

IPO Underpricing In Chinese Stock Market

Master Thesis

Erasmus School of Economics

Accounting and Finance

Student Name: Zixiao Xu

Student Number: 409549

Supervisor: S. Xia

First reader: Prof. S. Gryglewicz

Erasmus University Rotterdam

Abstract

This paper studies determinants of IPO underpricing in Chinese stock market. We investigated the impact of 11 factors and observed significant impact from time gap, profitability, firm size, and underwriter reputation. We also find underpricing degree changes with cyclical market background and varies among different industries.

Key words: IPO underpricing, Chinese A-share market, asymmetric information, time gap, profitability, underwriter reputation

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1. Introduction

1.1 Research Background

The stock market as an important marketplace for equity exchange helps firms to adjust capital structure and eliminate cost from financial distress. On the other hand, within the same market, organizations and individuals are provided with opportunities for investments. An initial public offering (IPO) occurs when security is sold to the general public for the first time, with the expectation that a liquid market will develop (Ritter, 1998). It makes firms take the first step into the stock market and expose to the capital market. Therefore, this is not only an opportunity but a risk for the company as well.

Issuing stock as an important method of raising fund varies with different size of enterprises. Researchers proved that small firms have lower pecking order coefficients (Frank & Goyal, 2003), which reflects that small firms are less observed following pecking order theory, choosing to issue stock prior to the bond. An intuitional reason would be, firms going public would benefit from increasing fame and attractive attention from investors, especially for less famous small business. Meanwhile, issuing stock gives firms more opportunity towards investment in other directions, and refusing issuing would make firm pass up the investment opportunity (Mayers and Majluf, 1984).

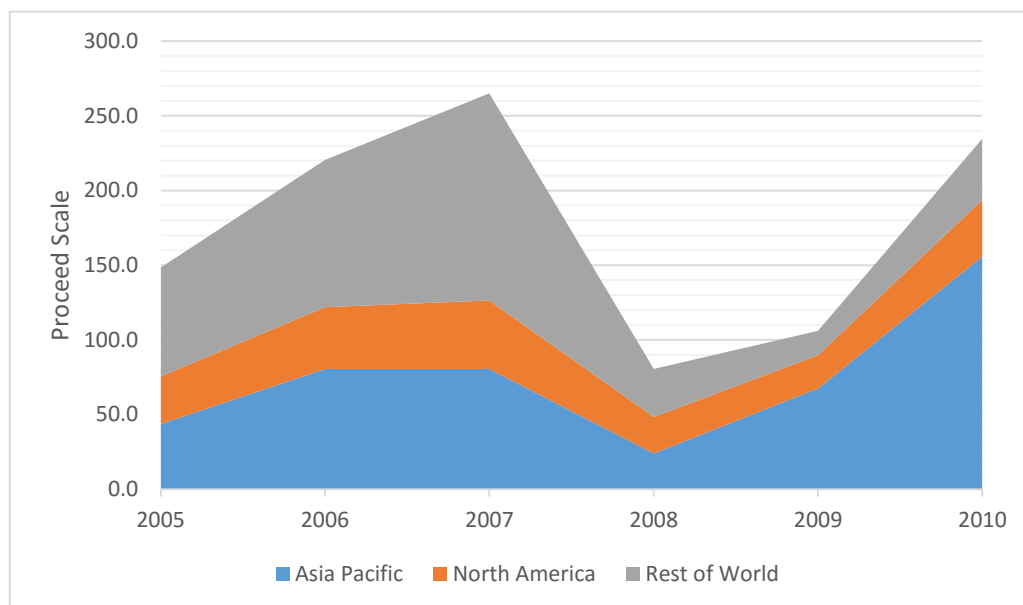
Based on the fact that IPO is considered an attractive raising fund method for companies, underpricing broadly exists on their listing date of those stocks. This phenomenon was proved by Ibbotson (1975) and Ritter (1984) since 1970-80s. For example, Ritter (1984) found that among 5000 listed companies, during 1960-1980 in the U.S. have an average 18.8% price boost during the listing date. Before the firm issuing stock, costs have to be taken into consideration: auditing, underwriting and legal expense as tangible cost and intangible cost such as time, value fluctuation affected by the market. Ritter (1987) found a 21.22% of realized market value has to be paid as a cost for direct expensed and underpricing. Firms going public, especially young growth firms, face a market

that is subject to sharp swings in valuations. The fact that the issuing firm is subject to the whims of the market makes the IPO process a high-stress period for entrepreneurs (Ritter, 1998). Therefore, we can see selling shares to an investor at a lower price than market value directly generates a substantial cost of going public.

1.2 Research Topic

Since the 1990s, China established the current stock market. Considering exchange markets with hundreds years history in many other countries, this market is young and somehow lack of protection from the institution. Meanwhile, it is one of the largest emerging stock markets as well. Figure 1 indicates the development and weight of Asian Pacific IPO comparing with North America in the global market. We can see that all region suffers from the financial crisis and Asian become an important engine of growth afterwards. Based on this background, we can also see that IPO reflects the magnitude of economic vitality.

Figure 1. Global IPO Proceeds



	2005	2006	2007	2008	2009	2010
Asia Pacific	43.7	80.6	80.5	23.8	67.4	155.8
North America	31.9	41.2	45.8	24.5	22.3	37.8
Rest of World	72.9	98.7	138.7	32.3	16.4	41.0

Source: RenaissanceCapital.com¹

¹ <http://www.renaissancecapital.com/ipohome/review/2010review.pdf>

Our article seeks to review different aspects affecting underpricing on the listing date in Chinese A-share market. IPO underpricing was previously studied with various classic models such as winner's curse, signaling and principle-agency model. We found that winner's curse and principle-agency theory are supported by our sample data while signaling cannot be proved.

We will also introduce China's issuing system development and its future trend in the following part.

2. China's IPO Issuing System

China's stock market was established in 1990. Stock can be traded in two exchanges: Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE). Both of them are regulated by China Securities Regulatory Commission (CSRC), which is a ministerial-level public institution directly under the State Council². After the burst of global stock market bubble in 2001, slightly regulation differences were applied to these two exchanges. Large firm shares issuing and trade are in SSE; mid or small firms stock are traded in SZSE. SZSE is also a market for venture exchange. In both of the markets, A-share and B-share are traded, which is for domestic investor and foreign investors respectively.

Currently During the past 25 year's development of China's IPO issuing system, we can observe a series of reforms. These reforms from some aspects reflect the adapting of China stock market with the step of marketization. Generally, China's IPO issuing system is divided into two periods according to change of regulation or government intervention:

Administrative Authorizing System, Approval System (2001-now). The Figure³ below indicates the development of China's IPO issuing system in the past years.

² http://www.csrc.gov.cn/pub/csrc_en/about/

³ Source: http://www.szse.cn/main/nssqyfwzq/wtjd_news/fxssgy/39741015.shtml

Figure 2. The Development of China’s IPO Issuing system

Administrative Authorizing System (1990 - 2000)		Approval System (2001 - Now)		Registration System
Quota Management System (1993-1995)	Index Management System (1995-2000)	Pathway System (Recommendation System) (2001.3 - 2004.12)	Sponsor System (2004.2 - Now)	Future development trend

2.1 Administrative Authorizing System

This system is implemented aiming at protecting the stability of the market, with the supervision from the government. Under this system, CSRC has the authority to make plans for the number of companies and approve their listing. If we check the owner of the listed firms especially in SSE, we could find that majority of these firms are state-owned. Empirical studies (i.e. Gao, 2010) is also proofed this phenomenon in their research.

The process of Administrative Authorizing System relies on the decision of CSRC and local government to a large extent, and that is also one of the reasons that State-owned Enterprises (SOEs) benefit from this system. Under the Quota Management system, CSRC makes plans for the amount of raised fund, and then the amount is distributed to the local government of each province. Afterwards, local government choose the listed firm themselves. On the other hand, Index management system has the limit on the number of listing firms, with the same distribution method with the former. According to the two periods under Administrative Authorizing system, we can see that government plays the actual role in deciding whether a firm could go public, that’s also why SOEs could receive more convenience with their listing.

2.2 Approval System

After March 2001, approval system is executed for IPO. Comparing with the system used previously, it respects the effectiveness from market to a larger extent. Under Approval system, CSRC's power is diluted by sponsors. In this system, a sponsor would be responsible for the listing of the firm, providing service, meanwhile CSRC switched from decision maker to regulator. Within this framework, two sub-systems are applied: Pathway System and Sponsor system. If we look at the execution period for these two systems, we would see that there exist an overlap between them (2014.3 - 2014.12) for the transition.

2.2.1 Pathway System

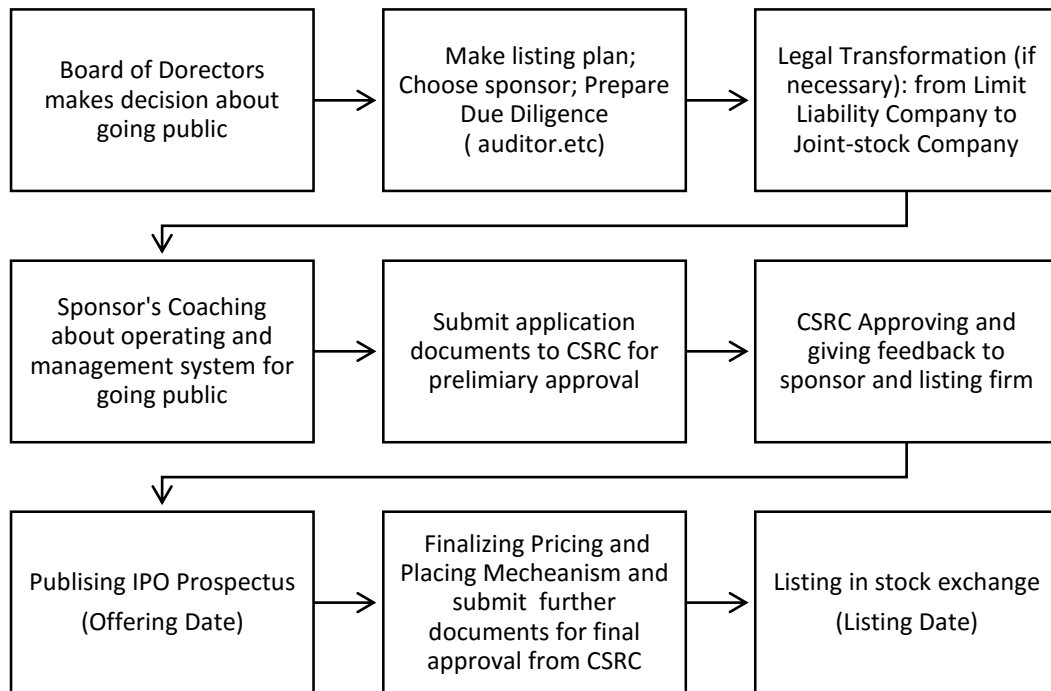
Pathway System, which is also called Recommendation System, is the first step under Approval System. During this period, sponsors have 2-9 pathways for issuance. A sponsor can only accept another listing firm after the pathway of the previous firm is cleaned. It is still limiting the number of IPO in its form, however, substantially it is an improvement comparing with Index Management System in the previous period. Because under Pathway System changed the method that government choose listing firm. Sponsor, meanwhile, undertakes the risk of issuing stock to some extent on one hand and obtains the power to choose an issuing firm.

2.2.2 Sponsor System

Next to Pathway System, Sponsor system strengthens the duty of sponsor. Under this system, a sponsor should not only be responsible for due diligence of the listing firm before issuing but a continuous supervision afterwards as well. The process demonstrated in Figure 3⁴ is the current applied system in China's stock market. It briefly shows the process of stock issuance for a firm.

⁴ Source: <http://www.sse.com.cn/services/sselisting/listcondition/>

Figure 3. IPO process under Approval System



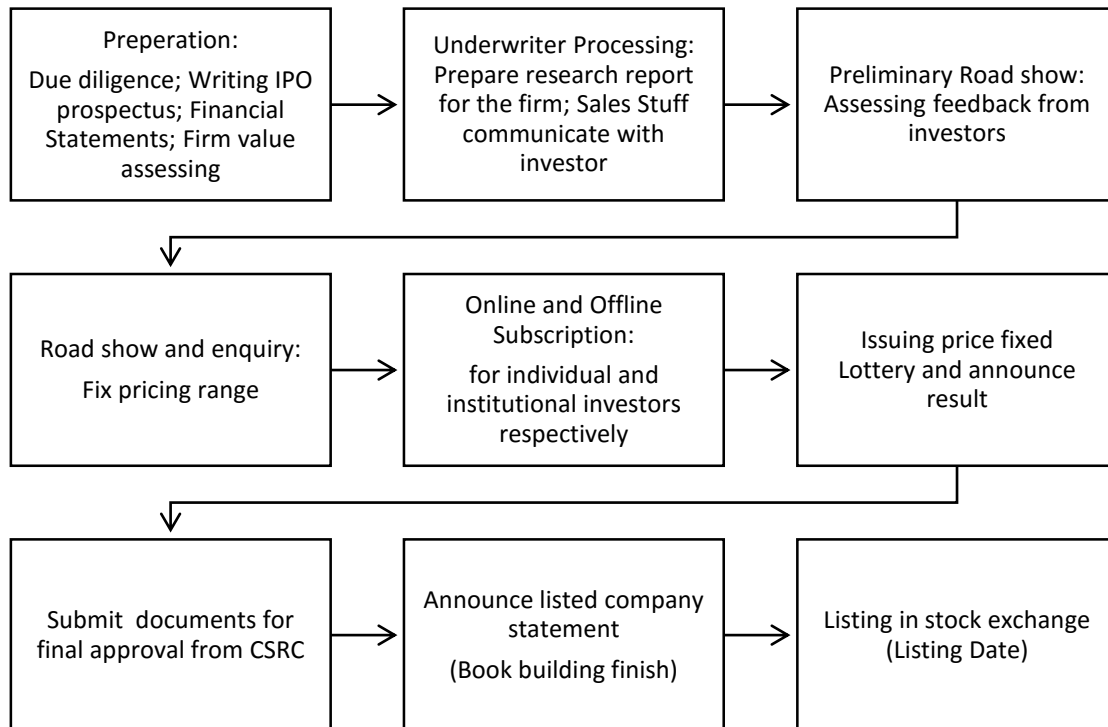
From the process figure showed above, we can see that sponsor’s responsibility is emphasized and specified. Therefore, sponsor plays a significant role in guiding and supervising firms with their IPO. Due to underwriters have practical knowledge about going public and the listing firm’s background, they also play as a supervisor. On the other hand, a company that wants to go public must pass all requirements including both legal and financial regulations, with the help of training from the sponsor.

2.2.3 Pricing and Placing Mechanism

Normally we define the period between offering date and listing date as the duration time of IPO, where pricing and placing mechanism decide how long the time would take. Figure 4⁵ indicates the Pricing and Place Process of IPO, this process mostly located in step 8 of Figure 3.

⁵ Source: <http://www.sse.com.cn/services/sselisting/listcondition/>

Figure 4. Pricing and Placing Process of IPO in China



Generally, there are three types pricing mechanism:

1. Book building.

This is currently the most popular method in the world. It is more likely to be found in markets where institutional investor widely exists such as U.S. and U.K. Firms in Chinese stock market also gradually adopted this method from around 2005.

After making preparation for all due diligence, statements and assessments, the underwriter would do initial work to gather information from the market for helping pricing, including talks with investors and roadshow. Afterwards, underwriter would obtain a pricing range based on information gathered, write research report indicating their pricing model for potential investors. Subsequently, investors would participate in offline and online subscription after paying full amount of subscription fee⁶. Normally, institutional investors benefit from their advantage in this step, and they do offline subscription before individual investors' online subscription due to their strong bargaining power and market knowledge. Issuer would fix final issuing price after subscriptions and announce lottery result. Investors who

⁶ Source: http://www.szse.cn/main/nssqyfwzq/wtjd_news/fxyss/39741253.shtml

do not win the lottery will be refunded. After about 20 days waiting for CSRC approval, issuer would announce a listed company statement so that a newly issued stock would appear in the secondary market in the 1-2 days.

2. Fixed price

With fixed price method, issuer value the issuing price at a pre-determined price. The main difference comparing with book building is whether to apply a price seeking or exploring procedure before offering price. Fixed price offerings are placed without first soliciting investor demand, with investors then making subscription decisions over a period that ranges from two weeks to two months (Busaba & Chang, 2010). On the other hand, book building would use roadshow and talks with potential investors, and assess their expectation afterwards to conclude a suitable pricing range.

3. Auction

This is also a commonly used pricing method in region such as Japan and European continent countries. Shares would be placed according to the result of auctions. The price is based on bidders' available information, and share placements are according to regulation before the auction. We can see that in this pricing method, underwriter and issuer have the least effect.

In China, fixed price method was the most widely used method before 2001. However, as the approval system's execution, book building took over fixed price method's majority position while some firms still keep using fixed price method for their pricing.

2.3 Future development: registration system

Comparing with approval system, registration system is a step towards full marketization. In approval system, CSRC would approve a firm's IPO so that further process would follow. Yet in the registration system, CSRC only participate in inspecting the legal status of firm's application. It means CSRC no longer determine firm's qualification by examining financial performance, issuing price or other determinants appeared in approval system. This change would greatly improve the efficiency of IPO proceeding and reduce firms' issuing cost. Market freedom is a

double-edged sword in this case: releasing control from CSRC would increase the risk of a newly issued stock, the underwriter would face higher pressure and investors have to be more cautious about potential hazards.

3. Literature Review

Many studies investigate IPO underpricing and give explanations in different models. Jenkinson, and Ljungqvist (2001) demonstrated comprehensive models and related evidence to explain IPO underpricing from three aspects—asymmetric information, institutional explanations and ownership and control. In this section, we summarize relevant explanations for IPO underpricing focusing on the first category—asymmetric information. There are some other theories such as underpricing as a method against legal liability (Drake, and Vetsuypens, 1993), or underpricing as a method to retain control (i.e. Smart& Zutter, 2003; Brennan and Franks, 1997), etc. These theories will not be introduced further as there are few evidences in Chinese IPO market. This review can help establishing theoretical foundation for further hypothesis.

Among the theories to explain underpricing, one category is based on if the assumption is asymmetric information or symmetric information. Among the three main entities in IPO— issuer, underwriter and investor, there can be one entity informed more than the others under asymmetric information assumption. When the asymmetry exists between issuers and investors, signaling theory plays the role; When the asymmetry exists between issuers and underwriters, Principle-Agency Theory works; When the asymmetry exists among investors, Rock (1986)'s winners curse hypothesis works.

3.1 Winner's Curse Hypothesis

Rock (1986) assumed that there are two group of investors in the IPO market— informed investors and uninformed investors. Ritter and Welch (2002) stated that it is not realistic to assume all investors equally informed. Otherwise, pricing shares too high will not be acceptable as investors know that they are overpriced. Thus, shares will only be sold at a price below investors' common assessment, which means underpricing

is the only result for IPO market. In the winner's curse hypothesis, those informed investors only bid for attractive IPOs whose issue prices are below their fair value. Without knowing that they will compete with informed investors, the uninformed investors will subscribe to all the IPOs without discrimination. Consequently these uninformed investors "receive a full allocation of overpriced IPOs but only a partial allocation of underpriced IPOs" (Ritter and Welch, 2002), and ended up with an average return lower than riskless rate. This is what named "winner's curse" in IPO market. As none of the two groups of investors can absorb the whole IPO market, underpricing is thus necessary to attract uninformed investors. Koh and Walter (1989) used the allocation rate in Singapore and provided empirical evidence for the existence of winner's curse. There are also other papers examining this hypothesis using worldwide allocation rate. (Levis, 1990; Amihud, Hauser, & Kirsh, 2003) Winner's curse hypothesis is also confirmed in Chinese IPO market. Yu and Tse (2006) collected 343 A-Share IPO data in China market in period 1995 to 1998. They proposed the hypothesis that after rationing adjustment (Rock, 1986), the uninformed investors will break even. Their regression provided a significant result, which is consistent with winner's curse hypothesis.

3.2 Signaling Theory

Another possible explanation is signaling theory, whose assumption is issuers are more informed than investors or underwrites. In this situation, a "lemon market" occurs. Investors cannot distinguish overpriced and underpriced shares, thus they will only buy shares whose prices are below average price. However, only low-quality issuers are willing to sell their shares at the average price. Thus, consistent with the original signaling theory of Spence (1973), high-quality issuers will try to signal their quality to distinguish from the pool of low-quality issuers by costing more, which is, underpricing their shares. Allen and Faulhaber (1989), Grinblatt & Hwang (1989), Welch (1989, 1996) and Rock (1986) hypothesized that high-quality firms distinguish low-quality firm by underpricing. The existence of substantial post-issuing activity of these high-quality firms (Welch, 1989) provided evidence of such hypothesis. Also, signaling

theory is examined in Chinese IPO market. Yu and Tse (2006) hypothesized a positive relationship between IPO underpricing and further seasoned equity offerings for returning to the market. The result shows that in China signaling theory does not hold, because such relationship is caused by market information feedback. Michaely and Shaw (1994) also rejected signaling theory by insignificant correlation between higher propensity for seasoned equity offering (SEO) and more underpriced IPOs.

3.3 Principle-Agency Models

Underwriter is an intermediate entity between issuers and investors. Benveniste and Wilhelm (1997) stated that underwriters can reduce IPO underpricing by pricing and allocating shares optimally. When asymmetric information exists between underwriters and issuers, it can lead to underpricing.

There are some papers investigate IPO underpricing on the basis of principle-agency model (i.e. Baron, 1982; Gannon & Zhou, 2008; Muscarella & Vetsuypens, 1989). Loughran & Ritter (2004) states that allocation of attractive shares can boost underwrites' profit. Baron, 1982 found that when issuers transfer pricing power to underwrites, underwrites found underpricing will reduce cost to market an IPO. As issuers have few access to observe or monitor underwriters pricing or allocation process, underwriters will tend to underprice IPO shares for following motivations—increasing success rate of issuing(Gannon & Zhou, 2008), reducing marketing cost and satisfying buy-side clients in order to establish a long relationship and make profit (Ritter, 1998). Thus, underwriter's reputation can be an essential term to influence IPO underpricing. Carter & Manaster (1990) observed a negative relationship between underwriter reputation and underpricing phenomenon according to the fact that underwriters with more reputation introduce good quality firms into market to reduce underpricing.

4. Hypotheses and Methodology

We examined the issuing system of Chinese stock market and its development. With our literature review towards underpricing existing in both China and other stock exchange, we also conclude several highlighted methodologies and results in empirical studies. However, several studies took the market out of China as sample or dataset could not reflect the development within change of current approval system. Therefore, in this part, we will illustrate our research about factors which affects IPO underpricing.

Newly issued stock provides non-risk arbitrage opportunities. It would benefit new investors on one hand and reduce existing shareholders' welfare. Meanwhile, the ultra-profitability in the primary market caused by IPO underpricing would also be reflected in the secondary market. Due to high demand in the primary market of the new stock, the secondary market stock price would be abnormally high.

4.1 Underpricing Explanation

In general, IPO underpricing stands for the fact that issuer sells shares to investor lower price than market value and this cost contributes a substantial cost of going public (e.g. Ritter, 1987). Meanwhile, regarding cyclical change of market, we also need to include a market indicator. Our research is based on Mok & Hui (1998)'s method of measurement. We define first-day return (FDR) as measurement of underpricing regarding market return:

$$\text{FDR} = r_{n,1} - R_{m,1}$$
$$\text{where } r_{n,1} = \left(\frac{P_{n,1}}{P_{n,0}}\right) - 1 \text{ and } R_{m,1} = \left(\frac{P_{m,1}}{P_{m,0}}\right) - 1$$

We use $r_{n,1}$ to represent underpricing for an individual stock n , which is generated from its closing price in the issuing date $P_{n,1}$ and its offering price $P_{n,0}$. Accordingly, the market indicator is the ratio between the A-share market composite index of the issuing date $P_{m,1}$ and offering date $P_{m,0}$.

4.2. Hypotheses and variables

From this part, we would clarify our hypotheses and discuss influencing factors. According to empirical studies and our research, we can build up our hypotheses as the following:

$$\text{FDR} = \alpha + \beta_1 \ln \text{tgap} + \beta_2 \text{nonliquid} + \beta_3 \text{cpafirm} + \beta_4 \text{epedlt} + \beta_5 \ln \text{size} + \beta_6 \text{bdipct} + \beta_7 \text{prdtmtp} + \beta_8 \text{sponsor} + \beta_9 \text{ex} + \beta_{10} \text{bear} + \beta_{11} \text{age} + \varepsilon$$

In this model, $\ln \text{tgap}$ is natural log of time duration between offering date and listing date; *nonliquid* is the proportion of non-tradable shares; *cpafirm* is reputation of auditor; *epedlt* is the profitability before issuing; $\ln \text{size}$ is natural log of firm sales size; *bdipct* is the percentage of independent board director; *prdtmtp* is firm's pricing method; *sponsor* is the reputation of underwriter; *ex* stands for exchange market where the firm issue shares; *bear* is an indicator for bull or bear market; *age* is the duration time between the firm's establishing and listing. Based on empirical studies and our analysis of China's IPO system, we have the following hypotheses:

4.2.1 Time Gap

As an important factor related with asymmetric information, the time gap affects IPO underpricing, which is defined as the time between the dated IPO prospectus published (offering date) and listing date. And this phenomenon varies among different countries (i.e. Mok & Hui, 1998). Under Administrative Authorizing system before 2001, this period was much longer than current Approval System. Comparing with other countries, the issuing duration time is also longer. The average time even reached more than 200 days (Mok & Hui, 1998). In Chapter 2.2 we compared advantages of Approval System regarding Administrative Authorizing system. One most obvious improvement of Approval system is approving efficiency. As an important representation of efficiency, time gap is believed related with IPO underpricing:

- *Hypothesis 1: Longer time gap between offering and listing date is related with higher underpricing degree.*

Time gap is related with winner's curse hypothesis. Because time gap makes different for informed investors and uninformed investors would not benefit from a longer time gap. According to the fact that time gap changes before and after policy change of 2001 approval system, we still believe this factor is related with the policy after 2001. Therefore, the potential moderating effect would also be discussed in following part.

4.2.2 Non-tradable Shares (NTS)

In general, there are four types of shares existing for an issuing firm: state-owned shares (shares directly state owned, or indirectly state-owned: controlled by stated owned legal entities), legal entity shares, natural person shares, employee shares, ordinary A-shares and ordinary foreign shares. Among these shares, the last two types are known as tradable in the stock exchange of SSE and SZHE (Guo & Brooks, 2008). Non-tradable shares are not allowed to be directly traded in the secondary market while it is allowed to be traded by auction or transferring by negotiation and agreement. Besides, transferring non-tradable shares must be authenticated by CSRC, so that its liquidity is greatly reduced. However, substantial non-tradable shares are held by managers (i.e. state-owned entities, employees, etc.) while tradable shares have no access to decision making, consequently, agency problem raise. After several attempts, since September 2005, Chinese IPO experienced a reform about non-liquid share, which is particularly helpful for benefiting firms with poorer corporate governance, transparency and small companies (Beltratti, Bortolotti and Caccavaio, 2011). Therefore, we would discuss the impact to underpricing from the non-tradable shares, especially the effect before and after the policy change in 2005.

- *Hypothesis 2: The higher non-tradable share proportion, the higher underpricing degree will be.*

4.2.3 Profitability and Size

As underpricing's definition, it is a cost of going public. Firms with different financial conditions would have different bargaining results with investors before issuing: more profitability would have more bargain power against investors so that underpricing would be less. Profitability as a signal towards the market represents the firm's financial performance in past years. Firms with better profitability, their performance would be considered as a positive news to the market and would increase investor's confidence in this firm. Empirical studies also proved that negative announcements would have negative effects on equity issues (i.e. Asquith and Mullins, 1986) and profitability is positive. Therefore profitability of the company might be a factor affecting the degree of underpricing. Therefore, we have the following hypothesis:

- *Hypothesis 3: The higher profitability the firm has, less underpricing will happen.*

Size would be a similar factor as profitability, which is related to bargain power of the issuing firm. According to our prediction, we would try to reject signaling model which suggests a positive relation between underpricing and profitability (Jegadeesh, Weinstein and Welch, 1993). And based on Yu and Tse (2006)'s opinion, we also predict a negative relation between these two factors in Chinese stock market:

- *Hypothesis 4: The larger size the firm has, less underpricing will happen.*

Our Hypothesis 3 and 4 predicts the wealth of the company would have a negative effect on underpricing. This prediction on the other hand would form a critical opinion against agency theory, which predicts the wealthier the firm is, the agency would care less about the cost in IPO.

4.2.4 Corporate Governance

Companies with better corporate governance would restrict discretionary decisions of its manager. Moreover, better corporate governance is proofed to be directly related to firm's market value (Bai et al., 2004). During the process of IPO, the chance of collusion between investors and issuer would be increased. A certain fraction of independent board directors would be helpful for improving corporate governance (i.e. Byrd and Hickman, 1992). Within regulation of CSRC, independent board directors must be over 1/3 of the total number, including at least one with the accountant background⁷. With respective independent directors' monitoring, a better corporate governance would limit the chance of collusion so that cost of underpricing would be lower. Thus, we have the following hypothesis:

- *Hypothesis 5: The better corporate governance, the lower underpricing degree will be.*

4.2.5 Reputation of Auditor and Underwriter

Rock (1986) mentioned in his research that investor having more information would have the advantage during the stock issuing than investors who do not have. This asymmetric information theory was developed in later studies by other researchers. The reputation of underwriter and auditor would reveal the expected level of "informed" activity. An organization's reputation reflects the quality of service they provide because auditor and underwriter owns necessary knowledge in their own field and are familiar with related regulations. Auditor with higher reputation would make their financial report towards the firm more reliable. On the other hand, better service from underwriter would provide better assessing and guidance to the firm's going public and avoid potential incidence during the process. Organizations with better reputation are related to lower risk of offering so that investor would be less incentive to require more information (Carter & Manaster, 1990). Unlike in some other countries where underwriter is mostly investment banks or commercial banks, in China, underwriter

⁷ http://www.csrc.gov.cn/pub/newsite/flb/flfg/bmgf/ssgs/gszl/201012/t20101231_189696.html

service is mostly provided by qualified security companies. So when we do our research on reputation of underwriter, we would investigate reputation of these sponsors. Based on our analysis above, we would have our hypothesis about reputation of auditor and underwriter:

- *Hypothesis 6: With better reputation of an auditor, a lower degree of underpricing would happen.*
- *Hypothesis 7: With better reputation of an underwriter, a lower degree of underpricing would happen.*

Concluding variables mentioned above, we also include control variables such as exchange location (ex) and cyclical market situation (bear), which are also believed to contribute IPO underpricing. Based our hypotheses, we have the following predictions:

Table 1 Predictions and variable measurements

<i>Variables</i>	<i>Prediction</i>	<i>Measurement</i>
<i>ln tgap</i>	+	natural log of time gap between offering date and listing date
<i>nonliqpct</i>	+	non-liquid share / total share issued
<i>cpafirm</i>	?	cpafirm=1 if auditor is big10, otherwise=0
<i>epedlt</i>	-	profitability before IPO
<i>ln size</i>	-	natural log of sales amount
<i>bdipct</i>	-	independent board director / total board director number
<i>prdtmtp</i>	+	IPO pricing method prdtmtp=1 for fixed price, 0 for book-building mechanism
<i>sponsor</i>	-	underwriter reputation, sponsor=1 if biggest 5 sponsor during the listing year, 0 otherwise
<i>ex</i>	?	ex=1 for SSE, ex=0 for SZSE
<i>bear</i>	-	bear=1 if the time is bear market, otherwise=0
<i>age</i>	?	age=(listing date – establishing date) /365

5.Data and Empirical Results

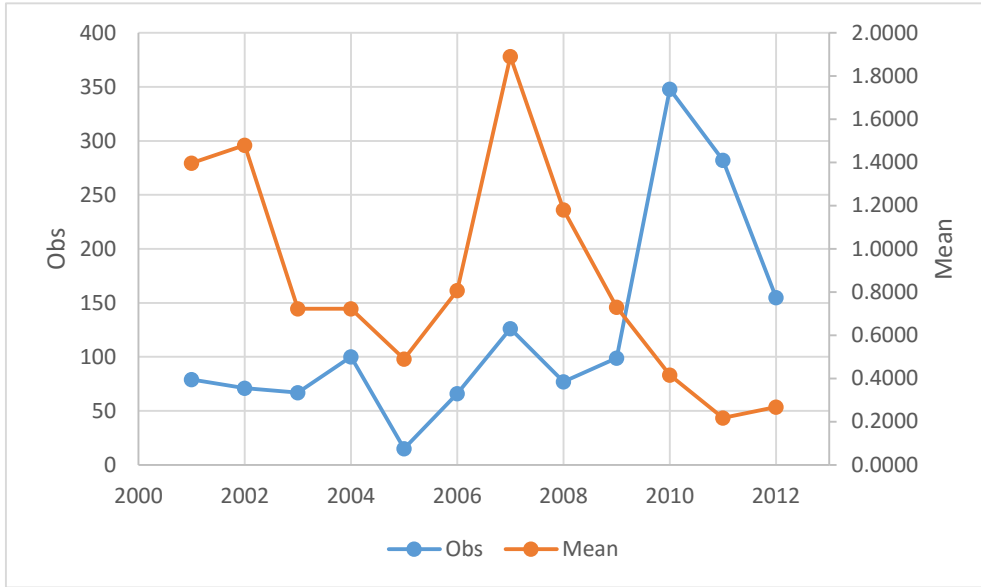
5.1 Data and sample

Since our research is about IPO underpricing in Chinese A-share market, we obtain our sample data from China Stock Market and Accounting Research (CSMAR) and Beijing RESSET Technology Co., Ltd database, which are two of the most leading comprehensive data provider based in China. Most variables' data is obtained from CSMAR except company age and size data from RESSET.

Our dataset contains 1486 samples and the data range in our research is 2001-2012. The reason is previous empirical studies mainly focus underpricing Administrative Authorizing System so that majority of their dataset fall into duration before 2001. In order to filter out effect due to approval system change, we start our sample data from 2001. Because CSRC stopped IPO for 15 months from October 2012 to January 2014, our data set would end to IPOs in 2012. In addition, during the time range we choose, there was also a long-term IPO stop from May 2005 to June 2006. Consequently, we also observe no data in this duration.

Figure 2 briefly showed trends about underpricing in the 12 years of our sample. Intuitively, we observe a positive correlation between underpricing and number of newly issued stocks before 2008 while we can no longer observe such a relation afterwards. On the other hand, we also found a downward trend of underpricing after 2007.

Figure 5 Observations and mean of IPO underpricing (Appendix 1)



Appendix 2 demonstrates the summary of variables in our research. We can see mean and median value of most non-dummy variables are not large, so that we believe this data set is concentrated more to the mean and less to both ends. The p25 and p75 data also are also helpful in receiving a supportive judge to this result. Nevertheless we observed a relative large difference between mean and median of first-day return: median 0.46 is much smaller than mean 0.70. This means more listing firms have a lower underpricing level comparing with the average level, in other words, most firms suffers from underpricing less than average. Another obvious fact we can see is that manufacturing firm (indcd5) owns majority of all listing firms, occupying more than half of the positions. This also copes with the economical fact that China's manufacturing industry emerges during this period of time, accordingly, more companies in this industry goes public. Due to availability of data about profitability before issuing, we only obtained 1297 samples which is less than the total number of issued firm 1486.

5.2 Winsorization

We analyzed our data set using OLS regression with the help of Stata. Before obtaining the final regression result, we winsorized data sample of time gap ($\ln \text{tgap}$) and firm's pricing method (prdtmtp) at 1% level, in order to avoid unnecessary interference from several extremely large observations. As our direct observation from sample data, we found several firms' listing time gap was extremely high (i.e. 3 firms have time gap more than 3000 days). We also observe that these abnormal firms are listed in 2001 and 2002. It means their listing procedures started before 2001 and Administration Authorizing System is the reason for the long duration time. Guo & Brooks (2008) also found in their research that in early years the average time reaches more than 200 days. Their data sample ranges from 1994 to 2005. Thus, we believe that the previous approval system do have longer time gap comparing Approval System in our research sample data.

5.3 Correlation coefficient and multicollinearity

After variable winsorizing, we analyzed correlation coefficient between variables, as content presented in Table 2. We observed that correlation coefficient of majority variables is around 0.1 so that we tentatively believe multicollinearity is not strong among variables. There are six industries in total in our sample data. In case of multicollinearity by nature, our matrix does not include the last type indcd6 . We observed that industry, especially public service (indcd2) and manufacturing (indcd5) have higher correlation with other factors, while other industries does not. Moreover, as an individual factor, the proportion of non-tradable shares (nonliqpct) and firm's pricing method (prdtmtp) also have higher correlation coefficient than average.

In addition, in order to verify that multicollinearity would not influence the significance of our regression, we also use VIF test (see Appendix3) and obtained mean VIF 2.29. Therefore, we believe that multicollinearity would not sufficiently affect a general regression covering all year or industries.

Table 2. Correlation coefficient matrix

	<i>fdr</i>	<i>ln tgap</i>	<i>nonliquid</i>	<i>cpafirm</i>	<i>epedlt</i>	<i>ln size</i>	<i>bdi</i>	<i>prdtmtp</i>	<i>sponsor</i>	<i>ex</i>	<i>bear</i>	<i>age</i>
<i>fdr</i>	1											
<i>ln tgap</i>	0.1178	1										
<i>nonliquid</i>	-0.021	-0.273	1									
<i>cpafirm</i>	-0.063	-0.106	0.1128	1								
<i>epedlt</i>	-0.242	-0.062	0.2948	0.0277	1							
<i>ln size</i>	-0.127	-0.283	0.2932	0.1438	-0.133	1						
<i>bdi</i>	-0.099	-0.113	0.111	0.0283	0.0542	0.1015	1					
<i>prdtmtp</i>	0.0738	0.305	-0.6806	-0.124	-0.329	-0.082	-0.13	1				
<i>sponsor</i>	-0.081	-0.028	0.0164	0.0517	-0.015	0.0665	-0.005	-0.0318	1			
<i>ex</i>	-0.004	-0.1	-0.2217	-0.0195	-0.284	0.4039	-0.071	0.5476	0.0536	1		
<i>bear</i>	-0.419	0.0574	-0.1826	0.0285	0.256	-0.113	0.0286	0.1221	0.0151	0.0081	1	
<i>age</i>	-0.14	-0.111	0.0999	0.0413	0.1617	-0.017	0.0292	-0.2729	0.0345	-0.177	0.1384	1

5.4 Regression results

5.4.1 Multicollinearity and VIF regression results

As we mentioned in previous parts, Chinese stock market experienced a reform about non-tradable shares from September 2005, and IPO once stopped for one year from mid-2005 to mid-2006. Moreover, from observation from Figure 5, we also observed a Therefore we would proceed our regression in not only full-time range from 2001 to 2012 but also 2001-2005 and 2006-2012 separately.

We also use VIF test to check multicollinearity of these two periods respectively, and VIF mean value below 1.6 were observed during all these three time durations. Thus, we believe regression would not be affected by multicollinearity problem.

5.4.2 Preliminary regression results

Table 3 demonstrates a general result of our regression. During the total time duration, we observe more significant coefficients than either of those two time ranges. Meanwhile, 2006-2012 regression result cope more with the overall result. Main reason for this is because sample data of the later duration is larger than the earlier one. We also believe that during 2001 to 2005, Chinese stock market is still in the process of adapting the new Approval System, and some of 2001-2005 issuing firms still are affected by Administrative Authorizing System. It is obvious that the regression results significance is improved after 2006 comparing with the period before.

Table 3 Preliminary OLS regression result of fdr coefficients

<i>fdr</i>	<i>All IPOs</i>	<i>2001-2005</i>	<i>2006-2012</i>
<i>ln tgap</i>	0.06595 (2.58)***	-0.04334 (-0.18)	0.06540 (2.41)**
<i>nonliquid</i>	0.67956 (2.37)**	-0.33400 (-0.4)	0.79137 (2.56)**
<i>cpafirm</i>	-0.01190 (-0.32)	-0.05553 (-0.64)	-0.00641 (-0.16)
<i>epedlt</i>	-0.73762 (-5.54)***	-1.96896 (-1.32)	-0.74689 (-5.32)***
<i>ln size</i>	-0.11130 (-6.18)***	-0.14220 (-3.47)***	-0.10116 (-4.88)***
<i>bdi</i>	-0.61560 (-2.09)**	-1.71975 (-2.67)***	-0.53700 (-1.6)
<i>prdtmtp</i>	0.14000 (1.44)	-0.03745 (-0.16)	0.50670 (1.05)
<i>sponsor</i>	-0.10670 (-2.52)**	-0.10004 (-1.03)	-0.09798 (-2.09)**
<i>ex</i>	0.02875 (0.43)	0.16745 (1.71)*	-0.04188 (-0.49)
<i>bear</i>	-0.89861 (-14.68)***	0.01473 (0.04)	-0.91140 (-14.15)***
<i>age</i>	-0.00618 (-1.61)	-0.01021 (-1.14)	-0.00540 (-1.28)
<i>_cons</i>	2.38391 (12.96)***	2.70108 (2.79)***	2.27948 (11.06)***
<i>N of Obs</i>	1296	186	1110
<i>adj. R²</i>	0.2449	0.1096	0.2547
<i>F-stat</i>	39.17 (0.000)***	3.07 (0.002)***	35.46 (0.000)***

For individual coefficients, we can see $\ln tgap$ has significant effect on first-day return while the positive effect degree is not very high. We can see for every percent increase in time gap would cause stock price about 6.6% higher. As we know most time gap is within 30 days, therefore we know $\ln tgap$ would have limited effect on underpricing. Although the effect magnitude is not as large as our expectation, we still believe Hypothesis 1 is supported by our regression result.

We do observe a large coefficient from non-tradable shares (*nonliquid*). The coefficient significance is improved to 5% significance level during the later period when the time range is divided. According to our regression result, we can see the more non-tradable share is related with a higher degree of underpricing. During 2006-2012 the effect becomes even stronger: every 1% non-tradable shares would increase underpricing by 0.68%. The strong impact from non-tradable shares indicates that underpricing exists to a large extent before going public to individual investors. And institutional investors' first-mover advantage is a direct cause of this phenomenon. Thus we find this regression result consists with our prediction and supports Hypothesis 2.

We also observed a negative relationship between profitability and underpricing. This coefficient is obtained based on the ratio between equity and asset. We can see that profitability is negatively related with underpricing to a large extent: the coefficient is -0.747 in total time range which means for every 1% of profitability would reduce underpricing by 0.7%. This result copes with our prediction about bargain power against investor: more profitable companies would have stronger bargain power so that they would suffer less from underpricing. Therefore we believe that Hypothesis 3 is proofed and profitability plays a considerable role in IPO underpricing.

Size has the only result that is 1% significance during all periods in our sample data. We use $\ln size$ as measuring method due to a better regression result: it explains the change of FDR for each certain proportion increase of sales size. We also tried to measure this relation with only sales size rather than its natural log. However, the regression result is not as sufficient as $\ln size$, because proportion increase can better explain its effect on first-day return change. As we can see from the result, each 1% increase in size would make 0.11% reduce in underpricing, which proofed our

prediction that large firms suffer less underpricing due to their stronger bargain power. Their negatively significant relation suggests that, although the magnitude is not large, Hypothesis 4 would still be positively explained.

We predicted that better corporate governance would reduce underpricing. In our regression result, individual board director do have a large coefficient on first-day return. We observed that this effect is significant in the total time range. However, we could not obtain satisfactory result when the time is divided into two periods, which means effect from individual board director to the underpricing degree is not obvious during these two sub-time-ranges. Therefore, we can only state that we fail to reject the null hypothesis of Hypothesis 5 in during 2006-2012 on one hand, yet this effect is positively suggested at 5% significance when the time is expanded to 12 years.

As our prediction about the organization of listing, we choose to find out effect from the reputation of auditor and underwriter. In our dataset, we obtained a very low significance level for auditor on one hand, and significant of underwriter reputation's effect. Appendix 4 shows underwriters we choose for each year. We pick top 5 underwriters of each year according to numbers of deals these companies obtained for listing. As we can see from Appendix 4 fierce competition among underwriters makes the list updated every year. Therefore, our regression result also suggests a relatively weak effect from this factor. We observed that underwriter reputation's significance is higher during the overall period (within 5% significance level, but p-value 0.012 is very closed to 1% significance level) while when the period is 2001-2005 is insignificant and 2006-2012 has a lower significance level of 5%. Our regression result about organizations suggests that, to some extent, a better reputation of underwriter would make companies suffer less underpricing. However, it seems that investors do not care so much about financial information from auditors. Therefore, our prediction of Hypothesis 6 could not be proofed by our regression result, yet prediction of Hypothesis 7 is confirmed.

Besides eight hypotheses above, we also observed effect from other variables. We find that exchange market location does not make an obvious difference to underpricing, although there are slight differences about regulations and size of listed firms between

SSE and SZSE. In addition, we found that economic background has a cyclical effect on underpricing. Tremendous negative relation suggests that underpricing would increase substantially during bull markets, vice versa. Moreover, we could not obtain a significant result about company age, and the coefficient is at a very low level as well. Consequently, we believe firm age is not related with underpricing.

5.4.2. Adjusted results: year fixed effect and heteroskedasticity

Industry and time are two important factors affecting our regression result, limiting R^2 at a low level. The logic is obvious: when a firm from newly emerged industry wants to go public, it by nature takes more risk so that investor would require more underpricing as compensation. Empirical studies found that underpricing differs under different backgrounds. For instance, natural resource companies in the 1980s as new “hot issue” faced higher underpricing in the US (Ritter, 1984). In addition to explaining this, Allen and Faulhaber (1989) stated that issuing firms with better prospects would have a higher degree of underpricing for signaling investors. On the other hand, industry may also have a different effect on among explanatory variables, such as size and time gap. For instance, financial service firms’ sales size are less stable than others in a cyclical market; high-tech companies have longer time gap due to difficulty in examining process. Besides, we also observed substantial time trend across the year in variable such as time gap ($\ln \text{tgap}$). Intuitionally, we believe the effect of time comes from the approval system reform, with the improvement of current Approval System, the approval efficiency improves accordingly. Therefore, in our research, we also predict that segment of the market would also be a factor affecting our regressions.

Based on our preliminary regression result, we used Breusch-Pagan test for testing heteroskedasticity. The test result suggests that Heteroskedasticity exists in our regression with p-value of 0. Therefore, in order to obtain a more reliable result, we would develop our preliminary result using year and industry fixed effect in our following regressions. In addition, we would also include the cluster of year and industry to reduce the influence of heteroskedasticity.

Table 4 demonstrates our regression result regarding fixed effect of time and industry. Column 1-3 include 1296 IPOs from 2001 to 2012; column 4-5 include the sub-period samples of column 3. Aiming to avoid heteroskedasticity effect, we used heteroskedasticity-consistent standard errors to obtain these t-statistics in parenthesis. Their standard errors are corrected by clustering across year and industry. Comparing with our preliminary result, we refined industry categories: the 6 large industries we discussed before are additionally divided into 68 subspecies. We only observed 44 cluster of industries during 2001-2005 and 67 clusters in 2006-2012.

Comparing with our regression result in Table 3, we can see table 4 result has a reduced significance and slightly different exists in the value of coefficients, yet the conclusion from results still consist. We observed time gap (*ln tgap*), profitability (*epedlt*), firm size (*ln size*) underwriter reputation (*sponsor*) and market circumstance (*bear*) still has significant relation with underpricing. Their coefficients do not have considerable change comparing with our preliminary result. Moreover, we also observed apparent change in non-tradable shares (*nonliquid*), the coefficient largely increased but turns to insignificant. The similar change is also observed on independent board director (*bdi*). Besides, we also found that firm age (*age*)'s significance increased to 10% when the time range is divided into two periods. According to our result with time and industry fixed effect, we found Hypothesis 2 no longer holds, and the rest hypotheses still are supported by our adjusted regression result.

Comparing with our regression results in Table 3, Table 4 provided us a better result with considerably higher R^2 : 0.48 for all time range, 0.19 for 2001-2005 and 0.50 for 2006-2012. Therefore, we believe the result becomes much more reliable than the previous one we obtained.

Table 4 OLS regression result of fdr coefficients

<i>fdr</i>	(1)	(2)	(3)	(4)	(5)
	All IPOs	All IPOs	All IPOs	2001-2005	2006-2012
<i>ln tgap</i>	0.06867 (2.350)**	0.04094 (2.400)**	0.04361 (2.640)***	0.24483 (-0.62)	0.04495 (2.600)**
<i>nonliquid</i>	1.01793 (2.140)*	-0.07323 (-0.260)	0.27143 (-0.82)	1.08162 (2.930)***	0.26845 (-0.71)
<i>cpafirm</i>	0.00056 (-0.02)	0.01786 (-0.54)	0.03162 (-0.87)	-0.03474 (-0.330)	0.04467 (-1.15)
<i>epedlt</i>	-0.83573 (-2.080)*	-0.50466 (-4.180)***	-0.58351 (-4.570)***	-3.18369 (-1.560)	-0.5746 (-4.630)***
<i>ln size</i>	-0.1327 (-4.070)***	-0.12139 (-8.010)***	-0.1205 (-8.830)***	-0.19371 (-4.080)***	-0.12203 (-8.510)***
<i>bdi</i>	-0.54124 (-1.740)	-0.32381 (-1.260)	-0.34468 (-1.260)	-0.36977 (-0.330)	-0.31118 (-1.070)
<i>prdtmtp</i>	0.20668 (1.790)*	-0.2127 (-0.900)	-0.08547 (-0.340)	0.14255 (-0.36)	-0.21828 (-0.520)
<i>sponsor</i>	-0.10257 (-2.470)**	-0.07767 (-2.380)**	-0.09041 (-2.640)***	-0.02247 (-0.160)	-0.08189 (-2.040)**
<i>ex</i>	0.01882 (-0.25)	0.08251 (-1.64)	0.08284 (1.730)*	0.14759 (-1.17)	0.1154 (1.940)*
<i>bear</i>	-0.93651 (-2.430)**	-0.25593 (-1.530)	-0.34198 (-2.140)**	-0.40905 (-0.940)	-0.33542 (-2.020)**
<i>age</i>	-0.00511 (-0.700)	0.00184 (-0.53)	0.00405 (-1.11)	-0.01654 (-1.700)*	0.00682 (1.720)*
<i>_cons</i>	2.4746 (4.670)***	1.83564 (9.260)***	1.85578 (7.850)***	2.1051 (1.350)***	1.71668 (9.910)***
<i>Year Fixed effect</i>	No	Yes	Yes	Yes	Yes
<i>Industry Fixed effect</i>	Yes	No	Yes	Yes	Yes
<i>N of Obs</i>	1296	1296	1296	186	1110
<i>Adj. R²</i>	0.2668	0.4628	0.4807	0.1856	0.501
<i>F-stat</i>	99.45	15.01	86.41	51.08	97.33

5.4.3 Result discussion

Combining our regression result with models we mentioned in the literature review, we can see that several models are proofed based on our data while some theories not.

Winner's curse hypothesis suggests that issuers would use underpricing to attract or compensate uninformed investors. Because lack of information about issuer, they could not obtain a positive return. According to our regression outcome about time gap, we can see that this factor which is directly related with informed investors, has an obvious impact on underpricing. It proofs Rock (1986)'s opinion about underpricing as compensation to uninformed investors. Therefore, we believe winner's curse is supported based on our result.

Signaling model states that better firm would have higher degree of underpricing in order to attract more investment. Age and profitability of the firm, reputation of auditor and underwriter are factors related with signaling theory. We observed insignificant relation with age and auditor reputation. What is more, regression result about profitability and reputation of underwriter suggests an opposite result against signaling theory. Thus, we find this theory cannot be applied in our sample.

Principle-agency model suggests better agency would save cost of underpricing for the firm. Our regression result about underwriter reputation indicates negative significant relation with underpricing. This result supports prediction of this model. Therefore, principle-agency model is supported by our regression outcome.

6. Conclusion and discussion

6.1 Conclusion

In our article, we studied determinants of IPO underpricing in Chinese A-share market. We investigated the impact of 11 factors and observed significant impact from 5 of them. We found with longer time gap, asymmetric information becomes more apparent, so that the listing company would suffer more from underpricing. Non-tradable shares also have the similar impact. On the other hand, firms with higher profitability and size would help to reduce the underpricing cost for the firm because they endow firms stronger bargain power against investors. Moreover, independent board directors' management and better underwriter are helpful to reduce agency problem so that additionally reduce underpricing. We also found underpricing degree changes with cyclical market background and varies among different industries.

Based on empirical studies of classic models, our research outcome supports Rock (1986)'s winner's curse hypothesis and Baron (1982)'s principle-agency hypothesis. Consistent with Yu and Tse (2006)'s finding, we believe Welch (1989)'s signaling model does not hold in Chinese A-share market.

We will also introduce China's issuing system development, the improvement in reducing asymmetric information problem and marketization.

6.2 Limitation and future studies

Due to policy change and reform in 2002, state-owned shares are no longer applied to IPOs. Nevertheless, it is hard to observe indirect state-owned shares, such as shares owned by state-owned legal entities. All such shares are only labeled as "non-tradable shares" in our research. Therefore, our regression still has improvement space for future studies about studying indirect impact from the government to underpricing.

Our sample data starts from 2001 when Approval System was applied. Due to the limit of availability, it is difficult to measure quantitatively how much effect on underpricing during the first several years came from to Administrative Authorizing System.

Appendix 1

Table 5. Sample data summary of IPO underpricing

Year	Obs	Mean	Std. Dev.	Min	Max
2001	79	1.3965	1.2596	-1.5838	8.3398
2002	71	1.4796	1.6006	0.2574	12.8535
2003	67	0.7225	0.4344	0.1365	2.2508
2004	100	0.7220	0.5437	-0.0572	3.2974
2005	15	0.4895	0.3302	0.0440	1.3183
2006	66	0.8075	0.6014	-0.0125	3.4287
2007	126	1.8905	1.1176	0.3216	5.2575
2008	77	1.1810	0.8848	0.2307	4.1049
2009	99	0.7301	0.4086	-0.0050	2.0691
2010	348	0.4158	0.4059	-0.1122	2.7310
2011	282	0.2169	0.2918	-0.1761	1.9437
2012	155	0.2680	0.5808	-0.1951	6.2410

Appendix 2

Table 6. Summary statistics of regression variables

Variable	N	Mean	Std. Dev.	Min	P25	Median	P75	Max
fdr	1486	0.70447	0.87527	-1.58376	0.17368	0.45905	0.90823	12.85346
ln tgap	1486	2.4850	0.81224	0	2.39790	2.63906	2.94444	3.89182
nonliquid	1486	0.15684	0.12606	-0.91411	0	0.20000	0.20000	2.05465
cpafirm	1485	0.44444	0.49707	0	0	0	1	1
epedlt	1297	0.31332	0.15836	0.03280	0.19800	0.26050	0.40580	1.11790
ln size	1486	6.54529	1.31171	4.13993	5.65661	6.30759	7.15220	13.63523
prdtmtp	1486	0.19515	0.39645	0	0	0	0	1
sponsor	1486	0.25437	0.43566	0	0	0	1	1
ex	1486	0.28668	0.45236	0	0	0	1	1
age	1485	8.43480	5.07300	0.04932	4.64932	8.00822	11.14795	54.34521

<i>Variables</i>	<i>Measurement</i>
<i>ln tgap</i>	natural log of time gap between offering date and listing date
<i>nonliqpct</i>	percentage of non-liquid share: non-liquid share / total share issued
<i>cpafirm</i>	reputation of auditor, cpafirm=1 if auditor is big10, otherwise=0
<i>epedlt</i>	profitability before IPO
<i>ln size</i>	natural log of sales amount
<i>bdipct</i>	independent board director proportion: independent board director / total board director number
<i>prdtmtp</i>	IPO pricing method: prdtmtp=1 for fixed price, 0 for book-building mechanism
<i>sponsor</i>	underwriter reputation: sponsor=1 if biggest 5 sponsor during the listing year, 0 otherwise
<i>ex</i>	exchange location: ex=1 for SSE, ex=0 for SZSE
<i>bear</i>	bear=1 if the time is bear market, otherwise=0
<i>age</i>	age of the firm: age=(listing date – establishing date) /365

Appendix 3

Table 7. VIF test results for multicollinearity

All IPOs			2001-2005			2006-2012		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
prdtmtp	3.23	0.30977	prdtmtp	3.18	0.31457	ex	1.83	0.54577
nonliquid	2.26	0.44256	nonliquid	3.00	0.33296	ln size	1.78	0.56295
ex	2.17	0.45996	epedlt	1.38	0.72397	nonliquid	1.24	0.80761
ln size	1.60	0.62584	bdi	1.37	0.72808	epedlt	1.23	0.81552
epedlt	1.34	0.74494	bear	1.37	0.73164	bear	1.21	0.82811
ln tgap	1.27	0.78704	ln size	1.32	0.75602	ln tgap	1.20	0.83170
bear	1.20	0.83487	ex	1.22	0.81757	age	1.06	0.94467
age	1.13	0.88248	ln tgap	1.20	0.83180	cpafirm	1.03	0.97332
cpafirm	1.04	0.95959	sponsor	1.11	0.90081	prdtmtp	1.02	0.98027
bdi	1.04	0.96322	age	1.09	0.91478	bdi	1.02	0.98428
sponsor	1.01	0.98683	cpafirm	1.06	0.94462	sponsor	1.01	0.98616
Mean	VIF	1.57	Mean	VIF	1.57	Mean	VIF	1.24

Appendix 4

Table 8. Top 5 underwriters 2001-2012

Year	Rank	Security company name	Year	Rank	Security company name
2001	1	Guotai Junan Securities Co., Ltd.	2007	1	CITIC Securities Co., Ltd.
	2	Everbright Securities Co., Ltd.		2	Guosen Securities Co., Ltd.
	3	CITIC Securities Co., Ltd.		3	China International Capital Co., Ltd.
	4	China International Capital Co., Ltd.		4	Gf Securities Co.,Ltd.
	5	Guosen Securities Co., Ltd.		5	Ping An Securities Co., Ltd
2002	1	Gf Securities Co.,Ltd.	2008	1	CITIC Securities Co., Ltd.
	2	Guotai Junan Securities Co., Ltd.		2	Guotai Junan Securities Co., Ltd.
	3	CITIC Securities Co., Ltd.		3	China International Capital Co., Ltd.
	4	Guosen Securities Co., Ltd.		4	China Galaxy Securities Co., Ltd.
	5	Industrial Securities Co.,Ltd.		5	BOC International Holdings Ltd.
2003	1	CITIC Securities Co., Ltd.	2009	1	CITIC Securities Co., Ltd.
	2	China Galaxy Securities Co., Ltd.		2	China International Capital Co., Ltd.
	3	Everbright Securities Co., Ltd.		3	BOC International Holdings Ltd.
	4	Southwest Securities Co.,Ltd.		4	China Securities Co., Ltd
	5	Guotai Junan Securities Co., Ltd.		5	Ping An Securities Co., Ltd
2004	1	China Galaxy Securities Co., Ltd.	2010	1	Ping An Securities Co., Ltd
	2	Haitong Securities Co., Ltd.		2	CITIC Securities Co., Ltd.
	3	CSLA Co.,Ltd		3	Guosen Securities Co., Ltd.
	4	Everbright Securities Co., Ltd.		4	China Securities Co., Ltd
	5	Huatai United Securities Co., Ltd		5	China Merchants Securities co., Ltd.
2005	1	Guotai Junan Securities Co., Ltd.	2011	1	Ping An Securities Co., Ltd
	2	China Galaxy Securities Co., Ltd.		2	CITIC Securities Co., Ltd.
	3	Shenyin & Wanguo Securities Co.,Ltd.		3	Guosen Securities Co., Ltd.
	4	Haitong Securities Co., Ltd.		4	Guotai Junan Securities Co., Ltd.
	5	Guosen Securities Co., Ltd.		5	Gf Securities Co.,Ltd.
2006	1	China Galaxy Securities Co., Ltd.	2012	1	CITIC Securities Co., Ltd.
	2	Guotai Junan Securities Co., Ltd.		2	Guosen Securities Co., Ltd.
	3	Shenyin & Wanguo Securities Co.,Ltd.		3	Gf Securities Co.,Ltd.
	4	Gf Securities Co.,Ltd.		4	Ping An Securities Co., Ltd
	5	Guosen Securities Co., Ltd.		5	China Securities Co., Ltd

Resource: Securities Association of China (<http://www.sac.net.cn/hysj/zqgsyjp/>)

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