

REGULATORY UNDERPRICING: DETERMINANTS OF CHINESE EXTREME IPO RETURNS

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Abstract

The Chinese stock market is often distorted by government regulation, and this is especially true for the initial public offering market. The average underpricing of Chinese IPOs is 247 percent, the highest of any major world market. We model this extreme underpricing with a demand-supply analytical framework that captures critical institutional features of China's primary market, and then empirically test this model using a sample of 1,397 IPOs listed on the Shanghai and Shenzhen Stock Exchanges between 1991 and 2004. We find that Chinese IPO underpricing is principally caused by regulation. The government regulator sets a cap on pricing IPO shares and stipulates IPO allocation quotas to control the supply of IPO shares. There is also a very long time gap between going public and the actual listing of shares for trading, which adds to the already high investment risks in China's primary markets.

Key words: IPO Underpricing, Regulation, Investment Risks, Privatizations, Corporate Governance
JEL Classification: G23, G28.

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1. Introduction

Starting from scratch in 1991, China's stock markets collectively became the second largest in Asia within a decade. However, this stock market is heavily intervened by the government. These markets quickly revealed uniquely Chinese phenomena, especially severe IPO underpricing. The average first-day return is 247 percent, and the median return is 122 percent, which are the highest of any major world market—as detailed in Figure 1. Using a comprehensive sample of Chinese IPOs, the vast majority of which are privatizations, we examine the determinants of initial returns for Chinese IPO shares by first documenting the temporal pattern of these returns over 1991-2004, and then testing several alternative theoretical explanations for this extreme level of underpricing. We argue that the high initial returns are regulatory underpricing and the market is twisted under government intervention.

**** **Insert Figure 1 about here** ****

We find the most compelling reason for high initial returns to be peculiarly Chinese financial regulations. The China Securities Regulatory Commission (CSRC) requires issuing firms to price IPO shares by multiplying net earnings per share by a fixed multiplier, which is always fixed far below prevailing market P/E ratios. Although average price/earning ratios in the Chinese secondary market are over 30 most of the time, the multiplier is set between 15 and 20. The specific multiplier is chosen by the issuer, but under a cap set by the regulator. Besides the pricing cap, the government also imposes “IPO quotas”, which restrict the quantity of IPO shares supplied to an extraordinarily hungry set of retail investors.

After making public offerings, issuing firms must wait in a queue to be floated, which produces a long listing time lag with an average of 54 days and median of 23 days. This delay locks up the investment of all IPO subscribers, including both outsiders and insiders. The Chinese lockup contract is much more restrictive than those observed elsewhere, and investors must be compensated for this high level of illiquidity with share price discounts. We find that one day's flotation delay increases initial return by 0.4 percent in China, and this delay captures 38 percent of the variance of initial returns in the

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univariate analyses. We further document that the length of the lag is not exogenous, but depends on insider shareholdings and underwriting costs, suggesting extensive rent-seeking activities by regulators and other informed players in China's primary market. During the long lockup period, managerial agency costs significantly reduce corporate value. Before listing on the stock exchanges, there are no share price signals and no market for corporate control. Insider control and weak corporate governance are thus key features of China's unlisted firms, as described most recently in Allen, Qian, and Qian (2005), Chan, Wang, and Wei (2004) and Wang (2005).

Insider theft of corporate assets is a big concern of IPO subscribers in China, and IPO shares must also be discounted for significant tunneling risks. We find that insider shareholdings are a negative determinant of initial returns. With larger insider shareholding, insiders are less inclined to destroy corporate values by tunneling and IPO underpricing becomes less severe, demonstrating that corporate governance plays a significant role in Chinese IPO underpricing. While Allen et al. (2005) and Cull and Xu (2005) show that alternative governance mechanisms work effectively for private (non-traded) Chinese companies, these mechanisms become ineffective once a firm goes public.

Another special feature of the Chinese IPO market is that the government is by far the largest issuer. In our sample, 66 percent of the IPOs in our sample are pure share issue privatizations (SIPs), in which the government sells part of its ownership in state-owned enterprises (SOEs) to the public; fully 88 percent would be considered privatizations under a more expansive definition that included state-connected owners. Shleifer and Vishny (1998) argue that the government owner has a grabbing hand, which ensnares corporate wealth to maximize the state's welfare. These grabbing risks suggest that locked-up IPO subscribers must be compensated with a discount on SIP shares. However, our data shows there is no pricing differential between SOEs and privately-owned enterprises, and the fraction of state shares sold does not significantly influence initial returns. This implies that the government shareholder may have a helping hand, as well as a grabbing hand, which disguises the direct effect of issuers' ownerships on initial returns (Tian 2000). On the supply side, this insignificant effect of issuers' ownership suggests that SOEs go public for new capital and therefore price IPO shares as high as private issuers (Dewenter and Malatesta 1997). In contrast to Biais and Perotti (2002), we find that the Chinese government pursues its political interests through financial regulations rather than through deliberate underpricing of SIPs, since the latter policy would further sacrifice the government's financial interest. We find that these institutional setups, and the consequent lockup risk, are the main determinants of excess IPO underpricing.

This study makes several contributions to the IPO literature. First, by providing a novel analytical framework and concrete empirical analyses, we help explain the extreme Chinese IPO underpricing documented earlier by Mok and Hui (1998), Su and Fleisher (1999) and Chan et al. (2004). Second, by

systematically documenting China's primary market and econometrically examining the determinants of initial returns, this paper contributes to developing investment strategies for China's emerging stock market, which is opening to foreign investors. Third, we examine the regulatory role played by the Chinese government and document that this significantly impacts market valuations. Besides the investment risks coming from asymmetric information observed around the world, there are lockup risks, tunneling risks and grabbing risks in the Chinese primary market.

This study is organized as follows: Section 2 describes China's enterprises reforms and the evolution of its primary market. In section 3, we review the IPO and share issue privatization (SIP) literatures and present our hypotheses of investment risks and financial regulations. Section 4 presents our data and examines the determinants of initial returns with univariate and multivariate analyses. Section 5 further discusses the underlying motivation of regulatory underpricing. Section 6 concludes.

2. China's primary share offering market

There are two stock exchanges operating in China, the Shanghai Securities Exchange (SSE) and the Shenzhen Stock Exchange (SZSE), founded in December 1990 and April 1991, respectively. The principal regulatory authority is the China Securities Regulation Commission (CSRC), founded in October 1992. With their socialist law legal origins, China's financial institutions have always featured government intervention. Although legal enforcements are typically weak in emerging markets, CSRC regulations are implemented quite effectively.

The government sets two main development objectives for these markets--to tap domestic savings and to reform unprofitable, inefficient state-owned enterprises.² As a symbol of capitalism, the stock market was one of the most controversial issues in China, since shareholders at least theoretically decide strategic corporate matters by exercising their investment-based voting rights. The rule of one-share-one-vote is the law in Chinese PLCs, which implies that capital employs labor in these firms and in the firms modeled after PLCs in China, but such a capital-labor relationship is seen as exploitation by Marxist theorists. The conservative wing of the government opposed the development of a stock market, which was initially founded as an experiment in 1991. The then paramount political leader, Deng Xiaoping, made the clear pledge to close it down if this experiment turned out to be against the interests of the

² The stock market mainly serves to raise capital for enterprises and to reform the SOEs, according to the speeches of Liu Hongru, the then CSRC chairman in January 1994 and Li Peng, the then Prime Minister in September 1997. In contrast, the British government under the Thatcher administration set the privatization goals as 1) raising new revenue for the state; 2) promoting economic efficiency; 3) reducing government interference in the economy; 4) promoting wider share-ownership; 5) providing the opportunity to introduce competition; and 6) developing the nation's capital market.

people.³ However, under the leadership of reformers and the management of the CSRC, the stock market quickly became an indispensable part of Chinese economic life.

Table 1 details the rapid development of the Chinese stock market. Between 1992 and 2000, the market capitalization increased at an average rate of 57.5 percent per year. At the end of 2000, the total market capitalization was over half of China's GDP. The number of listed companies grew 62.0 percent annually, from 53 PLCs in 1992 to 1,373 PLCs in 2000. Increasing 32-fold from 1992, there were 72.1 million investment accounts by 2004. Assuming one investment account per family, more than one-fourth of households invested in stocks. Given that most investors live in a city, a rough estimate is that at least half of urban families participated in the stock market in 2004. Still under the leadership of Communist Party, China has been significantly transformed into a society of investors. This expanding stock market also provides a platform for large-scale privatization. By attracting equity investors, severe IPO underpricing contributes to the development of China's stock market and the promotion of an equity culture.

****** Insert Table 1 about here******

On the other hand, several observed patterns suggest that the Chinese stock market is still in an early stage of development.⁴ First, there are many stories of corruption in the primary market and of insider trading in the secondary market, and rent-seeking activities appear rampant. Second, the government frequently intervenes in the market. For instance, a policy commentary on the high P/E ratios of the stock market at the end of 1996 brought down the stock index 32 percent in two weeks.⁵ The government also uses other methods to influence this market to achieve its policy targets, including the IPO quota system documented in this paper. Thirdly, the market is segmented, with 60.8 percent of shares having restricted tradability. Table 2 presents the official classification of shares. Only 3.6 percent of shares are denominated in foreign currency, and the Chinese currency is not freely exchangeable. On the other hand, foreign investors were only allowed to invest in the thin B-share market until recently.⁶ It

³ In a talk during his famous tour of southern China (January 22nd, 1992), Deng Xiaoping said “whether securities and stock markets are good, whether they are dangerous, whether they only belong to capitalism, and whether they can be used in socialism, we don't know, but we should do the experiment. Try it for a couple of years, if correct, open it up; if wrong, close it down.”

⁴ Wu Jinglian, a preminent Chinese economist, compared the Chinese stock market to a casino when he discussed the illegal activities of some traders. However, investors continue investing in this stock market and most economists argue that the problems within the Chinese stock market are on track to be corrected, although they are relatively more severe than those in the markets of developed economies.

⁵ On December 11, 1996, when the stock index was 1258, CSRC announced twelve measures to strictly regulate the stock market and the People's Daily published a commentary article. The stock market immediately crashed. On December 25th, 1996, the index was 855.

⁶ The qualified financial institutional investors program was implemented at the end of 2002, which allows very large investors, like Morgan Stanley, to invest in China's A-share market.

separates domestic investors from international investors, and severe IPO underpricing happens only in the domestic stock market.

****** Insert Table 2 about here******

More importantly, the government is not only the regulator, but also a major investor in listed stocks. Using the methodology of La Porta *et al.* (1999), Tian (2000) shows the ultimate shareholding structures of these PLCs. Although pyramids, cross shareholdings, and reciprocal shareholdings are not widely used in China, the government directly owns 28 percent of all the shares of China's public listed companies and ultimately controls 44 percent of China's public listed companies. The government thus has a huge financial interest in the stock market's performance. The heavy weight of government shareholding comes from the history of China's PLCs. Share issue privatizations are a significant feature of China's emerging markets. Tracing down the antecedents of 536 listed companies, we find that the central government is the majority owner of 78.4 percent of the sample IPOs. The other issuers are rich families, foreign investors and institutional shareholders that include township-village firms and fund of employees. Since most of these involve ownership by local governments, they can also be considered privatizations under an inclusive definition.

2.1. Underwriting and share allocations

China's Company Law (1994, 1999) stipulates the following conditions for a company to apply for listing on the stock market: 1) it has share capital of at least RMB ¥50 million (US\$6 million); 2) it is newly-formed under the 1994 Company Law or has a three-year track record; 3) it has more than 1000 shareholders who each hold shares with a nominal value of over RMB ¥1000; 4) it will offer at least 25 percent of its shares to the public or at least 15 percent if the share capital of the company is more than RMB ¥400 million (US\$46 million); 5) it has not committed any serious violations of government regulations in the last three years. These PLCs are therefore large and profitable firms. In fact, the rest of China's enterprises take the PLCs as their role models.

During the initial public offerings of these companies, the investment bankers mostly work as brokers and lead the selling of shares to the public. The banks often have the responsibility for unsold shares, although the offerings are usually massively oversubscribed. Most of these firms are associated with the government and are very well connected to the regulatory authority.

2.2. Pricing methods and IPO quotas

As an emerging market and a transition economy, China has experienced frequent changes of regulations. However, the core policies of controlling IPO pricing and restricting the supply of IPO shares have been used most of time. Unsurprisingly, before founding the stock exchanges, there was no

regulation on pricing of shares issued to the public. Ninety PLCs issued shares during the 1980s, and share face values were often taken as issuing prices. In 1991, it was stipulated that issuing shares had to be authorized by the government regulator, and all issuers were required to use the same lottery allocation method for IPO shares. The disclosure requirements of IPO firms were specified in 1994.

The CSRC stipulates IPO pricing using the multiplier method. The offering price is required to be the product of net earnings per shares and a chosen multiplier.⁷ An issuer sets a ratio as the offering multiplier with references to the price-earning ratios of similar firms on the stock market. However, the offer price, particularly the multiplier, has to be validated by the CSRC. In several internal guidelines issued during different periods, the CSRC sets the ceiling of the multiplier as 15 to 20 times earnings, which is the pricing cap of IPO shares. However, the average P/E ratio in the secondary market is often more than 30 times. This pricing regulation has been used for the vast majority of IPOs.

The CSRC also exercises a strict quota on the number of public offerings and flotations to restrict the supply of IPO shares.⁸ The CSRC only allows a certain number of new shares to be publicly offered and floated on the stock exchanges, and it rations the quotas to each of the 29 central government ministries that oversee various industries, as well as the 32 provinces, municipalities, and autonomous regions. In essence, it is a licensing mechanism that promotes rent-seeking activities. The enterprises wishing to go public must devote resources to competing for the quota. After being allowed to make an initial offering, a firm must still apply for a date to be listed on the stock exchange. The quota system was formally abolished in 2001, with an authorization system being installed in its place. This means that the local governments and the ministries are no longer entitled to recommend shares to go public under the quota given by the CSRC, but the firms satisfying the listing standards have to be approved by the CSRC, along with the number of listing shares. Thus the restriction on supplies remains effectively in place.

Because of the urgent need for capital, many firms make public offerings and collect IPO proceeds before knowing a listing date. There is consequently a time gap between going public and being publicly traded. With a median of 34 days, this listing time lag ranges from three days to nine years. For instance, the Shenyang Alloy raised capital by offering public shares in 1987, but these shares were not listed on the stock exchange until 1996. By controlling share pricing, stipulating the IPO quotas, and assigning a waiting period for flotation in a strong seller's market, the CSRC creates severe IPO underpricing.

⁷ In most periods, the CSRC requests the firms to use predicted corporate earnings authorized by chartered accountants. However, between December 1996 and September 1997, the CSRC required the IPO firms to use historical earnings as a main determinant of IPO prices.

⁸ The system of quota control and restricted supply was replaced in 2001 by a model based on recommendations by the local government or the ministries and authorization by the CSRC.

3. Determinants of Chinese IPO underpricing

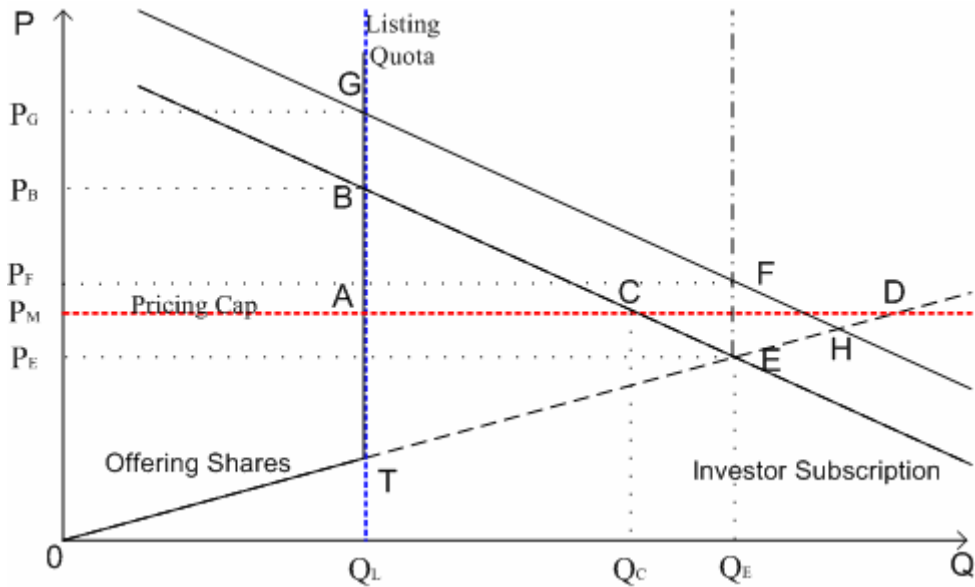
Several papers document the extraordinarily high underpricing of Chinese IPOs. A comprehensive survey of this literature is provided in table 4. Using datasets from multiple sources, these studies report average initial returns ranging from 142 percent to 949 percent, with medians ranging from 119 to 241 percent, but all find severe IPO underpricing in China. Several attempt to investigate the determinants of underpricings--and examine listing time lags, offering sizes, non-tradable shares, offering proceeds—but most encounter econometric problems.⁹ Some authors also attempt to rationalize Chinese underpricing with classical theories of asymmetric information. In contrast, others argue that China's institutional features bring about this extraordinary underpricing, particularly the long listing time lags. However, the determinants of China's extraordinary underpricing have not yet been conclusively explained.

**** Insert Table 3 about here ****

3.1 Analytical framework

The scarcity of capital is a common feature of emerging markets. Although going public is costly, many firms compete for IPO quotas. Because of the restriction of capital flows, China's domestic institutions and households can only either deposit their money in banks or invest in shares. Given China's high savings rate, the severe bad-loan problem of the country's banks (Tian 2001), and the low interest rates offered depositors, there is a high demand for equity investments. Our analytical framework of IPO pricing is formulated as the following chart.

⁹ Comparing the means and medians in these papers, the distribution of all the samples used in existing research is highly skewed. We use the Shapiro-Wilk W test to confirm the non-bell-shape distribution of initial returns in China, but the regression methods of the existing papers on China's IPO underpricing adopted the regressions—mainly OLS—with the assumption of normality.



The demand curve of investors is BE and the supply curve of issuers is OD. In a competitive primary market, the equilibrium of demand and supply, point E, prices the IPO shares at P_E with issuing Q_E amount of shares. The demands of investors are actually depressed at this stage, because of the asymmetric information about the intrinsic values of IPO firms. The process of public offerings disseminates information. After learning more about the quality of IPO firms, the demand of shares increases and the demand curve shifts from BE to GH on the first day of trading. Since the quantity of IPO shares cannot be changed immediately, there is a temporary rigidity of supplies. The supply curve is OEF. On the first day of public trading, the share price therefore increases from P_E to P_F . This IPO investment risk is observed worldwide, and may also induce part of the Chinese underpricing.¹⁰

The Chinese regulator uses IPO quotas to restrict the amount of issuing shares, and the supply curve of IPOs consequently becomes the line OTG. The market equilibrium shifts from E to B. Furthermore, the government regulator stipulates a pricing gap as the line ACD, which requires that the pricing of issuing shares must be below P_M . Because of the high demand for equity investments, most issuing shares are priced at P_M . The partial equilibrium of the primary market consequently becomes A. Investors purchase Q_L amount of issuing shares at price P_M . Financial regulations of pricing caps and IPO quotas consequently induce a shortage of issuing shares AC. On the first trading day in the secondary market, the regulatory pricing cap is removed, but the immediate supply of issuing shares remains the

¹⁰ To some extent, the investment risks may include the risks originally generated by China's particular financial regulations.

same. Because of the supply shortage AC, the prices of IPO shares shift from P_M to P_B and the market reaches the new equilibrium at point B. The gap of AB is the regulatory underpricing. We hypothesize that financial regulations bring about much of the observed Chinese underpricing.

Similar to the rationale for the change from P_E to P_F , the share price further shifts from P_B to P_G when the repression of demand by investment risks is relieved. We further hypothesize that investment risks are another main determinant of China's IPO underpricings.

3.2 Investment risks

IPO underpricing is a universal phenomenon. The average amount of money "left on the table" in Anglo-American primary markets during the last two decades is 18 percent (Loughran, Ritter and Rydqvist 1994, updated in 2001). Asymmetric information is the most widely accepted underpricing rationale. It argues that the investors are afraid of the winners' curse (Rock 1986) or a negative information cascade (Welch 1992). IPO subscribers' worries mean that there are significant investment risks in the primary market. The IPO-specific investment risks depress the demand of investors, which is relieved after flotation. This provides a theoretical foundation for the shift of demand curves from BE to GH in the above chart.

This shift of IPO demand curves and the consequent change of equilibrium prices is also observed in the Chinese primary market. Indeed, it is even larger in China than in Anglo-American markets, not only because the information is more asymmetric in an emerging market, but also because of the China-specific investment risks. The following sections specify these uniquely Chinese investment risks. Our hypotheses may not cover all of the risks in Chinese primary markets, but they provide a rationale for the demand shift from BE to GH described in the chart above.

3.2.1 Informational risk

Beatty and Rock (1986) argue that expected underpricing is an increasing function of uncertainty. IPO underpricing of a better-known firm is lower, since a larger firm is usually better known than a smaller one. A firm with a longer history is also better known than one with a shorter history. These observations lead to our first two hypotheses. Hypothesis 1.1 suggests that initial returns of IPOs are a negative function of corporate size. Hypothesis 1.2 suggests that initial returns of IPOs are a negative function of corporate history (age).

3.2.2 Lockup risk

As noted earlier, the time lag between going public (selling shares and receiving payment) and actually listing on an exchange is unusually long in China. For instance, *Chengdu Hoist Ltd* issued shares to the public at RMB ¥1 in January 1990, but was not floated on the Shenzhen Stock Exchange until March 1998. Thus for more than eight years, there was no liquidity for IPO subscribers of *Chengdu Hoist Ltd*. In another extreme case, a firm had to wait for twelve years before public trading could begin. If lockup risk for a firm is higher, investors should require higher compensation in the form of a larger offering price discount from expected post-issue market value. This suggests that initial returns of IPOs are a positive function of listing time lags (Hypothesis 1.3).

3.2.3 Tunneling risk

If a firm's shares are listed on the stock exchange, falling share prices should prompt the board of directors or the market for corporate control to discipline bad managers. However, during the lockup period, the IPO subscribers cannot sell shares and share prices cannot change, so there is no signal to prevent managerial actions that destroy firm value. With the long listing time lag in China, weak corporate governance is more costly to investors in the primary market than to those in the secondary market. Johnson *et al.* (2000) term expropriations of corporate assets by insiders as tunneling. We refer to the investment risks of weak corporate governance during a long lockup period as tunneling risks.

Shleifer and Vishny (1986) and Kaplan and Minton (1994) argue that a firm with a larger block shareholder has better governance. Large shareholding blocks improves corporate governance as large shareholders exert great influence and remove managers who do not maximize stockholders' wealth. As discussed in section 2, share blocks in China are non-tradable shares, including the legal-person shares and state shares. Initial returns of IPOs are thus predicted to be a negative function of the size of non-tradable shares (Hypothesis 1.4).

Jensen and Meckling (1976) argue that managerial ownership aligns the interests of managers and owners. When a firm has high managerial ownership, insiders should be reluctant to underprice the firm's IPO shares. Therefore, we conjecture that the size of managerial ownership is negatively related to initial returns (Hypothesis 1.5).

McConnell and Servaes (1990) show that, after a certain point, corporate value decreases with insider ownership. By the Chinese share classifications, employee ownership is insider ownership. The employees may tunnel corporate wealth at the expense of outside shareholders by increasing operation costs and labor payments. It suggests that the size of employee ownership is negatively related to initial returns (Hypothesis 1.6).

Another stream of IPO research argues that underwriters may take advantage of their superior knowledge of market conditions to intentionally underprice offerings. Taranto (2001) shows IPO

underpricing maximizes underwriters' profits. With underpricing, the underwriters create excess demand and make the offering an "event" to attract buyers (Shiller 1990). Underpricing therefore saves the marketing effort of underwriters and also ingratiates underwriters with buy-side clients (Baron and Holmstrom 1980 and Baron 1982). When they allocate shares to their favored clients, underwriters profit from collateral business (Fulghieri and Spiegel 1993). Underwriters further profit from underpricing when they act as post-IPO market makers (Ellis *et al.* 2000). Underwriters have incentives to tunnel corporate assets by underpricing at the expense of the issuers. With a higher payment on underwriting fees, the issuers may persuade the underwriters to refrain from intentionally underpricing IPO shares. Underwriting fees can reduce the tunneling risks of underwriters. On the other hand, the underwriting costs are directly deducted from corporate values. The demand for IPO shares can be depressed when there is no knowledge about the specific underwriting costs. It is relieved after reporting the actual underwriting costs after finishing IPOs. When the underwriting costs are high, the after-listing returns shall be lower. We therefore suggest (Hypothesis 1.7) that underwriting costs are directly related to initial returns.

3.2.4 Grabbing risk

Shleifer and Vishny (1998) argue that the government has a grabbing hand. As Chinese laws protect private property rights quite poorly, firms with high government ownership are more likely to be ensnared by the government than private enterprises. Ensnaring corporate assets is a process rather than a sudden act. A long lockup period brings about this grabbing risk in the primary market. After listing on the stock market, the publicity of corporate matters is improved and the government shareholder is relatively less inclined to take advantage of corporate wealth at the expense of other shareholders. Furthermore, investors in the secondary market have the option to exit before the value of the firm decreases too much. Investors in the secondary market are less worried about the grabbing hand than those in the primary market. Relatively speaking, grabbing risks depress the demand of shares during IPOs.

The literature of share issue privatizations argues that IPO underpricing of state-owned enterprises is different from private enterprises. Assuming that the government pursues privatization revenues, Perotti (1995) argues that the investors remain uncertain about the commitment of the government towards privatization. The government may renationalize the SIP firms or grab corporate wealth to fund social spending, so share issue privatizations almost always have this particular grabbing risk. Schmidt (2000) and Biais and Perotti (2002) show that, to ensure political power, a market-oriented government should underprice IPO shares of SOEs in fixed-price offers and then ration the shares to median-class voters. This Machiavellian strategic underpricing builds up political supports for the

reformist government. Jones *et al.* (1999) show privatized firms are often dramatically underpriced. Corporate wealth is taken for the government's political use through IPO underpricings.

Share issue privatizations may lead to severe underpricing. The above arguments differentiate share issue privatizations that the government is the owner of the issuers from other initial public offerings where a non-government shareholder is an owner. If there are grabbing risks in the primary market, the size of government shareholding matters. It suggests that government shareholdings reduce underpricing (Hypothesis 1.8).

3.3 Financial regulations

In his 2001 American Finance Association presidential address, Allen (2001) argues that finance theories have to take proper account of the role of financial institutions and their regulatory framework. Chinese IPOs are not issued in a competitive market, but arranged by an administrative plan, and the financial regulations of the fixed-pricing method and IPO quotas bring about extraordinary IPO underpricing in China.

3.3.1 Earning multiplier

Chinese IPOs are priced under the earnings-multiplier method and the multipliers are normally capped between 15 and 20. The price cap in competitive industries is set to promote the interests of the Chinese government, although the pricing-cap literature argues it helps to improve corporate efficiency in privatized monopoly industries (Beesley and Littlechild 1989). The CSRC stipulates the multiplier caps with its internal guidelines. In most cases, the final choice of a specific earning multiplier is apparently the result of bargaining between the issuer and the regulator. However, due to the scarcity of equity investors in China, there are too many firms wishing to go public to raise capital for the newly emerged stock market to handle, and the regulator acts as an IPO doorkeeper. In order to be allowed to make a public offering, an issuer has to follow the regulator's mandate regarding the IPO pricing cap, which the regulator has every incentive to set artificially low. Following the above demand-supply analysis on IPO underpricing, we suggest (Hypothesis 2.1) that the mandated IPO multiplier caps are positively related to initial returns.

3.3.2 IPO quotas

The Chinese regulation authority not only restricts the prices of IPO shares, but also controls the amounts supplied. Consulting with other ministries of the central government, the CSRC periodically specifies how many shares will be allowed to be publicly issued and then rations these shares to local governmental authorities. The total supply of IPO shares is periodically fixed and the issuing amount for

each firm is controlled by CSRC. If the issuing size of a firm is larger than another firm, the line GT moves towards the right and the immediate after-listing price should be lower. We therefore predict (Hypothesis 2.2) that initial returns are a negative function of issuing size.

4. Data and empirical analysis

4.1 Data sources

To construct the principal sample, we combine the IPO, accounting, and ownership data from the databases of the Taiwan Economic Journal (TEJ), the Securities Data Corporation and the Chinese firms Guotaian, Genius, and Hairong. These data are based on company reports, audited by chartered accountants. Thompson Financial International provides share price data. Our IPO sample consists of 1,371 firms going public from 1991 to 2004. We manually collect data on the ownership types of issuers from CSRC records and company reports.

4.2 Empirical methods

Table 4 presents descriptive statistics of initial returns and their potential determinants. Besides reporting the means and medians of the full sample in column (1), we group the firms into six categories based on initial returns. The overpriced IPOs with negative initial returns and the superstar IPOs with initial returns over 1000 percent are the two corner groupings, presented in columns 2 and 7. We then equally divide the rest of the firms into quartiles of initial returns between 0 and 1000 percent and report the means and medians of corresponding variables in columns 3, 4, 5, and 6. In column 8, we report the univariate regressions coefficients, with the dependent variable being initial returns and the independent variable being the corresponding value in each row.

Row 1 reports the mean and median initial returns in each category and row 2 reports the number of firms. There are altogether 1371 firms in our sample. The average initial return before adjustment is 247 percent with a median of 122 percent. The kurtosis of initial returns is 26.7 and skewness is 4.3. The kernel density of initial returns is not a bell-shaped distribution and the Shapiro-Wilk test also strongly rejects the normality of initial returns. We have a highly skewed data sample.

Ordinary least square regressions should not be applied with a highly skewed data sample, but, as noted earlier, most Chinese IPOs studies have failed to account for this data structure. In this paper, we handle the highly skewed IPO data sample with the bootstrap method for both means and medians. We report the univariate regression coefficients in Table 4.

****** Insert Table 4 about here ******

4.3 Univariate analyses

Row 3 of Table 4 reports the distribution of total assets under the spectrum of initial returns. Except for the 34 overpriced IPOs, we can see that corporate size decreases with initial returns from column 3 to column 7. In the univariate regressions, we find that corporate size is highly significantly negatively correlated with initial returns. Larger firms have lower initial returns, which is consistent with the argument that bigger companies are better known to the public, and that better information reduces underpricing. Hypothesis 1.1 is supported.

A firm with a longer corporate history should also be relatively better known and therefore it should be less underpriced. However, row 4 shows that older firms tend to have *higher* underpricing. Thus Hypothesis 1.2 is not supported. Row 3 and row 4 seem to have contradictory results. This contradiction is further examined in the multivariate analysis and discussed below in the section on Chinese institutional settings.

The listing time lag is incredibly long; on average, a firm going public has to wait for 10 months before listing. 74 percent of the firms in the overpriced category issued shares before 1994, when the regulations were not well established. In the regressions, one day's delay in listing increases initial returns by 0.6 percent. The R-squared is 25 percent in the mean regression and 14 percent in the median regression. With the expectation of being locked up in the primary market, IPO subscribers shall require a discount of IPO shares. Hypothesis 1.3, predicting a positive relation between lockup risks and underpricing, is supported. Given the significance of the lockup risk, a further analysis is performed in section 4.5.

During a long lockup period, IPO subscribers are understandably concerned about managerial exploitation and thus demand a price discount for tunneling risks. Theoretically, this risk should decline with increasing size of block shareholdings, and initial returns indeed become lower—though not significantly so. We examine the correlations between non-tradable shares and initial returns further in our multivariate analyses.

Row 7 shows small managerial shareholdings really are. On average, Chinese managers hold only 0.59 percent of total shares. The median is zero. Managerial shareholdings have to be reported to the public every six months and it is locked-up during the whole tenure of the managers. These managers sometimes use the account of their family members or friends to purchase shares, but do not record these as managerial shareholdings.

In Row 8, we find a negative relationship between insider shareholdings and initial returns. Insider shareholdings are approximated by employee shares. These shares are distributed to managers, employees and friends of the firm at the offering price. Except for managerial shareholdings, employee

shares can become tradable in the stock exchange after the authorization of CSRC. This authorization may not come for up to half a year after flotation. Given the size of employee shares, outsiders should perceive it as the alignment of insider interests with corporate interests. The insiders with their own shareholdings have smaller incentives to tunnel corporate assets and destroy corporate values. When the size of insider shareholdings rises, the discount of tunneling risks becomes smaller and underpricing is lower. Hypothesis 1.6 is supported.

Hypothesis 1.7 suggests that underwriters can take advantage of firms and their shareholders during public offerings. There is a significantly negative correlation between IPO expense and initial returns. The issuing firms that pay more to the underwriter are subject to less IPO underpricing, so Hypothesis 1.7 is supported.

The possibility of political intervention is called grabbing risk, but it is hard to find a straightforward empirical proxy for this risk. We examine the relation between the size of state shareholdings and initial returns, but cannot find a significant correlation. As argued in Tian (2000), the government shareholder has two faces. With increasing government shareholding, the grabbing risk increases until a maximum point, but the tunneling risk decreases with better corporate monitoring than with a dispersed shareholding structure. The government may even provide preferential treatment to its closely held firms to increase corporate value, such as by rebating taxes. Besides the grabbing hand, the government also has a helping hand. Row 10 confirms that there is not a monotonic relation between initial returns and the size of government shareholding. The univariate analysis of grabbing risks will be further discussed in the following section.

Row 11 shows a significant negative relationship between offer size and initial returns. As offering size increases, underpricing becomes smaller. Superstar firms with initial returns exceeding 1000 percent have an average issuing size of RMB 43 million, much smaller than other firms. Hypothesis 2.1 is strongly supported.

Row 12 shows that the earnings multiplier does not distribute monotonically on the magnitude of initial returns. The medians are about 16 times for most firms. In the student t statistics for means and the ranksum test for medians, the differences are not significant. In fact, the variances of multipliers come from different periods. Under the internal mandates of CSRC, the pricing caps for firms during the same period are fixed. Earning multipliers are chosen by the issuing firms, but they have to be set below the pricing caps. Given the high demand for IPO shares, IPO pricing is often set at the pricing cap. In the univariate analysis, we find that increasing the fixed pricing caps causes initial returns to decline significantly. Hypothesis 2.1 is supported.

We also obtain data on the success rates of IPO applications, but not the specific allocations. The allocation rates show the interaction of controlled supplies and depressed demands in the primary market.

When allocation rates are lower, oversubscription is more severe. The average allocation rate is only 1.4 percent, which means the average oversubscription is 72 times. The median is an even more excessive 0.393 percent, which implies oversubscription of 254 times. Row 13 reports that after-listing market valuations decline with allocation rates. When it is more difficult to get shares in the primary market, first-day returns in the secondary market become higher.

4.4 Multivariate analysis

Initial returns are influenced by overall market conditions and differ across industries. We thus adjust for changes in market indices. Using the Berger and Ofek, (1994) method for calculating the excess values, we standardize initial returns (IRs) by subtracting that firm's industrial median, classified using the GICS industry codes. The IR adjusted by the market index and industrial averages is termed IRA. We

calculate the IRA as $IRA_i = (IR_i - \frac{I_{i1} - I_{i0}}{I_{i0}}) - \frac{\sum_{j=1}^n (IR_j - \frac{I_{j1} - I_{j0}}{I_{j0}}) * P(P = 1 | i \in Industry_j)}{i}$, where I_{i0} is the opening

market index value on the offer day and I_{i1} is the closing value of the market index. We use the SSE composite index as the benchmark for the shares listed on the SSE and the SZSE composite index for the shares on the SZSE.

The variables IR and IRA are highly skewed, since Shapiro-Wilk W tests reject the normality distributions of IR at the 1 percent level and the graph of the univariate kernel density shows that IR is positively skewed (it has a long tail to the right). Using the OLS parametric regressions with student t statistics to estimate Equation 1, the specification tests reject residual normality for our cross-sectional regressions. It probably comes from the highly skewed distribution of the dependent variable. We therefore report the results with the bootstrap estimation of standard errors. The method of bootstrapping relaxes the normality-distribution assumption of linear regressions and improves the accuracy of estimation. Bootstrapping uses the observed distribution of the sample and produces a bootstrapped distribution. Then, based on the bootstrapped sample distribution instead of the assumed normal distribution, the variance of the means in the regressions is calculated. Dewenter and Malatesta (1997) adopt this method to examine the theoretical hypothesis of Perotti (1995) when they find non-normality in their data sets. The Box-Cox transformation is frequently used to transform the non-normally distributed data into a normal distribution, but it requires all the data to be positive and there are 22 cases of IPOs that were overpriced. With these 22 negative points, we cannot use the logarithm transformation either. Besides adopting the parametric methods, we also used non-parametric bootstrap least absolute value models to re-estimate our models. The advantage of the non-parametric models lies in the control of outliers, but the disadvantage is that information is reduced during the process of ranking of continuous

variables. We therefore report our results under the parametric estimations with bootstrapped standard errors after controlling for outliers by the Hadi method.

****** Insert Table 5 about here ******

In table 5, the dependent variable is adjusted initial returns, which is different from the raw initial returns in table 4. Column 1 confirms that firm size is a negative determinant of initial returns, but corporate age is positive. Similar to the contradictory findings in rows 3 and 4 of table 4, the hypothesis of informational risks is supported only by the test of corporate size, but rejected by the test of corporate age. One reasonable conjecture is that most Chinese public listed companies are newly founded or restructured and the variance of corporate age is small. Therefore, the magnitude of informational asymmetry may not be well approximated by corporate age. Other things being equal, if a young firm succeeds in getting the listing quota and going for floatation, the market should expect its superior performance. If the investors cannot be allocated some shares, they compete in the secondary market and push up the price. It is a feature of a transition economy that the newly founded or restructured firms may perform better than the old firms, which does not go against the hypothesis of information asymmetry under Chinese institutional settings. On the other hand, given that asset size is a significant negative determinant of initial returns, we have some evidences that the risk of informational asymmetry about corporate quality plays a role in deciding initial returns.

Column 2 examines the effect of the listing time lags on initial returns. The firms with longer lockup periods have higher initial returns. If it takes one day longer between the IPO and actual listing, the industry- and market-adjusted abnormal returns increase by 0.8 percent. Primary market investors gains more if shares have been delayed longer before listing on the stock exchange by the CSRC, which compensates for China's extended lockup of IPO shares. When IPO subscribers expect that these IPO shares cannot freely trade for an unknown period, they demand lower-priced shares to offset the lockup risk. The initial return of *Shenyang Alloy*, which was locked up for nine years, is 1285 percent. During a long lockup period, corporate performance may also change.

Column 3 points to the grabbing risks and tunneling risks inherent in a long lockup period. The government does not expropriate small investors in the primary market, since there is not a significant relationship between state shareholding and initial returns. The market has a complicated view on the role of a large government shareholder, which can be both beneficial and detrimental (Tian 2000). We also do not find a significant effect of block shareholding on initial returns. The block shareholders may wish to leave a good taste in investors' mouths instead of expropriating the outside investors' wealth. They can expect seasoned offerings to raise more capital under their control, which discourages them from tunneling firm assets before flotation. However, we find that employee shareholdings are negatively related to initial returns. If an IPO firm has a higher probability of insider control, the secondary market

values this firm less. Potentially, the firms that are controlled or influenced by employees tend to have higher labor costs but less labor intensity, which costs outside shareholders. There are faint traces of tunneling risks during a long lockup period. As discussed, the undersized managerial shareholdings do not play a significant role here.

Column 4 examines whether underwriters can reduce IPO underpricing, if they have been paid more. We find a negative relationship between IPO expenses and initial returns, suggesting that paying more to the underwriters gains the firm a higher offering price (thus less underpricing). On the other hand, the secondary market may view a firm with high IPO expenses as a victim of tunneling by underwriters.

5. Discussion

Table 4 and Table 5 show that the Chinese government uses IPO quotas, pricing caps, and listing time lags to increase IPO underpricing. Why does the government create severe underpricing with financial regulations? Schmidt (2000) and Biais and Perotti (2001) argue that, to ensure their political power, a market-oriented government should underprice shares in fixed-price offers and then ration the shares to median-class voters. The Chinese stock market was set up as an experiment in a communist regime and the reform-minded leaders needed to gain political support and reach a social consensus supporting gradual privatizations and a stock market ruled by capital. It makes sense for the government to pursue its political interests, which are maximized under the regulatory framework, at the expense of its financial interests. In fact, with severe IPO underpricing, China's stock market developed very rapidly to become the Asian second largest stock market in less than a decade. This helped China begin transforming from a labor-led society to an investor-centered one. Even privatization gradually became viable and popular in this country, which is controlled by the same communist government. Regulatory underpricing thus appears to be a rational political maneuver.

With severe IPO underpricing under the regulatory framework, the Chinese government pursues its political interests. This allows some social elites to pocket personal gains through IPO underpricing by free riding on the government's policies. There are some gamesmanship and rent-seeking activities associated with regulatory underpricing, although our dataset prevents us from carrying out a detailed study of private benefits in China's primary market. The complex web of political and financial interests of the government and private benefits of some elites in power seems to be the fundamental motivations producing the 247 percent underpricing of Chinese IPOs between 1991 and 2004.

6. Conclusion

We document severe IPO underpricing in China and empirically examine its determinants. The first-day return of 1,371 new issues from 1991 to 2004 is 247 percent on average, with a 122 percent median.

Providing an original analytical framework, we propose several hypotheses based on financial regulations and investment risks.

The government regulator stipulates IPO quotas and pricing caps. The IPO quota restricts the supplies of IPO shares, while pricing caps bring about a demand gap and prompt buying of shares in the first day of public trading. Empirically, these regulations account for more than a half of severe underpricing in China. Similar to Anglo-American markets, asymmetric information about the quality of the firm is a cause of IPO underpricing, but it is far from being a major determinant of initial returns in China. Besides the effects of financial regulations, we find that the Chinese-specific investment risks also contribute to severe underpricing. After going public, IPO firms have to wait in a long queue for flotation. This illiquidity induces lockup risks. During the long lockup period, IPO subscribers are concerned about tunneling risks and require a discount on IPO shares. The personal interests of corporate insiders, underwriters and regulators, can influence the length of the lockup period. During the lockup period, we find that the IPO investors also require a discount for tunneling risks. Due to the conflicting objectives of the government shareholder, there is no concrete evidence of grabbing risks in the primary market.

Why are Chinese IPOs underpriced so severely? It comes from the Chinese financial regulations and the Chinese investment risks. Behind the veil of regulatory underpricing, one can see a complex web of the government's political and financial interests and private benefits.

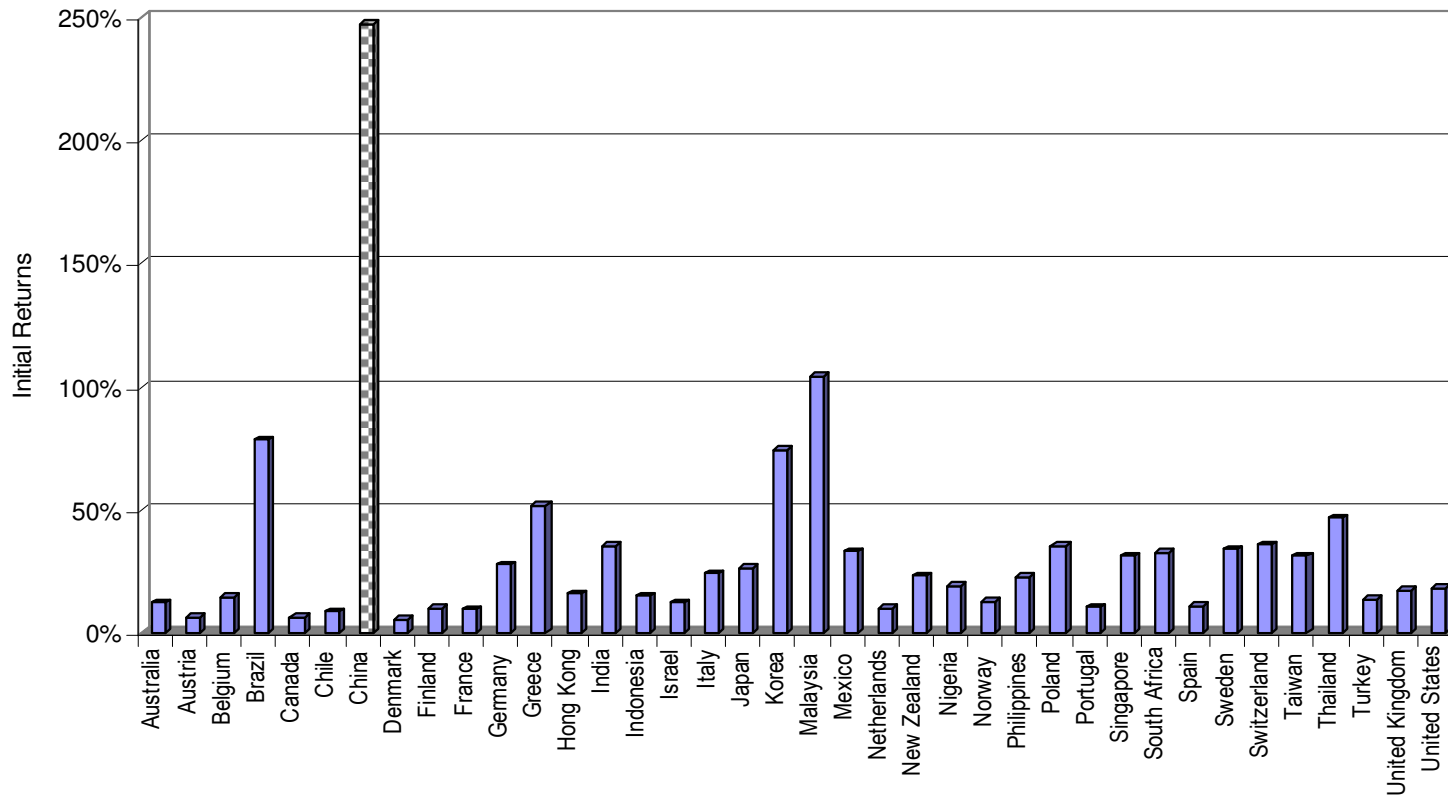
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Figure 1: Average level of first-day returns for initial public offerings in various national markets



Source: Loughran Tim, Jay R. Ritter, and Kristian Rydqvist, 1994. Initial Public offerings: International Insights. *Pacific-Basin Finance Journal* 2: 165-199., updated by Jay Ritter and posted on his website (<http://bear.cba.ufl.edu/ritter/ipodata.htm>).

Table 1: Financial characteristics of Chinese stock markets, 1992-2004

This table presents the market capitalization as a percentage of Chinese GDP, numbers of shareholders of the listed companies, number of listed companies, stock market indexes, turnover rates and price-earnings ratios. The period covers from 1992 to 2004. The Chinese stock market is separated into the Shanghai Securities Exchange and the Shenzhen Stock Exchange. The market capitalization and number of investors are the aggregated number from both exchanges. The data sources are from Shanghai Securities Exchange, Shenzhen Stock Exchange and China Securities Regulation Commission.

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
First-day Return													
Mean	14.503	1.564	0.480	0.462	1.008	1.399	1.220	1.140	1.848	1.919	1.496	0.721	0.711
Median	4.312	1.433	0.448	0.141	0.944	1.292	1.086	1.055	1.847	1.273	1.170	0.696	0.620
Newly Listed Companies	39	130	108	32	207	215	106	98	137	79	71	67	100
Total Companies	53	183	291	323	530	745	851	949	1088	1160	1223	1285	1373
Trading Values (RMB \$Bil.)	104	353	369	347	984	1753	1951	2647	4809	4352	3833	4246	3706
Composite Index													
Shanghai	780.4	833.8	647.9	555.3	917	1194.1	1146.7	1366.58	2073.48	1645.97	1357.65	1497.04	1266.5
Shenzhen	241.2	238.3	140.6	113.3	327.3	381.3	343.9	402.2	635.7	475.9	388.8	378.6	315.8
P/E Ratio													
Shanghai	-	42.5	23.5	15.7	31.3	39.9	34.4	38.13	58.22	37.71	34.43	36.54	24.23
Shenzhen	-	42.7	10.3	9.5	35.4	41.2	32.3	37.56	56.04	39.79	36.97	36.19	25.64
Market Cap over GDP (%)	3.9	10.2	7.9	5.9	14.5	23.4	24.5	31.8	53.8	45.4	37.4	36.5	21.4
Investor Account (millions)	2.2	7.8	10.6	12.4	23.1	33.3	39.1	48.1	58.0	66.5	68.8	70.3	72.1

Table 2: Share classes on China's stock markets

This table presents the official classification of common stock in Chinese publicly listed companies. CSRC stands for the China Securities Regulatory Commission. The numbers in the cells are calculated as the ratio of the corresponding class of shares over total shares. The first number in the cell is the mean, the second in brackets is the standard deviation, the third the minimum and the fourth the maximum.

CLASSES	DESCRIPTION
State shares	Shares obtained by an institution as a representative of the central government, on behalf of the State, and in exchange for the capital contribution made by the State. The institution can be the central government itself, local governments, or wholly government-owned economic institutions. State shares are not available for trading at the two stock exchanges but can be transferred to other domestic institutions on approval from the CSRC.
Legal-person shares	Legal person shares are shares owned by domestic institutions. A legal person in China is defined as a non-individual legal entity or institution. The Commercial Banking Law of China, which came into effect in 1994, prohibits commercial banks from underwriting, holding and trading shares. Legal person shares are not tradable at the two stock exchanges but can be transferred to other domestic institutions on approval from the CSRC.
Tradable-A shares	Tradable A-shares are held and traded mostly by domestic individuals and some by domestic institutions. There is no restriction on the number of shares that can be traded, but it is required that tradable A-shares should account for no less than 25% of total outstanding shares when a company makes its IPO. They are the only shares allowed to be publicly traded on the Shanghai and Shenzhen Stock Exchanges.
Employee shares	Employee shares are offered to workers and managers of a PLC, usually at a substantial discount. Employee shares are registered under the title of the labor union covering that company, which also represents shareholding employees trying to exercise their rights. After a holding period of 6 to 12 months, the company may file with the CSRC to allow its employees to sell the shares on the open market, but the directors, supervisors and the general managers may not transfer such shares during their term of office.
Shares denominated in a foreign currency	This group of shares includes B-shares on domestic stock exchanges, H-shares on the Hong Kong Stock Exchange and N-shares on the New York Stock Exchange. B-shares are available exclusively to foreign investors and some authorized domestic securities firms. The B-share market is separated from the A-share market, with SSE B-shares denominated in US dollars and SZSE B-shares in Hong Kong dollars. H-shares and N-shares carry the same rights and obligations as A-shares and B-shares, but they cannot be traded on domestic stock exchanges.

Table 3: Empirical studies examining China's Initial Public Offerings

This table surveys the existing literature about underpricing of initial public offerings in China. We only include the comprehensive papers directly dealing with underpricing issues. Anarony, Lee and Wong (2000) and Gu (2001) are therefore not included here.

Papers	Data Sample			Underpricing Degree		Regression Methodology	Findings (Statistically significant)	Interpretations
	Sample Size	Data Source	Covered Period	Mean	Median			
Datar and Mo (1998) <i>Working Paper, Seattle University</i>	226	Hand- Collected	1990-996	388%	209%	OLS	- Offering size - Offer price - Growth option	Political motive for the dispersed distribution of shares to create a viable capital market
Mok and Hui (1998) <i>Pacific-Basin Finance Journal</i>	101	N/A	1990-1993	462%	N/A	OLS	+ Listing Time Lag - Non-tradable shares	High equity retention by the state, a long time-lag between offering and listing etc.
Su and Fleisher (1999) <i>Pacific-Basin Finance Journal</i>	308	N/A	1987-1995	949%	231%	2SLS, Logit and Tobit	+ Listing Time Lag - Fund Raised	SEOs (signaling)
Chen and Gao (2000) <i>Financial Research Journal (Chinese)</i>	565	N/A	1992-1996	335%	149%	OLS	+ Listing Time Lag + Offering Proceeds	Risk of corporate operation, leaving a good taste for investors
Lui and Li (2001) <i>Working Paper, Peking University (Chinese)</i>	781	Qianlong	1991-1999	142%	119%	OLS	+ Listing Time Lag + Offering Proceeds - Issuing Price	No direct interpretation of regression results
Chi and Padgett (2002) <i>ISMA Working Paper, Univ. of Reading</i>	658	Guo Tai An	1996-2000	129% (adj.)	N/A	OLS	-High Tech -Issuing Size -Lottery Odds	Information asymmetry
Chan et al. (2004) <i>Journal of Corporate Finance</i>	570	Tai Wan Economic Journal	1993-1998	175% (adj. A-shares)	N/A	OLS	+ Listing Time Lag + Local Investors - Issuing Size	Institutional features

Table 4: Descriptive statistics and univariate analyses

Based on all the firms listed on China's stock market from 1992 to 2001, this table presents the distributions of hypothesized determinants of initial returns on the spectrum of initial returns. If initial returns are negative, it is classified as overprice and reported in column 2. If initial returns are over 1000%, it is classified as superstars and reported in column 7. In between 0% and 1000%, the firms are classified into four groups with the same amount of firms by the 25% percentile of initial returns, i.e. quartile. The thresholds of four quartiles are 0.777, 1.310, and 2.121, and columns 3, 4, 5, 6 report the intervals. Column 8 reports the result of univariate regressions with bootstrap methods. The dependent variable is the percentage of initial returns. The independent variable is the corresponding variable of each row. The asterisks following the coefficient show the range of P-values: *** as p-value $\leq 1\%$, ** p-value $\leq 5\%$, * p-value $\leq 10\%$. In the rows, the first line reports the mean and the second reports the median. Except for row 13 that use bootstrapped Tobit regressions, regressions for means are bootstrapped generalized liner regressions and these for medians are bootstrapped simultaneous-quantile regression. Row 1 reports the means and medians of initial returns in each category of initial returns and row 2 reports the number of listed firms in each respective category. Rows 3, 11, 12 report the actual amounts in the first seven rows, but the natural logarithms in the regressions of column 8. The units are shown in the cells of variables.

	Variables	Total	Overprice	Quartile 1	Quartile 2	Quartile 3	Quartile 4	Superstar	Coefficient
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	Initial Returns (%)	247	-38	39	96	155	361	1767	
		122	-36	41	95	151	281	1409	
(2)	Firms	1,371	34	305	341	340	256	95	
(3)	Total Assets (<i>Million RMB</i>)	1564	622	4512	915	795	386	312	-59.77***
		356	364	527	423	338	269	226	-24.72***
(4)	Firm Age (<i>Years</i>)	2.9	1.5	2.8	2.6	2.6	2.7	5.8	5.322***
		2.0	1.0	2.0	2.0	2.0	2.0	7.0	5.180***
(5)	Listing Time Lag (<i>Days</i>)	54	157	39	36	35	87	311	0.628***
		23	171	22	22	22	28	17	0.365***
(6)	Block Shareholding (%)	62.9	64.7	62.6	62.8	63.3	63.2	61.4	-0.297
		66.7	79.1	66.1	65.4	65.6	67.0	71.7	-0.134
(7)	Managerial Holding (%)	0.587	0.103	0.199	0.179	1.924	0.018	0.078	-0.181

		0.000	0.000	0.000	0.000	0.001	0.000	0.003	-0.047
(8)	Insider Shareholding (%)	3.379	0.903	3.512	4.187	4.282	2.549	0.246	-5.493***
		1.461	2.059	0.000	2.500	2.500	1.603	0.000	-3.555*
(9)	Underwriting Cost (<i>Million RMB</i>)	13.9	14.6	21.8	12.8	10.5	8.8	17.9	-1.439***
		11.7	16.0	16.0	12.0	9.8	8.2	16.6	-2.049***
(10)	State Shareholding (%)	38.3	31.2	41.0	38.9	38.4	38.6	29.9	-1.248
		44.5	9.1	51.0	47.2	43.9	43.4	26.7	-0.199
(11)	Issuing Size (<i>Million RMB</i>)	374	189	722	364	299	220	43.3	-0.084***
		232	147	377	289	243	114	17.1	-0.052***
(12)	Earning Multiplier	18.7	10.9	17.9	18.4	19.7	19.7	13.4	-4.339***
		16.2	13.4	16.5	16.4	16.2	16.0	15.0	-2.019***
(13)	Allocation Rate %	1.387	8.057	2.271	1.066	0.826	1.446	0.044	-1.183**
		0.393	1.087	0.528	0.429	0.411	0.315	0.039	-1.388***
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Variables	Total	Overprice	Quartile 1	Quartile 2	Quartile 3	Quartile 4	Superstar	Coefficient

Table 5: Multivariate analyses of the determinants of IPO initial returns

This table presents the regressions of different types of issuers on adjusted initial returns (IRA) and the offering multipliers. Standard deviations are given below the coefficients. The asterisks following the coefficient show the range of P-values: *** as p-value \leq 1 %, ** p-value \leq 5%, * p-value \leq 10%.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Log Asset	-38.293 [5.674]***								-31.304 [4.435]***
Firm Age	8.430 [3.297]**								4.123 [1.659]**
Listing Time Lag		0.845 [0.252]***							0.751 [0.154]***
State Shareholding			-0.447 [0.668]						0.246 [0.347]
Block Shareholding			0.226 [0.544]						0.053 [0.189]
Employee Shareholding			-3.703 [1.147]***						-0.817 [0.451]**
Manager Shareholding			-3.590 [6.257]						-1.417 [8.258]
IPO Expense				-1.110 [0.452]**					-1.802 [0.777]**
Issue Size					-0.173 [0.103]*		-0.096 [0.049]*	-0.059 [0.040]	-0.096 [0.036]***
Pricing Cap						-4.543 [0.194]***	-4.243 [0.250]***	1.118 [0.320]***	0.891 [0.324]***
Allocation Rate								-2.241 [0.711]***	-1.796 [1.013]*
Hot Market	46.147 [22.252]* **	54.748 [20.803]* **	39.595 [14.917]* **	20.152 [9.484]***				46.185 [7.899]***	40.267 [22.597]*
Observations	1133	1164	1124	1136	1353	1119	1119	970	828
Chi Test	58	31	24	17	13	547	509	1466	1346
Adjusted R2	0.03	0.16	0.02	0.02	0.01	0.3	0.31	0.56	0.67