlling shareholders (Bai *et al*., 2000; Wei *et al*., 2005; Chen *et al*., 2009; Jiang *et al*., 2010). In order to solve this problem, the Chinese government launched the split share structure reform in 2005 to compensate TS shareholders and allow all shares to be tradable (Firth *et al*., 2010). By the end of 2007, a total of 1254 PLCs had accomplished the split share structure reform, representing over 97% of the market capitalization (Li *et al*., 2011).

As more and more shares became tradable, the investment of institutional shareholders such as qualified foreign institutional investors (QFII), social security funds (SSF), security firms (SF) and security investment funds (SIF) developed very fast. Institutional shareholders held less than 10% value of the TS share market in 2003. This percentage rose up more than 5 times to about 60% in 2008 as QFII and SIF held more than 25% value of the TS share market. Hence, institutional shareholders have formed a powerful party in determining whether a proposal can be passed/rejected in the board of Chinese PLCs (Zeng *et al*., 2011).

(Table 1 around here)

Since acquisition and institutional shareholders activism are always important agendas for corporate management, their coincident fast development in the Chinese stock market arise a very interesting question: what role do institutional shareholders play in the Chinese PLCs' acquisition decision? This paper focuses on institutional shareholders in acquisition decision using recent available data in the Chinese stock market (Shanghai and Shenzhen). Our paper contributes to the published literature in

[1] We exclude special treated (ST) companies and financial institutions as described below. The exchange rate of The Penn World Table (PWT 7.0, 1 US dollar=6.95 RMB Yuan in 2008) is used to calculate the equivalent value in US dollars. We keep on using the RMB Yuan (￥) as the currency unit in this paper.

[2] It is so-called split share structure, where NTS cannot be traded in the capital market, while all else is equal with TS. The NTS are mainly composed of state shares (held by the state) and legal person shares (held by SOE and other non-bank institutions). The TS comprise A-shares, denominated in RMB and traded in the Shanghai and Shenzhen Stock Exchanges; and H-shares, listed in the Hong Kong Stock Exchange (Lee, 2009; Lee *et al.*, 2008). We concentrate on the Chinese A-share PLCs in this paper.

three ways. First, we offer a simple model to understand the selection and coordination process of corporate acquisition decision. Second, we investigate whether institutional shareholders could effectively monitor annual acquisition scale using an industry fixed effect model. We find that institutional shareholders have no significant effect on annual acquisition scale. Third, we identify this problem as Heckman selection biases that institutional shareholders could affect PLCs' acquisition through the coordination and selection process on whether to acquire rather than how much to acquire. Hence, we apply two-step estimation on the acquisition equation. Our results shed new light on the institutional shareholder activism in acquisition decision.

The remainder of this paper is organized as follows: the second section summarizes the previous literature; the third sector introduces the empirical model and the hypotheses; the fourth section presents the data and some descriptive statistics, while the empirical results are discussed in the fifth section. Some concluding remarks are provided in the sixth section.

2. Literature review

In the financial literature, institutional shareholders are supposed to play an active role even to be the most likely monitors in corporate governance by many authors such as Brickley *et al*. (1988); Smith (1996); Gillan and Starks (2000); Hartzell and Starks (2003); Almanzan *et al*. (2005) and Cheng *et al*. (2010). For our particular interest in corporate acquisitions, Opler and Sokobin (1995) find that coordinated institutional shareholders decrease the acquisition rate of focused corporation. Moreover, different institutional shareholders seemingly have different attitudes on corporate acquisition. Black (1990) discusses on the PPFs (public pension funds) and argues that the institutional shareholder activism is very prominent in PPFs due to its size and independence, which cannot be shared by most corporate pension fund.[3] In more recent literature, Borokhovich *et al*. (2006) find that only institutional shareholders who are outside and large shareholders (unaffiliated blockholders) exert influence on PLCs' decisions on acquisition. Qiu (2008) also finds that PPFs only reduce the likelihood of bad M&A, but no effect on good M&A.

These studies are mainly on the capital markets of developed countries such as the USA which are characterized by diffused corporate ownership and a high level of investor protection, and the main agency problem there is the conflict of interest between outside shareholders and inside managers (Jensen and Meckling (1976); Shleifer and Vishny (1986) ; Admati *et al*. (1994); Maug (1998) and Kahn and Winton (1998)). However, most emerging capital markets are characterized by concentrated ownership and poor investor protection, which shifts the main agency problem to conflicts of interest between majority and minority shareholders (La Porta *et al.*, 1999). Su (2010) argues that the ownership structure is germane to the understanding of corporate diversification strategies and debt-equity financing choices of the Chinese PLCs. Zeng *et al*. (2011) suggest that institutional shareholders in China are more likely to collude rather than fight with controlling shareholders and exacerbate the agency problem between majority and minority shareholders. Hence, the different role of institutional shareholders in an

[3] Some other characteristics also encourage PPFs' monitoring effect in corporate governance. First of all, 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 shareholder (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. Thus, Gillan and Starks (2000) suggest selling constraints imposed by indexing strategies provide a motivation for shareholder activism.

emerging market like China is of great interest both theoretically and in practice.

Furthermore, acquisition decisions, like other major strategic decisions, involve complexity, ambiguity and lack of structure (Duhaime and Schwenk, 1985). Decision makers such as the controlling shareholders, management and the institutional shareholders who are strategic alliances within the PLCs (Todeva and Knoke, 2005), cannot simultaneously consider or process all the variables and data involved in a decision as complex as acquisition. Hence, uncertainty of acquisition market and overconfidence of alliance partners may cause decision-making biases of alliance partners and possibly fail the alliance and acquisition proposal (Chao, 2011).

In order to function in uncertain acquisition market, as well as to avoid the stress that such ambiguity produces, decision makers may use perceptual process or heuristics for simplifying information processing. "In general, these heuristics are quite useful, but sometimes they lead to severe and systematic errors." (Tversky and Kahneman, 1974). Transaction cost economics (Williamson, 1985) argues that behavioural uncertainty can be resolved by implementing safeguards to mitigate a partner's opportunistic behaviour. On the other hand, the literature on relational assets, such as trust, offers another way to more closely align the interests of the two parties, eliminate unpredictable reactions and reduce transaction costs such as searching/matching information and monitoring (Gulati, 1995). Although previous authors have acknowledged that safeguards and trust are effective ways to reduce dysfunctional behaviour, their mechanisms are still unclear. One of the most extreme views is taken by Williamson who rejects the usefulness of the concept of trust and believes instead that the economics of contracts should be based upon an assumption of opportunism (Williamson, 1993).

Chao (2011) also argues that in dyadic decision making, when a focal firm gives insufficient consideration to the contingent behaviour of its partner, the firm is susceptible to three types of overconfidence: overoptimistically judging the likelihood that the alliance will result in a good outcome; overestimating its ability to manage the alliance so as to deliver the desired outcome; and overestimating the benefits of its relationship with the partner and trusting the partner too much. If a focal firm trusts its partner excessively, it may neglect the development of appropriate formal controls and rely too much on informal controls, such as trust or a previous working model, to govern interactions with its partner. Trust is a double-edged sword: it can discourage opportunistic behaviour, but under certain conditions it can also foster opportunistic behaviour (Anderson and Jap, 2005). Hence, it is very interesting to explore how controlling shareholders, management and the institutional shareholders maintain their alliance relationship within the Chinese PLCs and make efficient acquisition decisions together in a market with high uncertainty.

Another strand of literature is about collaboration or coordination process of institutional shareholders on acquisition decision. Firm-as-contract theorists argue that participants agree to cooperate with each other within organizations (i.e., through contracts), rather than simply deal with each other through the market, to minimize the costs of search, coordination, insecurity, etc (Williamson and Winter, 1991). Since an asymmetry always exists in organizational abilities to exert power and control over another alliance organization and its resources (Oliver, 1990), institutional shareholders often have disadvantages in structure of power, resource and information. The institutional shareholders have to choose proper collaboration way to avoid market uncertainties and hierarchical rigidities (Todeva and Knoke, 2005).

As minor shareholders, institutional investors have too high transaction costs to bargain with controlling shareholders and management, so they would better just follow the major shareholders and powerful management if they do not want to vote with feet. Hill and Jones (1992) and Freeman and Evan (1990) place greater emphasis on the

process of multiple-stakeholder coordination than on the specific agreements/bargains. In other words, the institutional shareholders' gains to acquisition are higher if all alliance partners are coordinated, so that there is a "strategic complementarity" (Ball and Romer, 1991). Todeva and Knoke (2005) also argue that institutional shareholders, as equity investors have high integration and formalization in the governance of their inter-organizational relationships which refers to combinations of legal and social control mechanisms for coordinating and safeguarding the alliance partners' resource contributions, administrative responsibilities, and division of rewards from their joint activities. Therefore, this paper directly tests whether all institutional shareholders would follow the acquisition decisions of controlling shareholders and such coordination make a crucial distinction between different institutional shareholders.

3. Hypothesis Development

We postulate a latent variable of acquisition ability (AA_{it}) for a Chinese PLC i in year t which follows a continuous (normal) distribution conditioning on its characteristics of corporate finance and governance. We cannot observe acquisition ability directly, but we can observe the characteristics of corporate finance (Fin_{it}) and governance ($Gover_{it}$), and expect acquisition ability as outside institutional shareholders. Better financial condition and more efficient corporate governance would increase corporate acquisition ability: $\partial AA_{it}/\partial Fin_{it}>0$, $\partial AA_{it}/\partial Gover_{it} >0$. We can also observe how much the annual acquisition scale (AS_{it}) is in this year if the PLC acquisition decision is coordinated successfully in the board.

However, there is search and match problem in the acquisition market as the possible acquired stocks and assets could be offered randomly with a gap between market offer and latent acquisition ability. Acquisition happens only if the expected PLC's acquisition ability is larger or equal to the market offers. High uncertainty and transaction costs in the acquisition market make institution shareholders impossible to efficiently monitor their alliances. Hence, institution shareholders have to simplify information processing and decide whether to collaborate or coordinate with alliances' acquisition decisions rather than monitor accurate acquisition scale. In long run equilibrium of acquisition, information of corporate acquisition ability such as characteristics of corporate finance and governance would be completely revealed to outside institution shareholders by their strategic alliances. Thus, the rational expectation on acquisition ability should be equal to the expected acquisition scale in long run equilibrium, but unrelated to institutional shareholders' composition ($Inst_{it}$) or the concentration of TS shareholders ($Top5_{it}$):

$$
\begin{aligned}
E(AS_{it}) &= E(AA_{it} \mid Fin_{it}, Gover_{it}, Inst_{it}, Top5_{it}) \\
&\partial E(AS_{it})/\partial Fin_{it}>0, \\
&\partial E(AS_{it})/\partial Gover_{it} >0, \\
&\partial E(AS_{it})/\partial Inst_{it} =0, \\
&\partial E(AS_{it})/\partial Top5_{it} =0
\end{aligned} \qquad (1)
$$

which leads to our first and second hypotheses as follows.

H1. Annual acquisition scale of Chinese PLC is positively related to its acquisition ability which is determined by its characteristics of corporate finance and governance.

H2. Institutional shareholders' composition or the concentration of TS shareholders is not related to the annual acquisition scale as the acquisition market offers are random with high uncertainty and transaction costs.

Controlling shareholders of the Chinese PLCs usually are SOEs with "investment hunger" and "expansion-drive" (Kornai, 1980; Zou, 1991) who always intend to acquire stocks and assets as much as they can if proper acquisition market offers appear. As more and more shares become tradable, the transferable control of Chinese PLC allows management to do more efficient acquisition and enhance corporate profitability (Chen *et al.* (2008)). Management knows better information about acquisition market than owners and need a discretion right to manage the annual acquisition scale. And, quite a bit of evidence points to the dominance of managerial rather than shareholder motives in firms' acquisition decisions (Shleifer and Vishny, 1997). Thus, the SOE controlling shareholders and management may collude to offer an overconfident annual acquisition plan in the board and seek a bigger discretion on acquisition sources within company than latent acquisition ability (Chao, 2011). They intend to coordinate outside minor TS shareholders (including institutional shareholders) to pass the annual plan. The more concentrated is the TS shareholders, for example, top 5 TS shareholder own more than 20% of total shares ($Top5_{it}$>20%), the easier is the coordination to be succeeded, because coordination of numerous minor shareholders with different preference structures would be more costly than a few major ones.

In the same vein, with expected acquisition ability (based on financial and governance characteristics of PLCs) in mind, different institutional shareholders may have different attitudes from controlling shareholders and management on the annual acquiring plan. The coordination in the board would succeed if their expected acquisition ability is more than the planned acquisition scale. Alternatively, institutional shareholders fight against the plan by voting with hand and feet. Therefore, coordination C_{it} is dependent on latent acquisition ability (AA_{it}), composition of institutional shareholders ($Inst_{it}$) and the concentration of TS shareholders ($Top5_{it}$):

$$\begin{aligned} C_{it} &= f(AA_{it}, Inst_{it}, Top5_{it}) \\ \partial f/\partial AA_{it} &> 0, \\ \partial f/\partial Inst_{it} &> \text{ or } < 0, \\ \partial f/\partial Top5_{it} &> 0, \end{aligned} \qquad (2)$$

which leads to our third, fourth and fifth hypotheses as follows.

H3. The presence of institutional shareholders is positively related with the chances of acquisition if they accept the coordination.

H4. The presence of institutional shareholders is negatively related with the chances of acquisition if they reject the coordination.

H5. The more concentrated are the TS shareholders they are more likely to be coordinated on acquisition decision hence positively related with the chances of acquisition.

Therefore, whether the presence of institutional shareholder increases or decreases the acquisition probability is an empirical question per se. Following the Heckman selection model (Gronau, 1974; Lewis, 1974; Heckman, 1976), an underlying regression relation between log form annual acquisition scale ($lnAS_{it}$) and conditions of corporate finance and governance is as follows,

$$lnAS_{it} = Fin_{it}\beta_1 + Gover_{it}\beta_2 + u_{1it} \qquad \text{regression equation} \quad (3)$$

Log form annual acquisition scale is not always observed. Acquisition happens only TS shareholders (including institutional shareholders) of PLCs are coordinated to a degree (C_{it}) for example, more than 50% of shareholders agree with the annual acquisition plan, that is

$$C_{it}\gamma + u_{2it} > 0 \qquad \textit{selection equation} \qquad (4)$$

where γ is the vector of coefficients in equation (2). Residual errors of two equations (3) and (4) follow normal distribution with mean 0 and standard deviations of σ and 1, and are correlated each other.

$$u_1 \sim N(0; \sigma)$$
$$u_2 \sim N(0; 1)$$
$$corr(u_1; u_2) = \rho$$

When $\rho \neq 0$, standard regression techniques applied to equation (3) yield biased results. In our case, equation (3) describes the annual acquisition scale of acquiring PLCs. The shareholders of PLCs choose whether to acquire in this year, and thus, whether their annual acquisition scale is observed in our data. Management would choose how much to acquire, "right of manage", according to the random offers in acquisition market. A solution for the selection biased acquisition equation can be found if there are some variables that strongly affect the chances for acquisition (the selection and coordination process of acquisition decision), but not the annual acquisition scale. Such variables might be the composition of institutional shareholders and TS shareholding concentration as in equation (4). Heckman selection model is applied to provide consistent, asymptotically efficient estimates for all the parameters of variables of corporate finance and governance in the regression equation (3).

We follow Richardson (2006) to test whether institutional shareholders and TS shareholding concentration affect acquisition decision. A Trans-log acquisition function can be expressed as follows:

$$lnAS_{it}=\beta_0+\beta_1 Fin_{it}+\beta_2 Gover_{it},+\beta_3 Inst_{it}+\beta_4 Top5_{it}+\beta_5 Year_t+\beta_6 Ind_j+\varepsilon_{it} \qquad (5)$$

where $lnAS_{it}$ is the log form annual acquisition scale of PLC i in year t. We examine the relation between annual acquisition scale and characteristics of corporate finance and governance (*hypotheses 1-2*) by testing $\beta_1 - \beta_4$.

And then, the traditional two-step Heckman estimates are firstly computed using Heckman's (1979) procedure. We examine the relation between TS concentration, the presence of institutional shareholders and acquisition probability (*hypotheses 3-5*) by testing vector of coefficients γ in the probit estimates of the selection equation

$$Pr(lnAS_{it}\ observed|\ C_{it}) = \Phi(C_{it}\gamma) \qquad (6)$$

Probability of acquisition is given by institutional coordination (C_{it}) which is conditional on expected acquisition ability (Fin_{it} and $Gover_{it}$), composition of institutional shareholders ($Inst_{it}$) and TS shareholding concentration ($Top5_{it}$). From these estimates, the nonselection hazard—what Heckman (1979) referred to as the inverse of the Mills' ratio, m_{it}—for each observation is computed as

$$m_{it} = \frac{\varphi(C_{it}\hat{\gamma})}{\Phi(C_{it}\gamma)} \quad (7)$$

where φ is the normal density. The two-step parameter estimates of β are obtained by augmenting the regression equation with the non-selection hazard m_{it}. Thus the regressors of equation (5) become [Fin_{it} $Gover_{it}$ m_{it}], and we obtain the additional parameter estimate β_m on the variable containing the non-selection hazard. And then, we test regression estimates using the non-selection hazard (Heckman, 1979) provide starting values for maximum likelihood (ML) estimation. The log likelihood for acquisiton, $lnL_{it} = l_{it}$, is

$$l_{it} = \begin{Bmatrix} ln\Phi\left\{\frac{C_{it}\gamma + \frac{(lnAS_{it} - X_{it}\beta)\rho}{\sigma}}{\sqrt{1-\rho^2}}\right\} - \frac{1}{2}\left(\frac{lnAS_{it} - X_{it}\beta}{\sigma}\right)^2 - \ln\left(\sqrt{2\pi}\sigma\right) & lnAS_{it}\ observed \\ ln\Phi(-C_{it}\gamma) & lnAS_{it}\ not\ observed \end{Bmatrix} \quad (8)$$

where lnΦ() is the standard cumulative normal distribution. In the maximum likelihood estimation, σ and ρ are not directly estimated. Directly estimated are log form standard error of residual in acquisition equation (lnσ), selectivity effect λ(=ρσ) and $\operatorname{atanh}\rho = \frac{1}{2}\ln\left(\frac{1+\rho}{1-\rho}\right)$. We will test these statistics to justify the Heckman selection model.

4. Data description

The empirical tests employ the CCER (China Center for Economic Research) PLC database of financial statement, corporate governance and institutional shareholders. This dataset include all PLCs in the Chinese stock market during the fiscal years 2003-2008. We exclude PLCs subject to special treatment (ST, that is, firms reporting two consecutive annual losses) and financial institutions (Global Industry Standard Classification between 401010 and 403030) because investing and financing activities are ambiguous for these firms.

Table 2 displays descriptive statistics of annual acquisition scale (*AS*), corporate finance (*Fin*), corporate governance (*Gover*), institutional shareholders (*Inst*) and TS concentration (*Top5*) in both acquiring sample and full sample. Following equation (5), we examine the relation between annual acquisition scale and characteristics of corporate finance and governance (*hypotheses 1*) by testing β_1 and β_2. β_1 in equation (5) is the vector of coefficients of corporate financial variables (Fin_{it}) including:

1) $lnSales_{it}$ is log annual sales;
2) $lnCash_{it}$ is the log annual cash holding, including cash and tradable financial assets;
3) $lnIntast_{it}$ is log intangible asset of the firm;
4) $Leverage_{it}$ (book value of total debt deflated by the book value of total asset);
5) $lnCapexp_{it}$ is the log capital expenditure, which is the cash payment on purchasing fixed asset, intangible asset and other fixed asset minus the cash received by selling fixed asset, intangible asset and other fixed asset, a measure of internal investment);
6) $CashDiv_{it}$ is annual cash dividend payout;
7) Q_{it} (Tobins' Q ratio, book value of total assets deflated by market value of total assets, indicating the growth opportunity);

First, economic resources of acquiring firms are important factors to determine acquisition ability. Fazzari *et al*. (1988) and Hubbard (1998) suggest that acquisition scale

increases with firm size significantly. We use annual sale and cash holding to measure financial resources. Rubin (1973) invents a model of investment-expansion based on resource theory and argues that a firm may choose to acquire if the acquirer owns 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. Hence, we use intangible asset as the proxy for the non-tangible resources of acquisition ability.

Second, Jensen and Meckling (1976) argue that increasing debt may reduce the expropriation by managers. Jensen (1986) continues his argument that debt would exercise a hard constrains on manager's investment, and the financial leverage is negatively related with the over-investment. Lang *et al*. (1996) also find that leverage is negatively related to capital expenditure. Moreover, Jensen (1986) and Hoshi *et al.* (1991) argue that the more cash the firm owns, the easier the firm acquisition will harm shareholder interest. Managers may prefer acquisition rather than pay cash dividend. However, these arguments may be not true in an emerging market such as China because the management in emerging capital markets is more likely to collaborate rather than fight with controlling shareholders (La Porta *et al.*, 1999; Chen *et al*. 2008). Hence, we include leverage, capital expenditure and cash dividend as control variables in this study.

Finally, Tobin's Q is developed by James Tobin in 1969 as the ratio between the market value and replacement costs of total asset. It reflects the capital market expectation to the asset. Lang *et al*. (1991) develop a measure of free cash flow using Tobin's Q to distinguish between firms that have good investment opportunities and those that do not. They find that value could be created through acquisition if high Tobin's Q firm acquires low Tobin's Q firm. Thus, we follow this tradition to use Q as a proxy of acquisition ability.

β_2 in equation (5) is the vector of coefficients of corporate governance variables ($Gover_{it}$) including:

1) $BoardSize_{it}$ is the number of directors of a company;
2) $Meetingtimes_{it}$ is the board meeting times per annum;
3) $Inddprop_{it}$ is portion of number of independent directors among board members;
4) $Magtholding_{it}$ is the shares percentage holding by senior management;
5) $Duality_{it}$ 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);
6) $Nationalowned_{it}$ is a dummy variable representing the ownership (status of the largest share-holder having 7 different natures, designate 1 as state owned company and 0 for all others);
7) $(Nation*Duality)_{it}$ is an interaction dummy (1 refers to the situation that the company is state owned and CEO and chairman is separate, 0 otherwise);

Lipton and Lorsch (1992) argue that the board suffers from dysfunction if board size increases beyond the limit (about 9 members from their results). They also show that more board meeting times will lead to enhanced effectiveness of the board. Board size and meeting frequency may affect firm's acquisition decision. Empirical researches show mix-up results on the effect of independent directors on firm's acquisition decision. Hermalin and Weisbach (2003) summarize that the higher ratio of independent directors in board would make favorite decision to firm in the events of CEO turnover, CEO compensation, poison pills and hostile takeover. Principle-agency theory implies the senior management may be slack and opportunistic. Thus, shares holding by senior management are used to measure the self-monitoring effect in acquisition decision.

Boyd (1995) and Baliga *et al*. (1996) argue that duality of CEO and chairman would help to be creative and effective in decision making, information sharing and communication, thereafter to improve the operating performance. However, Goyal and Park (2002) argue that the person holding position of chair should be different from that holding CEO to maintain the independency and effectiveness of the board. Chen *et al*. (2008) argue that China state owned PLCs confronted risks of managerial entrenchment, and managerial agent issue is quite different from other firms owned by private shareholders hence the investment behavior differs significantly. Therefore, the identity of largest shareholder (state or private) is taken into account with regard to annual acquisition scale in the Chinese stock market.

(Table 2 around here)

Next, we examine the relation between presence of institutional shareholders and coordination and annual acquisition scale (*hypothesis 2*) by testing β_3 and β_4. β_3 is the vector of coefficients of the presence of the institutional shareholders ($Inst_{it}$). β_4 is coefficient of TS shareholding concentration ($Top5_{it}$). We only consider tradable shares owned by institutional shareholders and top 5 tradable shareholders because they can choose to sell them in the exchange market rather than accept the coordination of controlling shareholder, hence being more comparable with Parrino *et al*'s (2003) argument that some institutional shareholders vote with their feet by selling their shares as long as they are not satisfied with the performance of the management.

Currently, there are eleven kinds of investors in the Chinese TS market: 1) QFII; 2) SSF; 3) SF; 4) SIF; 5) trust firms; 6) insurance firms; 7) occupational funds; 8) brokers; 9) financial plans; 10) individuals and 11) others. Among them, we concentrate on the most important four types of institutional investors: QFII, SSF, SF and SIF among the top 10 tradable shareholders. TS shareholders (including institutional investors) have become more and more important in the ownership structure of Chinese PLCs. For example, QFII in top 10 tradable shareholders held about 6% of total shares in 2008 in contrast to only 0.6 percent in 2003. SIF's percentage also increased from 0.16% to about 2%. The total share proportions of top 5 tradable shareholders are the proxy of TS concentration which also increased from 1.79% in 2003 to 17% in 2008 (Table 2).

In equation (5), year and industrial dummies are always controlled to capture time dynamics and industry fixed effects; ε_{it} is a random error.

There are still some factors influencing acquisition scale, known but hard to quantify. These factors include some details of deal: the target selection, 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 shareholders' interest, such as excessively over payment, bad timing to acquire, and blurred acquisition motivation. All elements mentioned above are captured by the residual error in equation (5), i.e. ε_{it}.[4] These variables are also applied into selection equation (6) to examine the relation between presence of institutional shareholders and TS concentration and acquisition probability (*hypothesis 3-5*).

5. Empirical Results

H1. We adopt stepwise method to examine the sensitivity of variables. Five different

[4] Since the take-over market in China is still in the infancy stage and almost no anti-taken case happens during 2003-2008, so we ignore the relation between anti-takeover and annual acquisition scale in this paper.

specifications are established to quantify equation (5). All specifications include year dummies and industry dummies. Table 3 presents the results from these models. Column 1 shows the expected signs of variables from theory. The specification (1) only includes the corporate finance variables. This simple model shows that variables of cash-holding, capital expenditure, leverage and Tobin's Q are significantly positively associated with annual acquisition scale as we expect. No significant association is found between sales, intangible asset and annual acquisition scale. It suggests that firm size is not important as cash resources for acquisition decision in the Chinese PLCs. Resources of acquisition are mainly tangible asset such as cash rather than the intangible asset such as R&D and branding. Cash dividend payout does not have important role in acquisition scale, which is consistent with the fact that the Chinese PLCs have no constraints of cash dividend and do not take cash dividend into account when they make the acquisition decision.

Based on the specification (1), extra variables concerning corporate governance characteristics are added into the specification (2) to examine whether and how certain governance mechanisms impact the acquisition scale. These governance characteristics include board size, annual board meeting times, the portion of independent directors in board and senior management holding. The specification (2) shows that, financial variables remain similar coefficients to what they behave in the first model. Board size, annual board meeting times and the portion of independent directors in board are found to be significantly positively related to acquisition scale. Giving shares to executives shows a good self-monitoring effect. These results confirm findings in literature that bigger board may bring more irresponsible acquisition while independent directors could not alleviate this problem.

(Table 3 around here)

We further explore another two corporate governance variables (duality of CEO and national ownership) impact on acquisition scale in the specification (3). Both of these two variables are dummies. For variable *Duality*, it takes value of 1 if the CEO and Chair are held by different individuals and 0 otherwise. The coefficient for variable CEO duality -0.335, significant at 1% level, indicates that the company with departure of CEO and Chair would have about 33.5% lower annual acquisition scale than PLCs without departure of CEO and Chair. It possibly suggests that CEO duality mechanism works in restricting overconfident acquisition.

For variable *National owned*, it takes value of 1 if the company is state owned enterprise, and 0 otherwise. State Owned Enterprises are supposed to acquire more because of the external driving forces exercised by the Chinese government at different levels. However, the insignificant coefficient of owner variable suggests that whether the largest shareholder is stated owned or not has no significant impact on annual acquisition scale. It is consistent with our hypothesis that annual acquisition scale should be unrelated with ownership structure because the acquisition market offers are random with high uncertainty and transaction costs.

The specification (4) is a sensitivity test to examine the relation between the identity and separation of duality with regard to acquisition scale. We design an interaction term by multiplying national ownership and duality, identifying the effect of the state owned PLCs with departed CEO and Chair on acquisition scale. No significant coefficient found for this interacted variable confirms our finding that annual acquisition scale is dependent on random market offers and not related to national ownership.

Another interesting finding is that the intangible capital shows some restricting effect on acquisition after we control duality and national ownership. It may be from a fact that only national owned firms existed before the 1979 reform. National owned firms have longer history and more intangible capital than private owned firms. Intangible capital

variable may reflect some positive effect of national ownership in specification (1-3), so not as significantly negative in specification (4). Specification (1)–(4) justify hypothesis 1 that the annual acquisition scale of Chinese PLC's is positively related to its acquisition ability which is determined by characteristics of corporate finance and governance.

H2. The further investigation focuses on the monitoring effect of different institutional shareholders on annual acquisition scale. We intend to indentify whether any particular or in general, institutional shareholders will restrict or encourage annual acquisition scale. Specification (5) in Table 3 tests the monitoring effect of institutional shareholders by regressing different institution's holding percentages and TS concentration on annual acquisition scale. All control variables of corporate finance and governance shows reasonable and consistent signs with the results in specification (1)–(4).

Institutional ownership and TS concentration show no significant effect on annual acquisition scale, which is consistent with selection assumption that the institutional shareholders may only affect whether to acquire rather than how much to acquire (Heckman, 1979; Qiu, 2008). Specification (5) justifies hypothesis 2 that the presence of institutional shareholders and TS concentration are not related to the annual acquisition scale because the acquisition market offers are random.

H3-5. Table 4 presents results of traditional two-step and maximum likelihood (controlling industry cluster) Heckman selection model. Two-step is a simplified model for large sample as ML estimation would be more efficient for a small sample. Heckman selection model allows likelihood of acquisition to be a function of institutional shareholders, top 5 shareholders, and (implicitly) the expected acquisition ability (via the inclusion of all explanatory variables of corporate finance and governance in acquisition equation, which we think determine the latent acquisition ability). This specification loosens the assumption that the coordination process of institutional shareholder would not consider the corporate acquisition ability.[5] Thus, we use composition of institutional shareholders and Top5 to determine whether acquisition scale is observed or not (selected or not selected).

The first big change is that we are using the full sample of about 8000 PLCs in the selection regression, compared with the acquisition sample of about 2000 PLCs in above regressions. Second, we find that institutional shareholders such as QFII, SSF, SF, SIF and top 5 TS shareholders significantly affect the acquisition probability in Table 4. SSF, SIF and top 5 TS shareholders can increase acquisition probability while QFII decreases the chance. Hypothesis 3 is only justified for those small and inside institutional shareholders such as SSF and SIF, the presence of which is positively related with the chances of acquisition as they collude with controlling shareholders and management. Hypothesis 5 is only justified for QFII, which is the only institutional investor containing the acquisition probability. These results suggest that only large and outside institutional shareholders such as QFII reject the coordination proposal of controlling shareholders and management (Black (1990); Opler and Sokobin (1995); Borokhovich *et al*. (2006)). Other smaller and inside institutional shareholders such as SSF and SIF would choose to collude with controlling shareholders and management (Zeng *et al*. (2011)). Hypothesis 5 is justified that the more concentrated are the TS shareholders they are more likely to be

[5] We also tried a sensitivity test on the selection of institutional shareholders without considering on latent acquisition ability (excluding corporate finance and governance characteristics in selection regressions). The results from this test are very similar to those in Table 4 hence not reported here.

coordinated by controlling shareholders and management on acquisition decision hence positively related with the chances of acquisition.

Thirdly, selectivity effect ($\lambda=\rho\sigma$) is significantly negative. Likelihood-ratio (LR) tests of independent equations ($\rho = 0$) are easily rejected for two ML specifications. The robust standard errors in ML (controlling industry cluster) tend to be a bit larger, but we notice no systematic difference. This finding is not surprising because the Chinese PLCs are mainly public-owned hence no industry-specific or any other characteristics that would deviate from the assumptions of the Heckman model. These tests clearly justify the Heckman selection equation with these data. Finally, comparing the robust results of ML (controlling industry cluster) with column (4) of Table 3, the selection biases for all variables of corporate finance and governance in a simple OLS are upwards or insignificant except that leverage, Tobin's Q, board size and independent director are significantly biased downwards.

(Table 4 around here)

6. Conclusions

The extant literatures mention little about the monitoring effect of institutional shareholders in the Chinese PLCs' acquisition. With recent available data of the Chinese stock market, we find evidence that large and outside institutional shareholders such as QFII may reject the coordination proposal of controlling shareholders and management, and decrease the acquisition probability. Other smaller and inside institutional shareholders such as SSF and SIF would choose to collaborate with controlling shareholders and management. And, the concentration of TS is also important for the coordination process in acquisition decision. More concentrated TS are positively related acquisition probability.

This research is still limited by the data availability of acquisition activity in the Chinese stock market. Information on acquisition deal known to influence acquisition decision but hard to quantify, are still unavailable. For example, detailed information of the selection and coordination process of strategic alliances, especially the board voting on acquisition is not available in our data. Behaviors by management deviate from shareholders' interest, such as excessively over payment, bad timing to acquire, and blurred acquisition motivation are not clear yet. We have to postulate a simple collaboration model between controlling shareholders and management. However, with the process of split share structure reform since 2005, institutional shareholders developed from nothing to powerful bargaining parties in corporate management. Our research provides a unique experiment on the effect of institutional investment and shareholding structure on PLCs' acquisition decision and shed new light into the management decision of acquisition in an emerging market like China. More accurate theoretical model and empirical investigation should be developed in future research. This research will continuously induce great interest of both academy and practitioners.

Table 1: Annual acquisition of the Chinese PLCs, 2003-2008

Year	PLCs number	Acquiring PLCs number	Acquiring PLCs Proportion (%)	Total acquisition scale (Million ￥)	Average acquisition scale (Million￥)
2003	1,261	299	23.7	50,767	170
2004	1,352	296	21.9	76,420	258
2005	1,399	239	17.1	36,002	151
2006	1,430	292	20.4	78,427	269
2007	1,537	476	31.0	279,564	587
2008	1,583	515	32.5	276,295	536
Total	8,562	2,117	24.7	797,475	377

Data source: the CCER PLC database 2003-2008.

Table 2 Variable Statistics Description
Acquiring sample (AS>0, Observation No. =2,117)

	2003				2008			
Variable	Mean	SD	Min	Max	Mean	SD	Min	Max
Log Acquisition Scale	17.37	2.23	0.00	22.58	18.09	2.23	0.00	24.48
Log Sales	20.47	2.15	-8.52	26.76	13.88	12.87	-8.52	25.10
Log Cash	19.30	1.21	14.89	23.58	19.74	1.46	11.36	24.55
Log Intangible Asset	15.30	6.85	-9.21	22.24	16.77	6.21	-9.21	23.88
Leverage	0.48	0.18	0.05	1.63	0.50	0.18	0.00	0.88
Log Cap Exp	18.18	1.80	10.03	24.59	18.66	1.97	9.21	26.13
Cash Dividend	0.08	0.10	0.00	0.50	0.10	0.14	0.00	1.20
Tobin's Q	1.55	0.85	1.01	4.59	1.87	1.06	-0.03	4.59
Board Size	6.69	1.69	3.00	14.00	6.25	1.69	3.00	14.00
Meeting times	8.20	2.98	3.00	25.00	10.65	3.94	4.00	36.00
Independent Director	0.50	0.12	0.00	1.33	0.60	0.18	0.00	1.67
Management holding	0.01	0.03	0.00	0.42	0.05	0.12	0.00	0.78
Duality	0.90	0.30	0.00	1.00	0.89	0.31	0.00	1.00
National Owner	0.74	0.44	0.00	1.00	0.56	0.50	0.00	1.00
National owner *Duality	0.66	0.47	0.00	1.00	0.50	0.50	0.00	1.00
QFII†	1.34	2.10	0.00	8.87	9.02	10.18	0.00	45.59
SSF	0.01	0.02	0.00	0.25	0.08	0.35	0.00	6.26
SF	0.12	0.36	0.00	3.39	0.13	0.36	0.00	5.49
SIF	0.30	0.48	0.00	3.28	2.44	3.76	0.00	25.79
Top5	2.26	2.37	0.05	9.41	16.94	10.93	0.27	51.64

Full sample (AS>0 or AS=0, Observation No. =8,562)

	2003				2008			
Variable	Mean	SD	Min	Max	Mean	SD	Min	Max
Log Acquisition Scale††	17.37	2.23	0.00	22.58	18.09	2.23	0.00	24.48
Log Sales	20.40	1.55	-8.52	26.76	13.22	13.05	-8.52	26.02
Log Cash	19.17	1.22	14.19	23.58	19.54	1.43	11.36	24.82
Log Intangible Asset	14.33	8.12	-9.21	22.24	16.60	6.00	-9.21	23.89
Leverage	0.47	0.26	0.01	4.34	0.48	0.19	0.00	0.96
Log Cap Exp	17.93	1.81	9.35	24.59	18.34	1.98	9.21	26.13
Cash Dividend	0.07	0.10	0.00	0.68	0.09	0.16	0.00	2.00
Tobin's Q	2.01	1.35	0.45	4.59	2.15	1.31	-9.12	8.05
Board Size	6.71	1.73	3.00	15.00	6.22	1.68	2.00	15.00
Meeting times	7.54	3.15	2.00	32.00	9.68	3.49	3.00	36.00
Independent Director	0.50	0.13	0.00	1.33	0.60	0.18	0.00	1.67
Management holding	0.02	0.06	0.00	0.75	0.05	0.13	0.00	0.78
Duality	0.90	0.29	0.00	1.00	0.91	0.29	0.00	1.00
National Owner	0.77	0.42	0.00	1.00	0.62	0.49	0.00	1.00
National owner *Duality	0.70	0.46	0.00	1.00	0.56	0.50	0.00	1.00
QFII	0.57	1.51	0.00	8.87	5.82	9.40	0.00	45.59
SSF	0.01	0.02	0.00	0.85	0.07	0.33	0.00	6.26
SF	0.07	0.25	0.00	3.39	0.11	0.50	0.00	14.05
SIF	0.16	0.38	0.00	3.28	2.00	3.52	0.00	25.79
Top5	1.79	2.17	0.05	9.41	17.00	12.26	0.27	60.10

Data source: the CCER PLC database 2003-2008.

†Institutional shareholders (QFII, SSF, SF and SIF) and top 5 TS shareholders (Top5) are weighted proportions of total shares (including NTS and TS) using total assets of PLCs as weights.

†† Log form acquisition scale is regarded as missing value when acquistion did not happen (AS=0).

Table 3: Regression analysis of annual acquisition scale, using equation (5)

	Predicted sign	(1)	(2)	(3)	(4)	(5)
Log sale	+	0	0.001	0	0	0.001
		0.005	***0.005***	***0.005***	***0.005***	***0.005***
Log cash holding	+	0.201***	0.179***	0.174***	0.174***	0.163***
		0.035	***0.035***	***0.035***	***0.035***	***0.036***
Log intangible asset	+	-0.01	-0.011	-0.011	-0.011	-0.011*
		0.007	***0.007***	***0.007***	***0.007***	***0.007***
Leverage	+	0.693***	0.437*	0.427*	0.427*	0.451*
		0.255	***0.254***	***0.254***	***0.254***	***0.255***
Log capital expenditure	+	0.256***	0.240***	0.237***	0.237***	0.222***
		0.03	***0.029***	***0.03***	***0.03***	***0.03***
Cash dividend	+	0.333	0.429	0.431	0.431	0.357
		0.312	***0.309***	***0.309***	***0.309***	***0.314***
Tobin's Q	+	0.106**	0.116***	0.117***	0.117***	0.118***
		0.045	***0.045***	***0.045***	***0.045***	***0.045***
Board size	+		0.065**	0.067**	0.067**	0.064**
			0.03	***0.03***	***0.03***	***0.03***
Meeting times	+		0.059***	0.060***	0.060***	0.058***
			0.012	***0.012***	***0.012***	***0.012***
Independent Director %	+ or -		0.620*	0.649*	0.651*	0.596
			0.364	***0.364***	***0.365***	***0.365***
Management holding	-		-2.239***	-2.162***	-2.158***	-2.131***
			0.474	***0.493***	***0.494***	***0.494***
Duality	+ or -			-0.333**	-0.378	-0.371
				0.139	***0.234***	***0.234***
National owned	+			0.058	-0.004	0.004
				0.096	***0.279***	***0.279***
National*duality	+ or -				0.069	0.047
					0.291	***0.291***
QFII	0					0.015
						0.012
SSF	0					-0.112
						0.1
SF	0					0
						0.025
SIF	0					0.016
						0.013
Top5	0					0.007
						0.009
Industry dummy		Yes	Yes	Yes	Yes	Yes
Year dummy		Yes	Yes	Yes	Yes	Yes
R-squared		0.154	0.175	0.177	0.177	0.178
N		1,998	1,998	1,997	1,997	1,997

Notes: The corresponding estimates of standard errors are reported below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 4: Regression analysis on acquisition scale, Heckman selection model

	Selection Biases	Heckman (2SLS)	Heckman (ML)	Heckman (ML, cluster)
4a. Acquisition regression: dependent variable Log Acquisition Scale				
Log sale	→	0	-0.004	-0.004
		0.005	***0.005***	***0.004***
Log cash holding	↑	0.167***	0.126***	0.126***
		0.035	***0.038***	***0.038***
Log intangible asset	↑	-0.012*	-0.014**	-0.014**
		0.007	***0.007***	***0.006***
Leverage	↓	0.438*	0.481*	0.481**
		0.253	***0.257***	***0.235***
Log capital expenditure	↑	0.221***	0.124***	0.124**
		0.031	***0.032***	***0.056***
Cash dividend	↑	0.399	0.283	0.283***
		0.308	***0.334***	***0.074***
Tobin's Q	↓	0.126***	0.187***	0.187***
		0.045	***0.048***	***0.068***
Board size	↓	0.070**	0.092***	0.092***
		0.03	***0.032***	***0.03***
Meeting times	↑	0.051***	-0.008	-0.008
		0.013	***0.014***	***0.016***
Independent Director %	↓	0.681*	0.874**	0.874**
		0.363	***0.394***	***0.397***
Management holding	↑	-2.217***	-2.525***	-2.525***
		0.492	***0.533***	***0.589***
Duality	→	-0.371	-0.335	-0.335*
		0.233	***0.256***	***0.198***
National owned	→	0.032	0.287	0.287
		0.278	***0.303***	***0.28***
National*duality	→	0.06	0.018	0.018
		0.289	***0.315***	***0.213***
4b. Selection regression: dependent variable acquisition dummy†				
QFII		-0.020***	-0.013**	-0.013
		0.007	***0.006***	***0.01***
SSF		0.153**	0.140**	0.140***
		0.063	***0.058***	***0.027***
SF		-0.019	-0.011	-0.011
		0.012	***0.013***	***0.03***
SIF		0.074***	0.059***	0.059***
		0.008	***0.007***	***0.01***
Top5		0.057***	0.048***	0.048***
		0.004	***0.004***	***0.008***
Mills				
Selectivity effect (lambda=rho*sigma)		-0.254*	-1.853***	-1.853***
		0.143	***0.109***	***0.344***

LR test of indep. eqns. (rho=0)	-	chi2(1) =60.37 Prob > chi2 = 0.00	chi2(1) =32.71 Prob > chi2 = 0.00
Industry dummy	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes
N	6,639	6,639	6,639

Notes: The corresponding estimates of standard errors are reported below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% level, respectively.
† Results of corporate finance and governance characteristics in the selection regression are not reported in this table to save space. Interested readers can contact with authors.

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