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# Testing the Pecking-Order Theory: Evidence from Chinese Listed Companies

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# **Testing the Pecking Order Theory: Evidence from Chinese Listed Companies\***

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## **Abstract**

The pecking order theory of capital structure, which predicts that firms prefer internal to external finance, is one of the most influential theories of corporate leverage. This paper examines if the financial structure of China's listed companies follows pecking order from debt to equity. Using the entire cross-section sample of China's listed companies in 2004, we find no evidence that China's listed companies follow the pecking order when they need funds to finance the investment projects. Further subgroup analyses indicate that big companies follow pecking order and small and medium companies do not. These results suggest that Chinese capital market is still under developing, however, the big companies face a relatively loose financing environment than the small ones.

**JEL:** G32

**Keyword:** Capital Structure, Pecking Order Theory, Financial Deficit

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## 1. Introduction

How should firms finance their investment projects? Two competing theories offer the optimal capital structure for this financing decision: traditional (static) trade-off theory and pecking order theory. The former suggests that a value maximizing firm will pursue an optimal debt-to-value ratio by a tradeoff of the tax benefits of debt and the cost of financial distress. Marsh (1982) and Taggart (1977) provided evidence that firms adjust toward a target debt-to-value ratio. However, Myers (1984) argued that the poor fitness of econometric model and dramatically different actual debt ratios across similar firms make it plausible for the static tradeoff theory.

Myers and Majluf (1984) proposed the second framework, the pecking order theory based on asymmetric information—managers have more inside information than the investors and act in favor of old shareholders. Their theory suggests that there is no optimal ratio and firms prefer debt to equity if external financing is required. Shyam-Sunder and Myers (1999) further developed an empirical model that financial deficit should have a dollar-for-dollar impact on firm leverage if pecking order is followed. That is, one dollar increase in financial deficit leads to one dollar increase in a firm's leverage. Using 157 firms that started at year 1981 and survived through 1981- 1989 from Compustat data, they found strong evidence to support the pecking order predictions.<sup>1</sup>

The purpose of this paper is to examine if Chinese listed companies follow the above pecking order theory in their financing decision. Using a unique sample of 407 listed Chinese companies at Shanghai Stock Exchange Center in year 2004, we find no evidence that the Chinese companies follow the pecking order theory. We further examine the pecking order theory in the narrow sets of firms. First, we focus on firms with the moderate debt ratio since Myers (1984) suggested that the modified pecking order theory is more suitable for

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<sup>1</sup> Chirinko and Singha (2000) put a critical comment on this paper. Their results indicated that Shyam-Sunder and Myers' results can evaluate neither the Pecking Order nor Static Tradeoff Models.

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companies with moderate debt ratio. The results indicate that the moderate debt ratio companies do not follow the pecking order either. Second, we break our sample by firm size (big, medium, and small) since small firms are expected to follow pecking order theory due to large information asymmetry. Contrary to the theory, our evidences show that only the big companies follow the pecking order. If the pecking order theory is correct, then the fact that the small and medium firms do not follow pecking order reflects the inefficient capital market in China. It is not surprising since Chinese economy is in a unique stage of both developing and transition economy. However, the big companies in China seem to have looser financing environment.

The above results are consistent with those in Frank and Goyal (2003). Using a broad cross-section of publicly traded American firms over the period 1971-1998, Frank and Goyal (2003) showed that the financial deficit is an important factor of the corporate leverage, but there is no evidence to support the pecking order. Similarly, they did find that the financing behavior of the largest quartile firms in earlier years follow the pecking order when narrower samples of firms were considered. However, this support for the pecking order theory declines over time. They argued that Shyam-Sunder and Myers (1999) had a surviving bias led their small sample toward larger firms and thus did affect their conclusion.

However, Chen and Zhao (2004) argued that Frank and Goyal's results were driven by their large debt reduction firms. After studying the financial decisions of firms with different bankruptcy risks, they found a clear preference of debt over equity. They further found that the pecking order from debt to equity strengthens from low to medium bankruptcy risk firms. Similarly, Adrian Zoppa and Richard G. P. McMahon (2001) examined a panel of 871 manufacturing Small and Medium Enterprises (SMEs) from the Australian survey data for three financial years from 1995-96 to 1997-98, and provided substantial empirical evidence supporting pecking order financing behavior amongst SMES.

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Two papers have examined the capital structure of Chinese listed companies in the literature. Using a panel sample of 1200 Chinese listed companies from 1994 to 2003, Huang and Song (2006) investigated the determinants of the leverage of Chinese listed companies. They conjectured that the static trade-off model explains the capital structure of Chinese listed companies better than the pecking order hypothesis.<sup>2</sup> Conversely, Tong and Green (2005) found Chinese companies do follow pecking order using 47 listed Chinese companies. Different from the above models, we explain the difference of our results in that we use pecking order model originally from Shyam-Sunder and Myers (1999) and they used the leverage model that indicates the determinant of leverage. To show this, we repeat their analysis and find the similar results that the leverage is determined by growth rate, company size, profitability and dividend. However, this does not indicate that the increase of fund deficit has the same proportion increase in the liability, which is what the pecking order model wants to investigate. Our paper fills this gap.

The rest of the paper is organized as follows. Next section introduces background of Chinese capital market. Section 3 introduces the data and methodology. Section 4 discusses the regression results. Conclusion follows in final section.

## **2. Background of Chinese Capital Market**

China has a large capital supply after economic reform and development with more than twenty years. Figure 1 shows the national saving amount increased from 9,241.6 in 1991 to 119,555.4 million Yuan in 2004<sup>3</sup>. Chinese households used to and still have to save for prompt demand due to the underdeveloped social security system, increasing health care expenditures, increasing education expenditure and the costly real assets. The resulting high

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<sup>2</sup> However, Tong and Green (2005) pointed out that their methodology is not appropriate to draw such a conclusion. See more discussion at Tong and Green (2005) P. 2181.

<sup>3</sup> Data source: National Bureau of Statistics of China. China Statistical Yearbook, China Statistics Press, 2005.

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savings imply the abundant external funding resources to Chinese listed companies. This is realized through three main financing channels: banking system, stock market, and corporate bond market.

Chinese banking sectors were and continually have been the primary source of companies' long-term debt in China (Bekier, 2005). There are big four state-owned commercial banks, which play the major roles in banking sector. As Hodgson (2004) pointed, they hold about 75 percent of the total bank assets. However, there exist many problems with the banking systems. First, the interest rates are still under control of Chinese central government due to past planed economy. Second, the banks established abnormal close relationship with companies based on non-profit reasons (called *GuanXi*). Third, the existing huge amount of bad loans and lower profitability indicate their inefficient risk management. This largely limits the new companies' financing channels. Finally, banks are much more cautious than ever in debt loan. They accept more short-term debt and mortgage loans. In 2004, the short-term loans of financial institutions were 8,684.060 billions of Yuan, whereas the medium-term and long-term loans are 7,670.290 billions of Yuan.<sup>4</sup>

The alternative funding sources are the capital markets established and rapidly developed over one decade. In 1990, the first stock exchange center, Shanghai Stock Exchange, was established at metropolitan Shanghai, and Shenzhen Stock Exchange was established at Shenzhen in the following year. After more than ten years of development, the number of listed companies in 2004 reaches 1,377<sup>5</sup>, while the capital raised by stock is about 1,510.94 millions of Yuan (issued share\*issuing price). In order to meet the demand of foreign currencies for domestic companies, the government created a B share market in 1992. The participators of B share were limited to foreign investors before 2002. After that, B share

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<sup>4</sup> Data Source: National Bureau of Statistics of China, China Statistical Yearbook 2005, China Statistics Press. Financial institutions include banks, savings deposit agencies of postal offices, housing saving banks, urban credit cooperative banks, rural credit cooperatives, urban credit banks, foreign-funded banks, financial trust investment agencies and financial companies etc.

<sup>5</sup> National Bureau of Statistics of China. China Statistical Yearbook, China Statistics Press, 2005.

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market was opened to individual domestic citizens (Chien-Liang Chiu et al., 2005). In 2004, there were 86 companies issuing both A and B shares, and 24 companies issuing only B share<sup>6</sup>.

Figure 2 shows the trend of funds raised by corporate bonds and shares from 1991 to 2004 respectively. The data are from China Statistical Yearbook 1996-2005<sup>7</sup>. The shares include A Shares, Rights Issued, H&N Shares and B shares. Compared with corporate bond market, the stock market is rapidly developed. As we can see from figure 2, the values of shares issued dramatically increase from 5 millions of Yuan in the year of 1991 to 1,510.94 millions of Yuan in year 2004. Chinese government was introducing more market mechanism and relaxing the regulations gradually for the two stock exchanges. For example, Administrative Measures for Securities Issuance of Listed Companies (AMSILC) were issued by China Securities Regulatory Commission (CSRC) in 2006. The AMSILC states that one of the roles of CSRC is to act as the third party for supervision or even directly interfering with the securities trade.

In contrast, the relatively flat curve of corporate bond indicates that the Chinese bond market is slowly developed. It is true that there exist many stimuli to the bond market reform, for example, the investment demand from insurance companies and foreign investors. However, the qualifications for the firms to issue bonds are very strict because of the absence of efficient credit rating systems. The complicated approval procedure in debt financing, quota control and the requirement of collateral significantly restrict the development of corporate bond market. Furthermore, Chinese companies' opaque financial records defer the potential bond investors and impede the expansion of the bond market (Chen Ji and Stephen Thomas, 2005).

In sum, the financing channels in China consist of the weak banking system, the

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<sup>6</sup> National Bureau of Statistics of China. China Statistical Yearbook, China Statistics Press, 2005.

<sup>7</sup> National Bureau of Statistics of China. China Statistical Yearbook 1996-2005, China Statistics Press.

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undeveloped corporate bond market and rapidly developed stock market in China. Our paper is trying to explore the financing structure of Chinese listed companies under current capital market.

### 3. Data and Methodology

The dataset in this paper is manually collected from 2004 unconsolidated annual financial reports of 422 companies<sup>8</sup> that are randomly selected from Shanghai Stock Exchange current listed companies. Of the 422 firms, six financial companies are excluded and four companies do not have enough information for the study. Furthermore, we drop 5 outliers with negative ownership equities. This leaves 407 listed companies for the empirical analysis.

Our empirical model is similar to Shyam-Sunder and Myers (1999) that is derived from the pecking order theory in Myers (1984) and Myers and Majluf (1984). Assuming that firms can finance their projects by retained earnings, debt and equity, the pecking order theory predicts that firms will fund their projects using retained earnings first, then use debt if retained earnings are inadequate, and turn to the equity financing if they have to — no more debt available and costs of financial distress are high. According to the theory, the pecking order hypothesis is to test:

$$\Delta D_i = \alpha + \beta DEF_i + \varepsilon_i \quad (1)$$

Where  $\Delta D_i$  denotes long term debt outstanding by firm  $i$  in Shyam-Sunder and Myers's model. Because Chinese companies employ current liability rather than the long-term debt as the major means of debt financing, we define  $\Delta D_i$  as the change of total liability (i.e. total liability at the end of year  $t$  – total liability at start of year  $t$ ).  $DEF_i$  is the flow of fund deficit defined as follows:

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<sup>8</sup> See data link at <http://www.sse.com.cn/sseportal/webapp/datapresent>.



$$DEF_i = DIV_i + X_i + \Delta W_i - C_i^9$$

Where:

$DIV_i^{10}$ : Cash payments for dividend, profit and interest for firm  $i$ ,

$C_i^{11}$ : Operating cash flow after taxes for firm  $i$ ,

$X_i$ : Capital expenditure for firm  $i$ , is a summation of the amount of increase in long term investment, the amount of increase in fixed asset, and the amount of increase in intangible asset and other asset; the amount of increase is defined as “the amount at the end of year  $t$  minus the amount at start of year  $t$ ”,

$\Delta W_i$ : Increase in working capital, working capital is defined as the difference between liquid asset and current liability, i.e., working capital = liquid asset – current liability.

Table 1 summarizes the above variables. Following Tong and Green (2005), all the data are measured by book value based on the fact that the book values are more reliable in China. As we can see at Table 1, the average ratio of current liability to total liability ( $RCT$ ) is about 84 percent for Chinese listed companies. The maximum ratio even reaches 100 percent. It implies that Chinese listed companies hardly rely on long term liability to raise external funds. However, this differs by company size. At last three columns, we summarize the mean of all variables for small, medium and large sizes. As we can see from the average ratio of current liability to total liability ( $RCT$ ), the large firms rely more on long term debt

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<sup>9</sup> Note that Shyam-Sunder and Myers define  $DEF_i = DIV_i + X_i + \Delta W_i + R_i - C_i$  where  $R_i$  is the current portion of long-term debt. According to the accounting definition and accounting data disclosure complying with the Chinese General Accepted Accounting Principles (CGAAP), the current portion of long-term debt ( $R_i$ ) is already contained in the working capital  $\Delta W_i$ . Therefore, we do not include  $R_i$  as a separate component of  $DEF_i$  in our model to avoid double calculation.

<sup>10</sup> Instead of using cash dividends as Shyam-Sunder and Myers, we include profit and interest as well since the Chinese annual financial statement only provides a mixed item of Cash Payments for dividend, profit and interest.

<sup>11</sup> Shyam-Sunder and Myers define it as cash flows after interest and taxes. We exclude taxes only since the interest is part of  $DIV_i$ .

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than other two kinds of firms. In addition, large firms pay more dividends (*DIV*) and have much more cash flows than small and medium companies (*C*). In particular, the capital expenditure (*X*) for large firms is much higher than the others. According to the definition of *X*, it implies that to some extent the large firms have more expenditure in long term investment projects or more investment in fixed assets. On the contrary, the negative *X* value for small firms means that many of them are in contraction.

The regression analyses of model (1) are conducted in next section. If the firms' capital structure follows the pecking order, then we expect to see that  $\alpha = 0$  and  $\beta = 1$ . In other words, the firm will tend to use debt to meet financing deficit, and equity issue or repurchase is treated as "last resort". On the contrary, if  $\beta$  is close to 0, it implies that Chinese listed companies prefer equity rather than debt.

## **4. Regression Results**

First, we conduct Ordinary Least Squares (OLS) regression on our 407 cross-sectional observations using the pecking order model (1). We then discuss our model by repeating leverage model used by Huang and Song (2006) and Tong and Green (2005). Doing this, we make our conclusion that Chinese listed companies do not follow pecking order theory.

### ***4.1 Pecking Order Model Regression***

We first conduct regression of model (1) to the entire sample. Then, we break the sample by debt ratios since Myers' (1984) modified pecking order theory suggests that the firms with moderate leverage will follow the pecking order the best. Finally, we break the whole sample by company size. As Frank and Goyal (2003) suggested, the small firms confronting with relatively worse adverse selection problems should more likely match the pecking order predictions.

We find no evidence that Chinese companies follow pecking order from our regression to

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the entire sample. As we can see at column (1) in Table 2, we find that the increase fund flow of deficits significantly increase the company new debts. However, the coefficient of  $DEF_i$  is rather low (0.152). We further test the joint hypothesis of pecking order that  $\alpha = 0$  and  $\beta = 1$ , the results of F-test indicate that the pecking order hypothesis is strongly rejected. Therefore, Chinese listed companies prone to equity issue when external funds are required. This compliments with the findings at Huang and Song (2006) that Tobin's Q (the ratio of the market value of a firm's assets), a measurement of firms' performance, for Chinese listed companies is extremely high. This implies that the stock values are excessively overestimated in China. According to the market timing theory, firms tend to issue more equity when their stocks are overestimated. Huang and Fung (2005) argued that a distinct characteristic between China's stock market and other developed countries' is that, in China, there exist nonfloatable shares that are held by the corporate controllers and can not be traded in either Shanghai Stock Exchange or Shenzhen Stock Exchange. The value of the nonfloatable shares is positively correlated with the market values of firm's equity.<sup>12</sup> In order to increase the expected value of nonfloatable shares, the firm controllers tend to issue maximum amount of equity.

Second, our results show that firms with moderate debt ratio do not follow pecking order either. Following Frank and Goyal (2003), the moderate debt ratio group excludes the companies with either the top two deciles or the bottom two deciles debt ratios. As we can see from the column (2) in Table 2, the results for the moderate leverage companies are similar to those with the entire sample. Therefore, there is no any evidence to support pecking order among Chinese listed companies, even for the firms with the moderate debt ratio.

Finally, we do find that the large Chinese companies follow pecking order. Table 3 provides the regression results for small, medium and big companies. The coefficient for

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<sup>12</sup> See more discussions about liquidity premium and market-to-book ratio at Huang and Fung (2005).

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small companies is not significant, while the coefficient for big companies is the highest (0.896) and significant at the 1 percent level. This is comparable with the results in Shyam-Sunder and Myers (1999) for 157 companies (about 0.7) and Frank and Goyal (2003) for big companies (about 0.7). The F-tests of our joint hypothesis indicate that the big companies match well with the pecking order predictions. The results are consistent with Frank and Goyal (2003) that found only the big companies follow the pecking order but the entire sample (including the small ones) does not. This, however, contradicts the pecking order theory that the small firms will follow the best because small firms confront more serious asymmetric information than the big ones.

Why, in general, Chinese listed companies do not follow the pecking order, but the large companies do? This may be due to the inefficient capital structure for the special stage of Chinese developing and transition economy. First, as we show at section 2, the bond market is slowly developed due to strict qualifications for the firms to issue bonds. This leads to the results that only some excellent large firms can be approved to enter the corporate bond market, especially some large state-owned enterprises. The large state-owned companies which are protected by the government not only have advantages to access to the corporate bond market, but also could use government credit to obtain loans from commercial banks or other financial institutions. Second, the big four state-owned commercial banks still play the significant roles in banking sector as shown in section 2. However, they are not operated as efficient as they should be. The existing huge amount of bad loans and lower profitability make banks much more cautious than ever. The big companies with more fixed assets that could be used as collateral would be easier than small firms to acquire the debt from banks.

Our conclusion contradicts with Tong and Green (2005), which claimed that Chinese companies follow pecking order using 44 companies. Tong and Green (2005) used a leverage determinant model that, in our point of view, deviates from the original testing model of

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pecking order. The leverage model captures the determinants of leverage, but it does not capture the dollar-for-dollar relationship that indicates that a dollar increase in fund deficit increases one dollar of debt ratio. To show this, we will briefly introduce the leverage model and test the model to compare with pecking order model at next subsection.

#### ***4.2 Leverage Model Regression***

The general leverage determinant model used to test the pecking order is given as follows:

$$LEV_i = SIZE_i + GROWTH_i + DIV_i + ROA_i + e_i$$

*LEV* denotes the leverage, which is the ratio of total liability to total assets at the end of year. The *SIZE* in the model is measured by the natural logarithm of annual sales during the year following Huang and Song (2006). The variable *GROWTH* is defined as the total assets book value at the end of the year divided by total assets at the beginning of the same year. *DIV* is the cash payments for dividend, profit and interest at the end of year scaled by mean value of total equity. Profitability (*ROA*) in this study is measured by profits from operations divided by the mean value of total assets. The above variables are summarized in Table 4. The correlations of the above variables are presented at Table 5. We see that the leverage is positively correlated with company size, growth rate, and dividend, and negatively correlated with profitability.

Table 6 reports the regression results. We conduct the leverage model using our 394 data, since 13 companies do not provide the sales data for unconsolidated accounts. Tong and Green (2005) conclude that the results tend to favor the pecking order theory based on the sign of coefficient for each variable in the model. We get the identical sign of coefficient for each factor in the model as Tong and Green (2005)'s: The firms' leverage is positively associated with company size, growth rate and dividend, and is negatively related with profitability. However, this does not imply that an increase of flow of fund deficit has a proportional impact on new liability as pecking order indicated. In particular, we put the

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following two comments to the impact of size and growth rate on the leverage in the following.

First comment goes to the firm size and asymmetric information. Tong and Green (2005) argue that the larger firms with complex organization face the higher costs of information asymmetries. In this way, they insist that the positive relationship conforms to the pecking order theory. However, from original pecking order model assumption, the asymmetric information is defined as how much the outsiders (investors) know the insider information (firms). Therefore, small firms have relatively more serious asymmetric information between firms and outside investors and thus should track pecking order more closely.<sup>13</sup> Therefore, whether the positive relationship should be interpreted as supporting evidence for pecking order theory or not is a question.

Second, the positive relationship between the asset growth rates and leverage may be not sufficient to prove the pecking order theory. Huang and Song (2006) point out that the firms with high growth rate in the past tend to have higher leverage, while firms with good investment opportunities in the future tend to have lower leverage. It may be helpful to look across the firms with different growth rates using original pecking order model.<sup>14</sup>

In summarize, leverage model does characterize that firm's leverage is determined by firm size, growth rate, dividend and profitability. However, we do not find that the debt ratio increases proportionally with the fund deficit. Therefore, we cannot make a conclusion that Chinese listed companies follow pecking order.

## **5. Conclusions and Implications**

We examine whether the Chinese listed companies' financing decisions are consistent with

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<sup>13</sup> This is also confirmed by Frank and Goyal (2003).

<sup>14</sup> Frank and Goyal (2003) investigated this but found no evidence that firms with high growth rate follow pecking order.

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the pecking order theory. Using a sample of 407 companies, we find no evidence that the capital structure of Chinese companies follows pecking order from retained earnings, debt to equity. Further, we find that the companies with the moderate debt ratios do not follow pecking order, which is against Myers (1984) that the companies with the moderate debt ratio will follow the pecking order the best. Finally, contrary to the implication of the pecking order theory that the small companies will follow the pecking order the best, our results indicate the opposite: big companies follow the pecking order while small and medium companies do not.

These findings are generally not consistent with those of prior studies in the developed markets such as Shyam-Sunder and Myers (1999), Chen and Zhao (2004), Zoppa and McMahan (2001).<sup>15</sup> The main reason may be due to the imperfect Chinese capital market described in section 2. Simply speaking, the high entrance requirements of China's corporate bond market make it impossible for the companies to finance by debt. The inefficiency of four state-owned commercial banks largely affects the companies' finance decision. In addition, current economic laws are not fully developed to protect the minority shareholders. This makes the equity financing of the companies much more attractive in China. Therefore, it is necessary to have further reform of the banking system, development of corporate bond market and improvement of stock market to change the inefficient companies' financing structure. As Franklin Allen et al. (2003) suggested, it would be wise to develop an appropriate reform pattern based on China's existing financial system rather than simply copy other advanced countries'.

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<sup>15</sup> We have discussed the difference between our results and those undertaken by Tong and Green (2005) in previous section.

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**Tables:**

**Table 1: Descriptive of Variables**  
(Unit: Billions of Chinese Yuan)

Variable	Obs	Mean	Std. Dev.	Min	Max	Variable Means by Company Size		
						Small companies	Medium Companies	Large Companies
$\Delta D$	407	0.3977	2.82	-8.12	49.00	0.0193	0.1628	1.0156
$DEF$	407	-0.2208	4.87	-89.60	17.20	-0.6601	0.0521	-0.0532
$X$	407	0.26751	5.59	-89.50	63.10	-0.6115	0.1594	1.2620
$\Delta W$	407	-0.1453	1.37	-23.40	3.16	-0.0076	-0.0413	-0.3887
$DIV$	407	0.13978	0.67	-0.19	11.70	0.0199	0.0401	0.3610
$C$	407	0.48284	2.42	-0.78	34.20	0.0609	0.1060	1.2875
$RCT$	407	0.84377	0.19	0.06	1.00	0.8938	0.8618	0.7752

Note:

$\Delta D$  = Total liability at the end of year t – total liability at start of year t.

$DEF = DIV + X + \Delta W - C$ , where

$DIV$ : Cash Payments for dividend, profit and interest for each firm,

$X$ : Capital expenditure, Capital expenditure of the firm = Increase in long term investment + Increase in fixed asset + Increase in intangible asset and other asset,

$\Delta W$ : Increase in working capital, working capital = liquid asset – current liability,

$C$ : Operating cash flow after taxes for each firm.

$RCT$ : Mean value of current liability / Mean value of total book liability.

**Table 2: Results of Pecking Order Model**

	Whole Sample	Moderate Leverage
DEF	0.152 (0.028)***	0.134 (0.033)***
Constant	0.004 (0.001)***	0.005 (0.002)**
Observations	407	244
R-squared	0.07	0.06
Hypothesis: $\alpha=0$ and $\beta=1$	F = 937.06 Prob > F = 0.0000	F = 693.52 Prob > F = 0.000

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table 3: Results of Pecking Order Model**

	Whole Sample	Small Companies	Medium Companies	Large Companies
DEF	0.152 (0.028)***	0.001 (0.001)	0.383 (0.079)***	0.896 (0.093)***
Constant	0.004 (0.001)***	0.000 (0.000)**	0.001 (0.000)***	0.011 (0.003)***
Observations	407	136	136	135
R-squared	0.07	0.01	0.15	0.41
Hypothesis: $\alpha=0$ and $\beta=1$	F= 937.06 Prob > F = 0.0000	F = 5.8e+05 Prob > F = 0.0000	F = 60.98 Prob > F = 0.0000	F = 1.25 Prob > F = 0.2665

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table 4: Descriptive of Variables**

Variable	Obs	Mean	Std. Dev.	Min	Max
LEV	407	0.40	0.19	0.01	0.97
SIZE	394	13.26	1.88	4.56	19.80
GROWTH	407	1.16	0.29	0.41	3.94
DIV	407	0.05	0.06	-0.14	0.76
ROA	407	0.04	0.07	-0.25	0.50

Note: LEV = Total book liability at the end of 2004/ Total book assets at the end of 2004

SIZE= Ln (Sales in 2004)

GROWTH = Total book assets at the end of 2004 / Total book assets at the beginning of 2004

DIV = Cash Payments for dividend, profit and interest at the end of 2004 / Mean value of total equity

ROA = Profits from operations / Mean value of total book assets

**Table 5: Correlation**

	LEV	SIZE	GROWTH	DIV	ROA
LEV	1				
SIZE	0.2506	1			
GROWTH	0.2084	0.2706	1		
DIV	0.4156	0.1802	0.0888	1	
ROA	-0.1556	0.4289	0.3754	0.058	1

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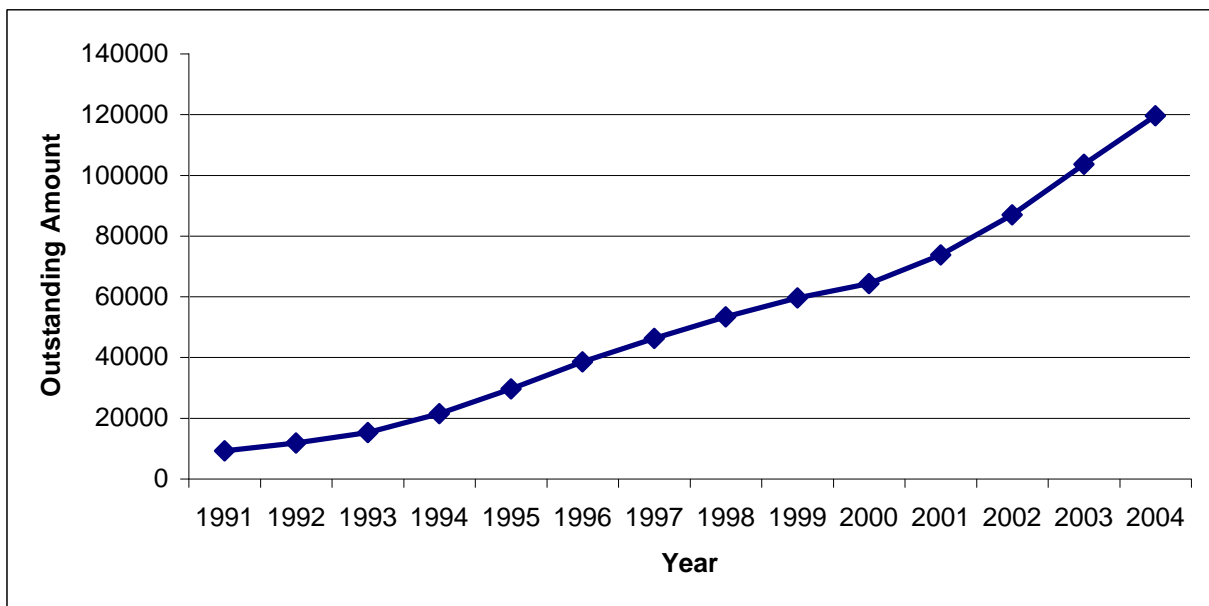
**Table 6: Leverage Model**

SIZE	0.028 (0.005) <sup>***</sup>
GROWTH	0.156 (0.029) <sup>***</sup>
DIV	1.091 (0.126) <sup>***</sup>
ROA	-1.027 (0.126) <sup>***</sup>
Constant	-0.161 (0.063) <sup>**</sup>
Observations	394
R-squared	0.34

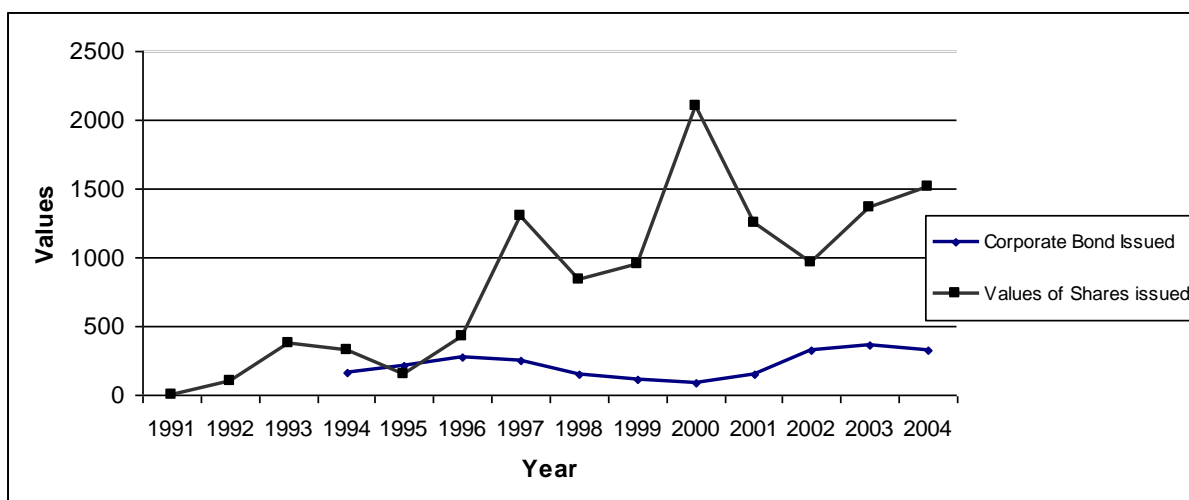
Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Figures:**



**Figure 1: Savings Deposit in Urban and Rural Areas (Unit: 100M Yuan)**



Source: National Bureau of Statistics of China. China Statistical Yearbook 1996-2005, China Statistics Press.

Note:

1. Raised Capital by Share includes A Shares, Rights Issued, H&N Shares and B shares.
2. China Statistical Yearbook does not provide the data of corporate bond issue in 1999. We use the average number of the two adjacent numbers in 1998 and 2000 to approximate the corporate bond issue in 1999.

**Figure 2: Funds Raised by Corporate Bond and Share (Unit: 100M Yuan)**