

12-2009

## Acquiring Capacity and Acquiring Behavior of Chinese Firms

Jianguo Chen  
*Massey University*

Jing Chi  
*Massey University*

Shu Zhu

Follow this and additional works at: <https://digitalcommons.pepperdine.edu/jef>

### Recommended Citation

Chen, Jianguo; Chi, Jing; and Zhu, Shu (2009) "Acquiring Capacity and Acquiring Behavior of Chinese Firms," *Journal of Entrepreneurial Finance and Business Ventures*: Vol. 12: Iss. 4, pp. 87-104.  
Available at: <https://digitalcommons.pepperdine.edu/jef/vol12/iss4/6>

This Article is brought to you for free and open access by the Graziadio School of Business and Management at Pepperdine Digital Commons. It has been accepted for inclusion in The Journal of Entrepreneurial Finance by an authorized editor of Pepperdine Digital Commons. For more information, please contact [Katrina.Gallardo@pepperdine.edu](mailto:Katrina.Gallardo@pepperdine.edu), [anna.speth@pepperdine.edu](mailto:anna.speth@pepperdine.edu), [linhgavin.do@pepperdine.edu](mailto:linhgavin.do@pepperdine.edu).

# **Acquiring Capacity and Acquiring Behavior of Chinese Firms<sup>±</sup>**

**Jianguo Chen<sup>\*</sup>**  
**Massey University,**

**Jing Chi<sup>\*\*</sup>**  
**Massey University,**

**and**

**Shu Zhu<sup>\*\*\*</sup>**  
**Massey University**

China's short stock market history has already seen three merger waves, yet little is known of the performance drivers of acquirers. Using an acquirer's announced target value as the proxy of the firm's acquiring capacity, the link between that and its operational and/or financial conditions was investigated. Cash reserve ratio was significant in determining capacity: a firm with a higher cash ratio will, on average, take a larger target firm in both absolute value and relative measure. A larger acquirer size is associated with a larger takeover size, but a lesser target ratio is relative to the size of the acquirer. Firms' debt and profitability ratios do not explain the target size.

## **Introduction**

Merger and acquisition have been widely used as a corporate tool in developed Western countries; but were not prevalent in China until 1987 when the first Chinese merger wave came. With the development of the Chinese stock market and the reform of Chinese

---

<sup>±</sup> Jianguo Chen, Jing Chi, and Shu Zhu, are all from Massey University in New Zealand. The authors wish to thank the reviewers Chunchi Wu and Junesuh Yi for their very helpful comments.

<sup>\*</sup> Jianguo Chen is a Senior Lecturer at Massey University in New Zealand. His research interests include empirical corporate finance, international portfolio management and financial risk analysis.

<sup>\*\*</sup> Jing Chi is a Senior Lecturer at Massey University. Her research interests include financial investments, empirical corporate finance, and international finance.

<sup>\*\*\*</sup> Shu Zhu was a postgraduate student at Massey University.

state-owned enterprises, China experienced its second merger wave from 1991 to 1996 and its third wave from 2003 to 2006; but still little is known about the major operational or financial characteristics that motivated those firms taking merging and acquisition action in China. We have initiated here an investigation to fill the gap.

M&A have increasingly captured the attention of public policy makers, corporate managers and financial investors. Past literature about the relation between acquisition behavior and bidders' financial characteristics is extensive, but not many scholars have studied the situation in China. The purpose in this study was, therefore, to investigate the acquiring capacity of a firm. In particular we test the effect of a firm's financial characteristics on its acquisition capacity by using the absolute size of the acquisition and the relative size of the acquisition as proxies. This method has never been used in previous literature. This method, measuring the difference in target size as an indicator for acquirers' takeover capacity, is different from the traditional Logit model which measures the difference between bidders and non-bidders. Although the two models take different forms in regression, we have assumed that the difference is in degree, not in fundamental nature. We tried to use the available theories explaining the motivations of takeover to explain why a firm chooses a larger size takeover. The traditional Logit model is also employed for comparison.

By examining Chinese acquisition cases between 2001 and 2006, this research report presents new evidence on M&A in China. The OLS regression approaches confirm that bidders higher cash reserve tend to acquire larger firms in both terms of absolute value and relative target ratio. It is also confirmed that bidders with larger size tend to acquired larger firms but smaller in relative target ratio. The results are extension of existing evidence of describing the likelihood of a firm taking acquiring action. The other hypotheses of operational performance and debt capacity are not supported by our results.

The remainder of the paper is organized as follows. In section I, we briefly review the literature and in section II we describe the development of mergers and acquisitions in China. In Section III we develop and discuss the models used in the study and section IV contains the empirical results. Finally we draw conclusions in section V.

## **I. Literature review**

Previous literature has provided a clear picture of incentives for merger and acquisition, which have been the primary vehicles for value creations (Jarrell, Brickley and Netter (1988); Jenson and Ruback (1983)). The motivations can be summarized as follows: 1) synergistic gain by merging the resources of two firms (Bradley, Desai and Kim (1988)); 2) exploitation of asymmetric information between acquiring firms' managers and acquiring or target firms' shareholders; 3) solution to agency problems associated with free cash flow; 4) increase of market shares; 5) gaining of tax benefits; 6) reduction of financial risk and avoidance of bankruptcy (Kumar and Rajib (2007)). Furthermore, some researchers state that merger and acquisition is also motivated by misevaluation of the target firms or stock market or managers' empire-building preference (Roll (1986), Shleifer and Vishny (2003), and Jenson (1986)). Recently, Folta and O'Brien (2008) provide a threshold model to describe the merging and acquisition behavior of management which will tolerate a negative abnormal return. The prediction is consistent to their pursuit for best long-term interest of shareholders.

There are many motives for M&A and certain characteristics make firms more likely to become involved in M&A. A similar stimulus could affect their choice of target size. More operational and financial synergy could be a good reason for acquiring a larger sized target.

The agency problem and tax advantage can very likely explain discrepancies in the sizes of the parties in a takeover. If acquisition is motivated by a certain financial rationale, then the acquirers should indicate some special characteristics of their actions that explain this size difference.

The study of financial characteristics started in the early 1960s; when researchers focused mainly on the likelihood of being targeted by comparing the financial characteristics of acquired firms to those of the non-acquired firms. According to these investigations, smaller sized firms, and those with lower earning ratios and growth rate, poor liquidity and less debt were more likely than others to become targets (Monroe and Simkowitz (1971); Harris et al. (1982); Palepu (1986); and Kumar and Rajib (2007)). However, some empirical tests display an opposing view on a few ratios. For instance, Wansley (1984) and Owen (1995) observed that target firms have higher growth potential and more liquidity than non-target firms.

While plenty of researchers investigated the profitability of firms that have been acquired, there are not many such empirical papers that test the acquiring firms. Trahan and Shawky (1992) made an attempt in this area. They selected 1163 US-listed firms that engaged in manufacturing and mining industries and completed their acquisitions between 1984 and 1986. By utilizing Logit probability models to compare bidders' and non-bidders' financial ratios, their results suggest that firms with larger size and longer history that paid a large proportion of earnings out as dividends have greater probability of engaging in acquisitions than do others. However, there is no other significant relationship between the bidder's characteristics and the likelihood of acquisition to be found in the paper. Sorensen (2000), who studied the characteristics of acquirers, targets and non-merger firms, documents that acquiring firms are more profitable than target and non-merging firms. His findings confirm that modern mergers are primarily motivated by companies with above average margins seeking profit improvement by rapid expansion of sales.

Recently, Pasirous and Gaganis (2007) examined the financial characteristics of 47 acquirers that were involved in acquisitions in the Asian commercial banking sector over the period 1998 to 2004. By employing the binary logistic model, they found that the probability of making an acquisition increases with the bidder's size and cost efficiency, proxied by cost to income ratio and profitability. However, after partitioning the sample into two sub-periods (1998-2000; 2001-2004), only size remained significant. Also, Kumar and Rajib (2007) compared 227 acquirers to 215 target firms in India and reported that the acquiring firms tended to have higher P/E ratios, higher book values, higher cash flows, and higher values of liquid assets, but lower leverage than the target firms.

As the literature is focused mainly on the UK and US markets, what determines acquisition behavior in China has not yet been conclusively demonstrated, nor do there appear to be any especially Chinese characteristics in acquisition activities, particularly since China has become a member of the WTO. This study is designed to shed some light on the question. Additionally, we propose a new proxy for the acquiring capacity of a firm. We use the actual market value announced by acquirers of a targeted firm as an indication of its acquiring capacity. This proxy of target size has not been used in previous literature. We argue that it might be an alternative to the dummy variable used in the Logit model to measure acquiring behavior. Based on the assumption that higher take over capacity firms will have a tendency to select larger firms for acquisition; the announced value of the targeted firm could be used as an indicator to measure an acquirer's degree of aggressiveness in the action and thus its

acquiring capacity. With this measure, the study is unique and the results are interpreted based upon this assumption.

## **II. Merger and acquisitions in China**

Although merger and acquisition programs already have a long history in the West, they are relatively new in China. Since 1987, the first merging wave occurred mainly in a few cities, with total transactions of \$32.1 million. But in the second wave, the M&A activities expanded to the whole country and the transactions dramatically totaled \$5.27 billion between 1991 and 1996 (Koplyay and Fu (2001)). Since 2001, China's joining the WTO has brought more pressures to bear on Chinese firms and made them feel that it is more difficult to succeed in this highly competitive market. Thus, how to expand market shares and compete in the global market have become the most urgent questions for Chinese firms. In these circumstances, M&A, which is known as an effective expanding strategy, has been considered as a good choice for many firms. (Cefis, Marsili, and Schenk (2009) have explained the mechanism of the external firm growth due to mergers and acquisitions and provided their evidence on the firm size issue.) Moreover, with the implementation of state-owned shares restructuring and the reform of share ownership divisions, China experienced its third merging wave in the period after 2003, which was the most active stage for M&A in Chinese history.

In the earlier period, all the acquisition activities were paid for in cash. It was not until 1998 that equity payment was first used in China. Although this new method avoids risky cash transactions, it was still unpopular then in China's M&A because equity payment involves issuing new shares, which causes dilutions and reduced acquirers' EPS and net assets per share. Besides, shareholders of target firms may sell the stocks immediately after receiving them and this will decrease bidders' share price greatly. Moreover, as equity payment was just beginning, the regulations and guidelines in this area were still incomplete and incompetent. Therefore, cash payment remains the most commonly used method of settlement in acquisition activities.

## **III. Acquisition models**

We have assumed that there exists a certain type of probability for corporations' acquiring behavior. We have also assumed that a firm's acquisition probability is related to its operational and financial conditions. This belief is based mainly upon the merging and acquisition theories of operational and financial synergies. The higher a potential synergy exists in a firm, the higher the chance that the firm will take action to acquire another firm. We can have a function (F) in the form of

Acquiring Probability (T) = F (operational and financial ratios of a firm, T-1).

The acquiring probability of a firm to acquire another firm in the next time period (T) is a function of some current (T-1) operational and financial ratios of the firm.

This probability is not observable directly, but it is possible to measure it through some observable proxies or actions of a firm, for example by its action of making an acquiring announcement and/or realizing an acquisition.

Past researchers have all used this acquiring probability in their studies. In contrast to all of them we have tried to explore the answers to other inquiries: if a firm takes the action of acquiring, what is the appropriate size it usually takes? What elements determine this acquisition size? Is there any observable relation between the acquired size and an acquirer's financial positions? We could not find any literature concerning this relation, so this study is the first attempt to answer these questions.

The first hypothesis we can develop concerns the relation between a firm's financial liquidity and the size of the firm to be acquired. Higher liquidity makes it easier for a firm to finance an acquisition at a lower cost. The second hypothesis is about a firm's debt level. The higher the debt level of an acquirer (and thus higher financial risk), the higher will be the financing cost of takeover action. The third relation we have explored deals with a firm's profitability. We argue that a higher profitability firm has more growth opportunity, and if it decides to acquire another firm, it will target a firm of larger size. The last relation we have tested in this study concerns the size of an acquirer. The relation is that relatively larger firms possess stronger financial capacity and can afford higher values of acquisition. To test these relations we have used both absolute acquisition value and relative ratio of acquired value against the acquirer value to perform the following tests.

We have tested the following two models in the study:

$$\begin{aligned} &\text{Probability (acquisition)} \\ &= F(\text{CurrentRatio}, \text{Cash}, \text{D/A}, \text{FirmSize}, \text{NPM}, \text{ROA}, \text{FixAssets}) \end{aligned} \quad (1)$$

and

$$\begin{aligned} &\text{Acquired Size (or target value to acquirer value ratio)} \\ &= \alpha + \beta_1 \text{CurrentRatio} + \beta_2 \text{Cash} + \beta_3 (\text{D/A}) + \beta_4 \text{FirmSize} \\ &\quad + \beta_5 \text{NPM} + \beta_6 \text{ROA} + \beta_7 \text{FixAssets} + \text{Acquire Type Dummies} \end{aligned} \quad (2)$$

The dependent variable in Model (1) is assigned the value of one if the firm has announced an intention to acquire and zero otherwise and a Logit model is used (which has been widely used in the literature). It compares the financial characteristics of bidders to those of non-bidders.

In Model (2) we use either absolute size (target value) or relative size (target value/acquirer value) as the dependent variable. A pooled data regression is used to estimate the parameters.

The major variables used in the models are described in the following hypotheses:

A. *Liquidity hypothesis: firms with higher cash levels are more likely to take a higher value for an external acquisition program.*

Based on the agency problem and Jensen's (1988) free cash flow theory, managers with excess cash flow may have the incentive to invest in projects with negative net present values, rather than paying back to shareholders. This conflict of interest between shareholders and managers over payout policy is more severe when substantial cash is generated. Moreover, the free cash flow theory also states that M&A are likely to destroy rather than create value; acquisition is the evidence for the conflict of interests and is used as a route for managers to spend cash rather than paying it back. Thus a positive relationship between firms' cash level and their acquisition level and action is predicted. Two measurements of cash level are used in the model. One is the ratio of cash to total assets (generally called Cash Hypothesis in M&A literature); the other is current ratio (Current Ratio).

B. *Leverage hypothesis: firms with higher leverage are less likely to carry out or take a lesser value in an external acquisition program.*

According to Myers and Majluf's (1984) financial slack theory, value is created when a slack rich firm combines with a slack poor one; financial slack is the sum of cash in hand and

unused debt capacity. This means that firms with low financial leverage may be able to create value when acquiring firms with high financial leverage, because bidders can pursue the profitable but unfunded investment opportunities from the targets and realize financial synergy. A low leverage signals higher unused debt capacity. So we expect a negative relation between firms' leverage and acquisition level and action. Leverage is presented by the ratio of total debt to total assets (D/A).

*C. Firm size hypothesis: Larger firms are more likely to carry out or take a larger value in an external acquisition program.*

Larger firms often have greater incentives for acquisition as they are able to realize the operating synergies resulting from the economies of scales or scope. Moreover, these firms also have more efficiency and financial resources to acquire other firms (Trahan and Shawky (1992); Kumar and Rajib (2007)). This supposes that a larger firm will have a higher probability of being a bidder and will take a higher value in an acquisition program. Firm size is proxied by total assets (FirmSize).

*D. Internal investment hypothesis: if a firm invests heavily in internal growth, it is less likely to carry out or take a lesser value in an external acquisition program*

If cash were to be paid out as dividends or invested in internal growth, acquisition activities would be rare. The internal investment proxy used is the fixed assets (FixAssets), including equipment, plant, properties and other long-term assets, as the percentage of total assets (Trahan and Shawky (1992)). The natural prediction is that a higher fixed asset ratio firm will have more difficulties in financing an acquisition activity, so there is a negative relation to the takeover action or lesser amount in the action.

*E. Management performance (or profitability) hypothesis: firms with superior management are more likely to carry out or take a larger value in an external acquisition program.*

Based on Jensen (1986), acquisitions will lead to improved performance, if the managers are able to maximize the value of corporate assets, which is indeed a function of their previous history of performance. Thus, acquirers - or more aggressive acquirers - should indicate superior accounting performance compared with that of non-acquirers. Under this hypothesis, a positive sign on the performance coefficients is predicted. Return on assets (ROA) and net profit margin (NPM) are utilized as the accounting measures for management performance.

In addition to these financial characteristics, several dummy variables are added into the model; these are payment method (PMT, 1 for cash and 0 for others), acquisition type (AcqType, 1 for equity acquisition and 0 for others) and subsidiary acquisition (SubAcq, 1 for subsidiary acquisition and 0 for not).

#### **IV. Empirical Results**

Table I provides the distribution of sample firms in various industry sectors. Although the Conglomerates category has the most acquisition announcements, these firms are not from any one sector in particular, but in China the most frequent acquisition announcements (about 6% of all in the sample period) happened in the Chemical industry sector. All of the 27 listed specific industry sectors contain at least 10 acquisition announcements (more than 1.3%), which shows that such an event is not limited to a small number of industries.

Table II provides the basic statistics for these acquisitions by announcement year. It reveals that acquisitions occurred mainly between 2003 and 2005, and 42% (319 deals) happened in 2004. However, deals occurred rarely in 2001, 2002 and 2006.

This could well be explained by the time of implementation of some new government policies, and some natural events which happened in the period. At the beginning of 2001, joining the WTO was considered to have been a stimulus to the third M&A wave to China. However, in July of that year, the Chinese government issued a clause which was aimed to reduce the proportion of nationally owned shares to allow more shares to be freely traded in the capital market. This clause greatly increased the number of shares available for trading, and thus caused a market depression. Hence only a small number of acquisition were announced in 2001. From 2002 to the beginning of 2003, the outbreak of SARS caused a big scare for the health of people and the event significantly reduced business activities (including acquisitions) in China. After July 2003, when the government announced that the threat of SARS was over, the Chinese economy started to recover, which caused a rapid increase in the number of acquisitions which reached a peak in 2004. In May 2005, the Chinese government decided to implement a reform of share ownership division, and again this policy caused a decrease in acquisition activities. In total, the deal value during the 6 years was 202.49 billion Yuan (US \$25.3 billion, much greater than that in the second merger wave of US\$5.27 billion). Most transactions were paid for in cash (97%); only 21 out of 762 deals being financed by equity. Furthermore, this indicates that more than 70% of bidders chose to acquire their target's equity rather than assets; this phenomenon continues to occur each year.

Table III presents the characteristics of the acquiring firms at the end of the fiscal year prior to the announcements. It shows that bidders' average total assets are 3,513 million, the mean purchasing value is 266 million and the mean relative size (acquired asset/acquirer asset) is about 22%. The median relative size is about 6%, which means that about half of the acquiring ratio is less than 6%, thus the acquisitions in the sample are mostly small in size.

For acquirers' operating and financial ratios, the mean value of current ratio is 1.52, and cash is only 0.06% of the total assets, which does not suggest a high liquidity. However, bidders have a low debt to assets ratio (23.84%), indicating that their unused debt capacity is high. They also show a high net-profit-margin (76.25%), but a low ROA (1.94%). The fixed assets account for 41.16% of the total assets.

Table IV shows the correlation matrix of bidders' characteristic variables. Most of them are not highly correlated with each other (less than 0.15 in absolute value). The only two noticeable pairs are Liquidity vs. Debt-to-assets ratio, and Debt-to-assets vs. ROA; their correlation coefficients equal -0.5 and -0.25 respectively, which indicates that Chinese firms with a higher debt ratio are more likely to be associated with a weaker liquidity condition and lower operating profit.

In order to investigate the acquiring behavior of a firm, we first use the popular Logit model to explain the difference between acquirers and non-acquirers. For that purpose, we have composed a comparable list of firms from the Chinese market. For each acquiring announced sample firm, we select another firm in the same industry sector with similar asset size, with no acquiring plan announced.

Table V compares the financial characteristics for 713 bidders with 713 non-acquiring firms by means of a Logit probability model. These two groups have similar total asset values (because of the sampling method used for non-acquiring firms), and so the coefficient on size variable is non-significant. The major conclusion we can draw from the table is that the fixed



asset ratio plays an important role in explaining the difference between acquirers and non-acquirers. The relation is positive at a 10% significance level for five out of six sub-periods, or for the whole period with an exception in 2006. This means that bidders tend to have higher proportions of fixed assets than do non-bidders. The fixed assets can be a proxy for either internal investment (more capital investment) or a firm's financial condition (security for debt capacity). The positive coefficient is not consistent with the internal investment hypothesis but it is consistent with financial capacity prediction. Beyond the fixed assets variable, the second interesting one is Net-profit-margin. The coefficient for the whole period is significantly negative and is negative also in each sub-period, but most are not statistically significant. The acquirers are those with lower profit margin compared with the non-acquirers; the result is actually a contradiction of the management hypothesis suggested above.

In the above Logit model test we cannot test the relation to the firm's size because of the sampling method. In the following tests, we use our proposed dependent variable of acquired size and relative size ratio as the proxies for takeover capacity. The model is discussed in the foregoing section and the results are reported in Table VI.

Regressions (1) and (2) are the results obtained using the logarithm of acquired value as the indicator for acquiring capacity, and regressions (3) and (4) are the results with relative size as the dependent variable. The same variables are used in regressions (1) and (2) except for size, and the same comparison between regression (3) and regression (4) on the size variable. It is interesting to note that both coefficients for size in regression (2) and regression (4) are statistically significant at the 1% level; but in opposite directions. The positive coefficient in regression (2) indicates that a larger acquirer will usually take a larger target value; and the negative sign for the coefficient in regression (4) shows that a larger acquirer usually takes an acquisition in a smaller percentage relative to its own size. The first result has frequently been reported in the past (not exactly the same as our results, since we used a different dependent variable) and the second result has not been reported previously. We can interpret these as positive size capacity but negative incremental size capacity when the acquirer is enlarged. Equally, if two smaller firms are combined into a larger firm, the larger firm will acquire a smaller value than the total value which could have been acquired by the two smaller firms. The conclusion is contradictory to the co-insurance effect of combining two smaller firms; because the combined firm has less financial risk and lower financial costs.

We recognize that there is potentially a problem of spurious relation in testing regression (4) because the acquirer size used in the denominator of the dependent variable is also one of the independent variables. We do not specifically test the spurious problem, but we can still draw some conclusions for the regression results based upon the observation that the results for other independent variables are generally consistent in regression (1) compared with regression (2), and in regressions (3) compared with regression (4). The first conclusion we can draw is about the cash ratio. The positive significant coefficients in all four regressions tell us that cash is significantly related to an acquirer's capacity to take acquisitions. A larger cash reserve ratio will support a larger size acquisition in market value and a larger target percentage relative to its own asset value. If a firm's cash is increased by 1%, the acquisition size could rise on average by more than 1.4 million Yuan or 0.6% of the acquirer value, which strongly supports the liquidity hypothesis. The positive relation is not observed in another liquidity variable of current ratio.

Another interesting result is the significant (at the 1% level) positive relation in the

relative size regressions (3 and 4) of the total fixed assets ratio. On average, 1% increase in an acquirer's fixed asset will increase the relative target size ratio by 0.6. Although the same is not observed in the purchased value regressions (1) and (2), the same positive relation is observed in the Logit model shown in Table (V). The positive relation for the fixed asset ratio is in the opposite direction from the internal investment hypothesis. The result could be explained by the reason that higher fixed assets may serve as financial collateral and thus higher financial capacity

The results for the other hypothesized variables do not show any consistent or significant relations. The leverage and management performance hypotheses are not supported by the study results.

Additionally we have the acquisition type, payment method and subsidiary acquisition dummies as additional control variables in the regression models of Table VI. The results show that the coefficients on the first two dummies are statistically significant for both target size and relative size regressions. They suggest that the acquisition size and relative ratio are relatively smaller if the acquisition is paid for in cash instead of equity and if the acquired is equity instead of asset. The results indicate that firms taking over by cash payment are generally less aggressive in terms of relative takeover ratios. Consistent behavior is also observed for the type of acquisition; firms are less aggressive in acquiring targets' equity than in acquiring their other types of assets (such as total assets or fixed assets only). Whether acquisition type is subsidiary or not is not statistically important in explaining the acquisition size.

In a summary of the empirical tests on firms' acquiring capacity, we have observed a significant positive size effect. The larger an acquirer's size, the greater the target value it may take over. We have also observed a negative relative ratio effect; a larger firm will take over a smaller ratio of target relative to its own size. The results indicate that an increase in a firm's size will not proportionally increase its acquiring capacity; the marginal capacity will decrease. Similar result is not seen in the previous literature for this negative effect; and this is our unique contribution to the literature. Another significant relation is observed for the cash ratio level. A higher cash ratio is associated with a larger target measured in both value and relative ratio. The level of cash is consistently related to a firm's acquiring capacity, which is consistent with the cash hypothesis (or liquidity hypothesis).

It is also interesting to note that the method of payment indicates a firm's acquiring capacity. If a takeover is announced with cash payment, it is usually associated with a smaller target in both market value and target value ratio. In interpretation of this result we are cautious because the great majority (97%) of our cases were settled in cash. The results might be explained by the observation made by Tuch and O'Sullivan (2007). When they examine the impact of bid characteristics on performance they found that acquisition transactions paid with cash and larger targets are associated with superior performance.

The other operational (return on asset and net profit margin) and financial variables (debt ratio) do not provide any observable relation to the target size in either absolute value or relative ratio terms. We may explain that for many Chinese takeover activities there is less operational consideration, thus it seems that it is affordability and regulatory or policy issues that play important roles in these acquisitions. This phenomenon is usually popular in a developing country such as China.

## **V. Conclusion and discussions**

This study was designed to investigate the acquiring capacity of a firm which is expressed as a function of its operational and financial variables. The proxy used for the acquiring capacity is the targets' market values expressed in the announcement made by the acquirers. We used both absolute target value and target ratio (relative to the acquirer value) in the investigation.

Our regression results show strong significant positive relation to the acquirer's firm size. These Chinese firms could significantly increase their acquiring power by increasing their own sizes. Probably this explains part of the reason why the merging waves occurred in China; those firms had the chance of increasing their acquiring capacity by acquisition. This explanation of merging wave could be an alternative to the principal-agent theory and market timing theory. This is similar to the theory of the prisoner's dilemma: when merging firms' improvement in acquiring capacity is sufficiently large, the non-acquiring firms may have a higher risk of being taken over. To avoid this situation more firms are involved in the tides. Thus the merging wave resembles a game of Prisoner's Dilemma: each individual chooses to merge despite the fact that their combined firm value is lowered by this action. This result is also consistent with the principal-agent theory, management can avoid being replaced by others by increasing their acquiring power through acquiring others first.

The size effect discovered in the test is not simply a repetition of the past because in our model we used a unique measure which has not been applied before. In past research the dummy variable has been used to compare the difference between acquirers and non-acquirers; this study is the first in which target size has been used as an indicator to measure the difference in the degree of acquisition. The question is about which major characters of a firm influence the level of a takeover action. To enable consideration to be given to this, the size effect developed in the study is actually an extension of the past results. Larger firms usually have higher probability of performing takeover action. Additionally, they have a tendency to take a larger target. A firm can increase its takeover capacity by increasing its own size, but the increased capacity will be diminishing with smaller incremental capacity.

We have also discovered in the study that the cash reserve ratio of an acquirer firm is significantly positively related to the size of target firm it will take over. This relation is true when the target size is measured in a relative ratio to the acquirer value. Chinese firms with a high cash ratio tend to choose a larger target in their acquisition.

The motivations and dynamics of merging and acquisition could be evolving over time, and theories developed to explain the behavior need to be updated from time to time. We hope the results reported here will serve this purpose.

## REFERENCES

- Bradley, Michael, Anand Desai, and E. Han Kim, 1988. Synergistic gains from corporate acquisitions and their divisions between the shareholders of target and acquiring firms. Journal of Financial Economics 21, 1: 3-40.
- Cefis, Elena, Orietta Marsili, and Hans Schenk, 2009, The effects of mergers and acquisitions on the firm size distribution, Journal of Evolutionary Economics 19, 1:1-20.
- Folta, Timothy B. and Jonathan P. O'Brien, 2008, Determinants of firm-specific thresholds in acquisition decisions, Managerial & Decision Economics 29, 2/3:209-225.
- Harris, Robert S., John F. Stewart, David K. Guilkey and Willard T. Carleton, 1982, Characteristics of acquired firms: Fixed and random coefficients probit analyses, Southern Economic Journal, 49, 1:164-184.
- Jarrell, Gregg A., James A. Brickley., and Jeffery M. Netter, 1988, The market for corporate control: the empirical evidence since 1980, Journal of Economic Perspectives 2, 1 (Winter): 49-68.
- Jensen, Michael C., 1986, Agency Costs of Free Cash Flow, Corporate Finance and Takeovers, The Market for Corporate Control AEA Papers and Proceedings 76, 2: 323-329.
- Jensen, Michael C. and, Richard S. Ruback, 1983, The Market for Corporate Control, The Scientific Evidence, Journal of Financial Economics 11, 1-4: 5-50.
- Koplyay, T., & D.C. Fu, 2001, Merger and acquisitions in China. Retrieved on June 6, 2005 from [http://www.cata.ca/files/PDF/Rources\\_Centres/china/MandainChina.pdf](http://www.cata.ca/files/PDF/Rources_Centres/china/MandainChina.pdf)
- Kumar, B.R., & Rajib, P. (2007). "Characteristics of merger firms in India: An empirical examination." *Vikalpa*, v32. no.1 January-March 2007.
- Monroe, Robert J and Michael A. Simkowitz, 1971, Investment Characteristics of Conglomerate Targets: A Discriminant Analysis, Southern Journal of Business 15, 1-16.
- Myers, Stewart C. and Nicholas S. Majluf, 1984, Corporate Financing and Investment Decisions When Firms Have Information that Investors Do Not Have, Journal of Financial Economics 13, 2:187-221.
- Owen, Sian, 1995, The Characteristics of Firms Involved in UK Acquisitions, Working Paper, Department of Economics and Finance, Brunel University, Uxbridge, Middlesex, UK.
- Palepu, Krishna G., 1986, Predicting Takeover Targets, Journal of Accounting and Economics 8, 1:3-35.
- Pasirous, F., & C. Gaganis, 2007, Financial characteristics of banks involved in acquisitions: evidence from Asia, Applied Financial Economics 17, 329-341.
- Roll, Richard, 1986, The hubris hypotheses of corporate takeovers, Journal of Business 59, 2 (April): 197-216.
- Shleifer, Andrei, and Robert Vishny, 2003, Stock market driven acquisitions, Journal of Financial Economics 70, 295-311.
- Sorensen, Donald E., 2000, Characteristics of Merging Firms, Journal of Economics and Business 52, 5:423-433.
- Trahan, Emery A. and Hany A. Shawky, 1992, Financial Characteristics of Acquiring Firms: An Industry Specific Approach, Review of Financial Economics 1, 2: 81- 94.

- Tuch, Christian and Noel O'Sullivan, 2007, The impact of acquisitions on firm performance: A review of the evidence, *International Journal of Management Reviews* 9, 2:141-170
- Wansley, J. A., 1984, Discriminant Analysis and Merger Theory, *Review of Business and Economic Research* 20, 1:77-85.

**Table I**  
**Sample Firms Distribution in Industry Sectors**

The sample observations are collected from available public acquisition announcements in the years 2001 to 2006. The industry sectors are classified in terms of the CSMAR database.

<i>Sector</i>	<i>No. of Acquisition (%)</i>	
<b>Conglomerates</b>	75	(9.84)
<b>Raw Chemical Materials and Chemical Products</b>	47	(6.17)
<b>Medicine Manufacturing</b>	45	(5.91)
<b>Production and Supply of Electric Power, Steam and Hot Water</b>	43	(5.64)
<b>Transportation Equipment Manufacturing</b>	40	(5.25)
<b>Estate Development and Operation</b>	32	(4.20)
<b>Retail Trade</b>	25	(3.28)
<b>Textile</b>	24	(3.15)
<b>Non-metallic Mineral Products</b>	24	(3.15)
<b>Smelting and Pressing of Ferrous Metals</b>	24	(3.15)
<b>Electrical Machinery and Equipment Manufacturing</b>	24	(3.15)
<b>Special Equipment Manufacturing</b>	22	(2.89)
<b>Communications and Related Equipment Manufacturing</b>	17	(2.23)
<b>Computer Application Service</b>	17	(2.23)
<b>Support Service for Transportation</b>	16	(2.10)
<b>Food Processing</b>	15	(1.97)
<b>Trade Brokers and Agents</b>	14	(1.84)
<b>Paper and Allied Products</b>	13	(1.71)
<b>General Machinery Manufacturing</b>	13	(1.71)
<b>Other Manufacturing</b>	12	(1.57)
<b>Agriculture</b>	11	(1.44)
<b>Beverage Production</b>	11	(1.44)
<b>Garment and Other Fabric Products Manufacturing</b>	11	(1.44)
<b>You Se Metal Ye Lian Ji Ya Yan Jia Industry</b>	11	(1.44)
<b>Tourism</b>	11	(1.44)
<b>Electronic Components and Appliance</b>	10	(1.31)
<b>Instruments and Appearance, Culture and Office Machinery Manufacturing</b>	10	(1.31)
<b>Public Facilities Services</b>	10	(1.31)
<b>Others</b>	135	(17.72)
<b>Total</b>	762	(100.00)

**Table II****Distribution of Acquisition by Announcement Year**

The acquisition percentage is relative to the total number of observations made in the sample period. All information was collected from acquisition announcements in the sample period.

Year	No. of Acquisition and (%)		Total deal value (million)	Average deal value (million)	Cash payment (%)	Equity acquisition %
	2001	16	(2.10)	2391	149	93.8
2002	1	(0.13)	410	410	100.0	100.0
2003	194	(25.46)	25478	131	97.9	69.1
2004	319	(41.86)	103710	325	96.9	78.47
2005	170	(22.31)	38004	224	99.4	70.0
2006	62	(8.14)	32491	524	91.9	75.8
<b>Total</b>	762	(100.00)	202485	266	97.2	73.1

**Table III**

**Acquiring Firm Characteristics**

The first two variables are used as dependent variables in the regressions and the others are independent variables

	<i>Mean</i>	<i>Media</i>	<i>Std</i>
<b>Total Acquirer Asset(million)</b>	3,513	1,505	8,313
<b>Purchasing value (million)</b>	266	45	1,627
<b>Relative Size%</b>	22.28	6.08	24.17
<b>Current ratio</b>	1.52	1.28	0.97
<b>Cash%</b>	0.06	0.01	10.04
<b>D/A%</b>	23.84	23.70	14.88
<b>Acquirer Size</b>	21.24	21.13	1.00
<b>Net-profit-margin%</b>	76.25	77.81	65.12
<b>ROA%</b>	1.94	2.84	3.14
<b>Total_fixed_assets%</b>	41.16	32.60	59.71



Table IV

## Correlation Matrixes

	<i>Current Ratio</i>	<i>Cash %</i>	<i>D/A %</i>	<i>Acq'er Size</i>	<i>N-P-M %</i>	<i>ROA %</i>	<i>TFA %</i>
<b>Current ratio</b>	1.00						
<b>Cash%</b>	-0.01	1.00					
<b>D/A%</b>	<b>-0.50</b>	0.02	1.00				
<b>Acquirer Size</b>	-0.14	0.09	0.07	1.00			
<b>Net-profit-margin%</b>	0.03	-0.03	0.00	0.02	1.00		
<b>ROA%</b>	0.14	0.12	<b>-0.25</b>	0.10	-0.04	1.00	
<b>Total Fixed Assets%</b>	-0.08	-0.10	0.05	-0.08	0.00	-0.01	1.00

**Table V**

**Logit Regression Results on Acquisition Probability**

The dependent variable takes a value of 1 if the firm has announced an acquisition plan and a value of 0 for a comparable firm with no acquisition announcement. The Logit regression is applied to the following model:  
 Probability (acquisition) = F (*Liquidity, Cash, D/A, FirmSize, NPM, ROA, FixAssets*) (1)

	<b>whole</b>	<b>2001</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>Current ratio</b>	-0.06 (0.20)	2.21 (0.28)	-0.17 (0.18)	0.03 (0.72)	-0.17 (0.13)	-0.11 (0.54)
<b>Cash</b>	-0.31 (0.53)	-8.3 (0.25)	0.18 (0.85)	-1.77 (0.04)	-1.39 (0.26)	2.64 (0.08)
<b>D/A</b>	-0.27 (0.48)	36.7 (0.11)	-0.66 (0.38)	0.32 (0.59)	-0.8 (0.39)	-1.85 (0.22)
<b>Acquirer Size</b>	-0.06 (0.89)	0.02 (0.98)	-0.07 (0.48)	-0.05 (0.59)	-0.03 (0.80)	0.25 (0.26)
<b>Net-profit-margin</b>	-0.22 (0.06)	-31.62 (0.04)	-0.08 (0.67)	-0.21 (0.22)	-0.3 (0.30)	-0.25 (0.54)
<b>ROA</b>	0.72 (0.16)	65.09 (0.16)	-0.07 (0.90)	1.91 (0.08)	2.70 (0.08)	3.15 (0.18)
<b>Fixed asset</b>	1.09 (0.00)	13.09 (0.08)	1.23 (0.03)	1.19 (0.01)	1.02 (0.01)	-0.35 (0.74)
<b>R-Square</b>	2%	58.86%	1.63%	2.59%	5.42%	8.62%

**Table VI****OLS Regression Results on the Market Value of Acquisition**

Acquiring Capacity (Acquired Size or Acquired Value to Acquirer Value Ratio)  
 $= \alpha + \beta_1 \text{CurrentRatio} + \beta_2 \text{Cash} + \beta_3 \text{(D/A)} + \beta_4 \text{FirmSize}$   
 $+ \beta_5 \text{NPM} + \beta_6 \text{ROA} + \beta_7 \text{FixAssets} + \text{Acquire Type Dummies}$  (2)

	Ln(purchased value)				Relative Ratio			
	1		2		3		4	
	Coeff	P-V	Coeff	P-V	Coeff	P-V	Coeff	P-V
Current ratio	-0.11	0.14	-0.02	0.78	-0.01	0.88	-0.02	-0.65
Cash	1.81	0.00	1.42	0.02	0.58	0.05	0.63	0.03
D/A	-0.17	0.72	-0.29	0.52	0.40	0.08	0.42	0.07
Net-profit-margin	0.07	0.46	0.04	0.66	0.03	0.55	0.03	0.50
ROA%	-0.37	0.39	-0.83	0.04	0.10	0.62	0.15	0.45
Total_fixed_assets	-0.05	0.66	0.03	0.74	0.67	<.0001	0.66	0.00
Acquisition type	-0.66	<.0001	-0.66	0.00	-0.19	0.00	-0.19	0.00
Payment	-1.77	<.0001	-1.59	0.00	-0.58	0.00	-0.60	0.00
Subsidiary acq	-0.49	0.06	-0.41	0.10	-0.12	0.33	-0.13	0.29
Acquirer Size			0.58	0.00			-0.07	0.00
Adjusted-R-square	0.06		0.17		0.22		0.22	