Empirical Analysis on Financing Constraints of SMEs of China—Proofs from Pre-IPO three Years’ Panel Data of China’s Listed Companies Listed in 2015

Yuping Wei
Wuhan University School of Economics and Management Wuhan, P.R.C
Jianghan University Business School, Wuhan, P.R.C

ABSTRACT: Because of defects of financial system of supporting Small and Middle Enterprises (SMEs) and the deficiencies of SMEs itself, China’s SMEs are facing more serious financing constraints than big enterprises. Using cash-cash flow sensitivity coefficient as proxy variable, we make use of pre-IPO (Initial Public Offerings) three years’ panel data of China’s firms listed in 2015, empirically analyze the financing constraints condition of SMEs of China. The study has the following findings: firstly, China’s listed firms are facing common financing constraints before IPO, among them, firms listed on the main board are facing lesser financing constraints before IPO, firms listed on the GEM (Growth Enterprise Market) are facing relatively serious financing constraints before IPO; secondly, through group regression according to fixed assets scale, results show that large enterprises are facing the smallest financing constraints, small businesses are facing moderate financing constraints, the medium-sized enterprises are facing the largest financing constraints.

KEYWORDS: Financing constraints of SMEs; Cash-cash flow sensitivity; Cash holdings

1. INTRODUCTION

Financing difficulties of small and medium-sized enterprises (SMEs) is conundrum which financial circles paid close attention to for a long time but never effectively solved. As early as in 1931, British lawmakers Macmillan in Macmillan report pointed out that there were a long-term lack of funds for SMEs named Macmillan Gap. Presenting of the Macmillan Gap has led western governments and academia pay high attention to financing problems of SMEs. The root cause of the financing gap of SMEs is credit rationing, and the causes of credit rationing is information asymmetry and insufficiency of property rights\(^1\). Due to the obstacle of financial system and the deficiencies of SMEs itself, China’s SMEs are facing more serious financing constraints than other developed countries’ SMEs. Most Chinese research on financing constraints of SMEs in the literatures qualitative analysis of the status quo and reason of financing constraints, quantitative empirical research is relatively few; in the few empirical studies, most scholars use the public financial data, analyze the post-marketing financing constraint condition of China's listed firms, few people study the Pre-IPO financing constraints condition of listed firms. Firms listed on the Small and medium-sized board and the GEM are SMEs of having good operating performance\(^2\), they are facing more lighter financing constraint than unlisted SMEs, so financing condition of listed SMEs can’t be popularized to all SMEs, but to a great extent, we can promote pre-IPO financing constraint condition of listed SMEs to all SMEs\(^3\), so it is very important in theoretical and policy aspects to study pre-IPO financing constraints condition of listed firms through empirical research. Based on this, through manual sorting pre-IPO 3 years’ financial data of listed firms listed in 2015, the paper empirically studies the pre-IPO financing constraint condition of China’s SMEs.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESIS

2.1 Literature review

Financing, investment and dividend decision are three most important financial decisions. Under
perfect market assumption, Modigliani and Miller (1958) proved that the value of the company and the capital structure is irrelevant, the ways of company’s internal and external financing can be completely replaced, the investment behavior has nothing to do with the way of financing. However, Myers and Majluf (1984) pointed out that in the real economic environments, due to information asymmetry, transaction cost and other influence factors such as tax, firms face financing constraints, investment spending is sensitive to the change of cash flow.

The empirical research about the financing constraints was started by Fazzari, Hubbard and Petersen (1988, FHP)\textsuperscript{[4]}. Using investment-cash flow sensitivity as proxy a variable, they studied enterprise’s financing constraint problem quantitatively. Research results show that enterprises with serious financing constraints has propensity of investment-cash flow sensitivity, enterprises without financing constraints has no propensity of investment-cash flow sensitivity. After about ten years, the positive correlation between sensitivity of investment-cash flow and financing constraints was questioned by some scholars.

The first objection coming from Kaplan and Zingales (1997).\textsuperscript{[5]} They did a more subtle classification to 49 firms of FHP dividing into the best seriously financing constraints group, their study found that the sensitivity of investment-cash flow of lower financing constraints enterprises was more higher ,the conclusion was just the opposite to FHP. Because KP’s study based on small samples, and the rationality of the group was also flawed, so until KP’s questions were empirical support by Cleary (1999)\textsuperscript{[6]} based on a large samples. The challenges (measure errors of Tobin’s Q and identification or agency problems of financing constraints) faced by the model of investment-cash flow sensitivity triggered academia to further study the financing constraints problems.

Gomes (2001) pointed out, because of the above two problems, investment-cash flow sensitivity and financing constraints are neither fully relationship nor necessary relationship. In order to avoid the above problems, Almeida (2004)\textsuperscript{[7]} proposed a financing constraint identification strategy based on a cash-cash flow sensitivity .

Using investment-cash flow sensitivity and cash-cash flow sensitivity as a proxy variable of financing constraints, China’s scholars have carried on the empirical research on financing constraint condition of China’s listed firms. But due to the difficulties of acquiring data, few scholars empirically studied pre-IPO financing constraints of listed firms, and few scholars empirically studied financing constraints of SMEs. Empirical analysis on pre-IPO financing constraints of listed firms can reflect the financing constraints status of the vast majority of firms, it is very important in theory and reality.

2.2 The research hypothesis

Because the condition of the capital market mechanism is not soundly, enterprises’ internal and external financial status is differently. When external financing cost is higher, enterprises can’t pay, will appear financing difficulty. Adopting generalized moment estimation method (GMM) reasonable controlling endogenous bias of model, Lian Yujun, Su Zhi, Ding Zhiguo (2008) found because of financing constraints, China’s listed firms showed strong propensity of cash-cash flow sensitivity\textsuperscript{[9]}; Chen Xuesheng, Zhang Jianbo, Dong Wenlong (2012) found that the investment-cash flow sensitivity of listed firms of China is higher, there is an obvious phenomenon of financing constraints\textsuperscript{[10]}. Hence, this paper puts forward assumption 1.

Hypothesis 1: China’s listed firms are facing common financing constraints before IPO.

In order to establish and perfect the multi-level capital market, China has set up the Shanghai stock exchange and Shenzhen stock exchange. The firms listed on the small and medium-sized board are SMEs, the listed firms listed on GEM are innovative, growth type SMEs. Hu Yan, Xuyin (2015) thought, the GEM firms are mostly in the early development stage of the enterprise life cycle, face more obvious financing constraints than firms listed on the main board, have more need to strengthen the communication with the capital market\textsuperscript{[11]}. Liu Fei, Wang Kaike (2015) considered, because of cost difference of internal financing and external financing, China’s firms listed on the small and medium-sized board are facing more serious financing constraints, restriction of bank credit and commercial credit, their reliance on internal cash flow are more strong. Hence, this paper puts forward to hypothesis 2.

Hypothesis 2: the firms listed on the main board are facing more serious financing constraints than the firms listed on the small and medium-sized board and GEM.

The scale of the enterprise itself may also affect financing constraints. The larger scale of enterprise is, the more financing channels they can have, and it is easier to find financing ways of suitting their own development phase, funds to be raised will be relatively more. By contrast, because Small firms don’t have a wide range of financing channels, and their financing ways are limited, they will face more serious financing constraints, cost of financing is relatively higher than large enterprises. Enterprise credit problems are closely related with its size, information transparency of small enterprises can’t meet the standard requirement. Because asymmetric information leads to the loan risk increasing, banks don’t choose the small enterprise to be loaned, this indicates that financing constraints of small
businesses are more serious than large enterprises. Thus, this paper puts forward hypothesis 3.

Hypothesis 3: large enterprises are facing small financing constraints, Medium-sized enterprises are facing middle financing constraints, small businesses are facing big financing constraint.

3. THE EMPIRICAL RESEARCH DESIGN

3.1 Sample selection and data sources

The samples are listed firms listed on the main board, the small and Medium-sized board and the GEM of Shanghai and Shenzhen stock exchange, the period of samples are over 2012-2014 year. In the process of sample selection, we eliminate the financial firms and the firms that data isn’t complete. In order to overcome influence of outliers, the paper makes the main variables sorized 1% end. Because some variables are increment based on last year’s data, so the actual data are from 2013-2014 year.

After the above selection processes, we get 188 samples, among them, firms listed on main board are 76, firms listed on small and Medium-sized board are 35, firms listed on the GEM are 77, there are total 376 observations. The data of samples comes from company’s pre-IPO financial statements downloaded from Hexun Net, and settled by Excel 2007. The empirical analysis software is SPSS21.0 and STATA13.0.

3.2 The research variables and the model

On the basis of previous studies, Almeida (2004) used cash-cash flow sensitivity as the proxy variable of financing constraints, put forward a new financing constraints model. This model avoided relevant problems coming from the investment-cash flow sensitivity model, was widely accepted by scholars in theory.

To test hypothesis 1-3, the paper use the research methods of Almeida, etc. (2004). At the same time, in order to avoid measuring errors of Tobin’s Q, we use growth rate of main business as proxy variables of corporations’ growth. Model sets as follows:

\[
\begin{align*}
\text{Cash}_t &= \alpha + \beta_1 \text{CF}_t + \beta_2 \text{Growth}_t + \beta_3 \text{FA}_t + \beta_4 \text{STD}_t + \\
&+ \beta_5 \Delta \text{NWC}_t + \beta_6 \text{Expense}_t + \beta_7 \text{MZ} \_ \text{Dum} + \epsilon_t
\end{align*}
\]

The dependent variable Cash is ratio of the ith company’s monetary capital and trading financial assets to the beginning total assets. CF is the ith company’s ratio of business activities cash net flow to the beginning total assets.

Financing constraints is manifested through coefficient \( \beta_i \) of cash-cash flow sensitivity. According to our theoretical analysis, cash-cash flow sensitivity coefficient of financing constraints enterprise is bigger than the non-financially constrained enterprise', cash-cash flow sensitivity coefficient of groups listed on medium-sized board and GEM are significantly positive and bigger than the group' listed on the main board; cash-cash flow sensitivity coefficient of SMEs groups are significantly positive and bigger than large group’.

4. EMPIRICAL RESEARCH RESULTS AND ANALYSIS

4.1 Descriptive statistics

Table 2 shows the descriptive statistics of the main variables. Grouping according to listed plate, the proportion of pre-IPO cash holdings to total assets of the listed firms listed on main board is less than the firms’ listed on the small and Medium-sized board and the GEM; grouping according to three tertiles, the proportion of pre-IPO cash holdings to total assets of small scale listed firms is more than the large scale listed firms'; grouping according to median, the proportion of pre-IPO cash holdings to total assets of small scale firms is more than the large scale firms', it indicates small scale firms hold more cash than large scale firms.

Through F test, we find the mean difference of cash holdings and operating cash net flow of listed firms listed on the main board, small and Medium-sized board and the GEM is significantly different under the confidence level of 5%. Grouping according to three tertiles, the mean difference is significantly different under the confidence level of 1%; grouping according to median, the mean difference is significantly different under the confidence level of 5%.

According to the above three kinds of classification, mean difference of cash holdings and operating cash net flow are significantly different, the method dividing financially constrained group and non-financially constrained group is reasonable.
and is bigger, fitting degree of the model is \( \Delta R^2 \). Guo Bin, Liu Manlu (2002) found that the relationship of private financial capital is high proportion that Medium-sized enterprises used enterprise scale and credit supply appears inverted variance according to three tertiles, the cash-cash flow sensitivity coefficients of listed firms listed on the main board are facing smallest financing constraints, firms listed on the GEM are facing middle financing constraints, firms listed on the small and Medium-sized plate are facing biggest financing constraints. Hypothesis 2 is verified.

Table 4. Regression Results of Complete samples and Group samples According to Listed Plates.

<table>
<thead>
<tr>
<th>Complete</th>
<th>Mainboard</th>
<th>Small and Medium-sized board</th>
<th>GEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF</td>
<td>0.934***</td>
<td>0.319***</td>
<td>1.152***</td>
</tr>
<tr>
<td></td>
<td>(12.29)</td>
<td>(-4.97)</td>
<td>(-10.38)</td>
</tr>
<tr>
<td>Grow</td>
<td>0.05</td>
<td>-0.10***</td>
<td>0.065</td>
</tr>
<tr>
<td></td>
<td>(-1.20)</td>
<td>(2.23)</td>
<td>(-0.84)</td>
</tr>
<tr>
<td>FA</td>
<td>0.040***</td>
<td>0.037***</td>
<td>0.052***</td>
</tr>
<tr>
<td></td>
<td>(-9.89)</td>
<td>(-1.16)</td>
<td>(-1.52)</td>
</tr>
<tr>
<td>STD</td>
<td>0.342***</td>
<td>0.11</td>
<td>0.798**</td>
</tr>
<tr>
<td></td>
<td>(2.86)</td>
<td>(1.10)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>ANWNC</td>
<td>0.308***</td>
<td>-0.337***</td>
<td>-0.126</td>
</tr>
<tr>
<td></td>
<td>(-5.33)</td>
<td>(-2.96)</td>
<td>(-1.89)</td>
</tr>
<tr>
<td>Expense</td>
<td>-0.013**</td>
<td>-0.015**</td>
<td>-0.026**</td>
</tr>
<tr>
<td></td>
<td>(-2.51)</td>
<td>(-2.51)</td>
<td>(-1.31)</td>
</tr>
<tr>
<td>MI_dum</td>
<td>0.047***</td>
<td>0.007</td>
<td>0.017</td>
</tr>
<tr>
<td></td>
<td>(2.38)</td>
<td>(0.41)</td>
<td>(0.99)</td>
</tr>
<tr>
<td>MI_anm</td>
<td>0.087***</td>
<td>0.815***</td>
<td>1.176***</td>
</tr>
<tr>
<td></td>
<td>(-12.31)</td>
<td>(-7.45)</td>
<td>(-7.59)</td>
</tr>
<tr>
<td>adj.R^2</td>
<td>0.326</td>
<td>0.017</td>
<td>0.026</td>
</tr>
<tr>
<td></td>
<td>(17.92)</td>
<td>(4.10)</td>
<td>(0.44)</td>
</tr>
<tr>
<td>N</td>
<td>376</td>
<td>228</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>191</td>
<td>82</td>
<td>74</td>
</tr>
</tbody>
</table>

Note: robustness t value are shown in brackets, *, ** and *** indicates statistical significance at 1%, 5% and 10% (two-tail), respectively.


5. THE CONCLUSION AND POLICY MEANINGS

Based on pre-IPO data of china’s listed firms listed in 2015, the paper empirically analysis pre-IPO financing constraint condition of listed firms. Research has the following findings: firstly, China’s listed firms are facing common financing constraints before IPO, among them, firms listed on the main board are facing lesser financing constraints before IPO, firms listed on the GEM are facing relatively serious financing constraints before IPO, firms listed on the small and medium-sized board are facing the most serious financing constraints before IPO; secondly, through group regression according to fixed assets scale, results show that large enterprises are facing serious financing constraints, small businesses are facing moderate financing constraints, the medium-sized enterprises are facing the largest financing constraints. The group dividing financially constrained group and non-financially constrained group according to go public plates is an objective effective group method.

Policy implications of this paper are: firstly, firms in China are facing common financing constraints, therefore, to develop the financial industry, promoting financial deepening is of great significance to promote the economic development of China; secondly, SMEs are facing more serious financing constraints, therefore, to relax financial regulation in general and Promote financial deepening at the same time, also reform China's financial structure and financial system according to the factor endowment structure and enterprise structure, ease financing constraints of the SMEs.

6. ACKNOWLEDGMENT

The work described in this paper is supported by Hubei province project of humanities and social science “investment regulation and investment strategy research of China’s urban social pension insurance fund — take Hubei province as an example ”(project code:SZ-2012-9).

In the construction of support by superiority characteristic subject groups of Hubei provincial colleges and universities—“city circle economy and industry integration management”.

REFERENCES