Rent Seeking, Brokerage Commissions, and the Pricing and Allocation of Shares in Initial Public Offerings

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Abstract

Using investor bidding data from 189 Chinese IPOs, we find Chinese investment banks that have no discretion on IPO share allocation favor commission-paying mutual funds by discounting offer prices to make more orders from the latter eligible for allocation. This favoritism effect is largely mitigated in IPOs underwritten by pro-issuer banks that depend heavily on investment banking revenues and put more weight on the issuing firms' interests. These findings suggest that banks balance the interests of institutional investors and corporate clients when pricing IPOs. The discount caused by the favoritism is reflected in IPO underpricing. For the favoritism towards mutual funds, pro-issuer banks are compensated with increased brokerage commissions, and pro-investor banks are punished by losing future investment banking business from the IPO issuers.

Key words: IPO pricing; Rent seeking; Investment banks; Brokerage commissions

JEL number: G24; G28; G32

1. INTRODUCTION

There is a growing literature that uses the interaction between institutional investors and investment banks (underwriters) in the initial public offering (IPO) process to explain underpricing and share allocation. For example, the information extraction theory posits that banks could use their discretion in IPO pricing and share allocation to induce informed investors to reveal valuation information in the book-building process (Benveniste and Spindt, 1989; Cornelli and Goldreich 2001, 2003; Chemmanur, Hu, and Huang, 2010; and Hanley and Hoberg, 2010).[1] The IPO price stabilization theory argues that banks may allocate underpriced shares to investors who agree to hold the shares for a longer period, or buy additional shares in the immediate aftermarket (e.g., Aggarwal (2000), Fishe (2002), Jenkinson and Jones (2004), and Hao (2007)). The rent-seeking theory argues that hot IPOs are allocated to investors to generate future brokerage commissions or investment banking business for the banks (e.g., Loughran and Ritter (2002, 2004)).[2] A recent study by Jenkinson, Jones, and Suntheim (2017) compares the explaining power of the information extraction and the rent-seeking theory, and concludes that the latter is more prevalent in IPOs.

In practice, investment banks have two considerations when pricing IPOs. First, according to rent-seeking theory (Jenkinson, Jones, and Suntheim, 2017), they may have incentives to favor investor clients in exchange for brokerage commissions (the favor-investor incentive, henceforth). Meanwhile, banks can also have incentives to keep goodwill with the issuing firms for future investment banking business (the favor-issuer incentive, henceforth), which is similar to their incentives in the spinning practice (Liu and Ritter, 2010). In this paper, for the first time in the literature we consider the two incentives simultaneously and explore the interaction effects of these two incentives on IPO pricing.

We are able to take advantage of the unique institutional setting in the Chinese IPO market and directly compare the effects of banks' favor-investor and favor-issuer incentives. Specifically, since Chinese banks don't have the discretion on share allocation (i.e., any rationing will be done as a function of the shares bid for), they are only able to compensate the commission-paying investors and distribute the money left on table to them by lowering the offer

[1] See also Chemmanur (1993), who suggests that IPO underpricing is a means of inducing information production by outsiders about the firm.
[2] See Ritter and Welch (2002) and Ritter (2011) for excellent surveys of the theoretical and empirical IPO underpricing literature and the literature on IPO share allocation.

price and including them for allocation. That is, the favor-investor incentive should have a negative effect on IPO pricing. Meanwhile, though issuers could tolerate reasonable levels of underpricing for some reasons (Loughran and Ritter, 2002, 2004), it is in their interests to have a high valuation of the new shares. Banks with the favor-issuer incentive are likely to accommodate their needs by increasing the offer prices. Therefore, the favor-investor and favor-issuer incentives have opposite implications on IPO pricing, allowing us to compare their influences directly.

The banks' favor-investor incentive of allocating underpriced IPO shares to clients of their non-IPO businesses is well grounded in Fulghieri and Spiegel (1993). By modeling investment banks as multiproduct firms, they develop a theory of how investment banks allocate IPO shares among their clients. They show that, all else equal, larger clients receive a greater dollar value of underpriced shares from banks.[3] Intuitively, these effects arise from the desire of the investment bank that underwrites the IPO to promote future sales of their other (non-IPO underwriting) services (such as their brokerage business) by allocating underpriced IPO firm shares to their best customers of these services. In equilibrium, the allocation of underpriced IPO firm shares to a client will be greater, the more the bank expects to gain from that client in future transactions. While Fulghieri and Spiegel (1993) develop their model with a focus on book-building IPOs in the US (where IPO underwriters have complete discretion in both IPO pricing and share allocation), in the Chinese context, IPO underwriters have discretion only on deciding the IPO offer price and have to allocate shares to all bidders who bid above the eventual IPO offer price. This means that the Fulghieri and Spiegel (1993) model generates very sharp predictions for the pricing of IPO firm shares in the Chinese context (since the IPO share allocation channel has been mostly shut off in that context), which we are able to test using the very detailed data available to us on institutional bidding in Chinese IPOs.

The Chinese IPO setting allows us to test the predictions of investment banks' favor-investor and favor-issuer incentives on IPO pricing with the necessary information.[4] First, the China Security Regulation Commission (the counterpart of SEC in China, CSRC henceforth)

[3] Formally, in the Fulghieri and Spiegel (1993) model, the objective of the investment banks underwriting the IPO in allocating underpriced IPO shares to their institutional clients is to signal their true quality. However, in practice, IPO underwriters may also have other objectives, such as developing and maintaining long-term relationships with these institutions, thereby generating higher brokerage commissions in the future from them. We will focus on this latter objective in our empirical analysis.

[4] Meanwhile, China now has the second largest IPO market around the world by dollar raised, according to Doidge, Karolyi, and Stulz (2013), and is of great interest by itself.

requires banks to disclose order books with information on investor identities, bidding prices, quantities, and allocation to the public since 2010. Thus, we are able to observe the bidding and allocation information that is unavailable in other markets. Second, brokerage commissions that a mutual fund pays to every broker it uses, along with information on other fund characteristics, are also reported in detail in compliance with the CSRC's regulations. This allows us to calculate the brokerage commissions for each bank-mutual fund pair precisely. Third, the composition of investment banks' revenue is publicly disclosed as required by CSRC, allowing us to calculate a bank's dependence on investment banking revenues to capture the intensity of its favor-issuer incentive. In our analysis, we classify banks with above-median revenues from the investment banking business as pro-issuer banks, and those with below-median revenues as pro-investor banks.

We analyze the order books of 189 IPOs that are not likely to be affected by the CRSC's interference on pricing in the Chinese A-share market to investigate the effects of investment banks' favor-investor and favor-issuer incentives on IPO price setting. In practice, when a bank has compiled the IPO demand schedule based on the order information in the IPO book, it starts from the market clearing price and searches for the optimal offer price levels from high to low along the demand schedule. Our empirical tests focus on how the choice of the offer price is determined in this searching process.

First, we explore the effects of investment banks' favoritism towards commission-paying investors on deliberate underpricing, that is, the discount from the market clearing price to the offer price. This measure captures banks' efforts to lower the offer price directly, which is not observable without the data on order books. We find that the offer prices are discounted to a greater extent if the distributions of orders from commission-paying mutual funds are skewed towards lower price levels in the demand schedules. With a one standard deviation increase in the skewness measure, the discount increases by 1.2%, which could be translated to a 1.4% decrease in the offer price. This observation suggests that banks deliberately lower the offer prices to allow more orders from mutual funds, which pay more brokerage commissions to them, to be eligible for IPO share allocation.

Second, we condition the effects of banks' favoritism towards commission-paying mutual funds on banks' favor-issuer and favor-investor incentives. We define a pro-issuer (pro-investor) bank as a bank's investment banking revenue relative to total revenue ranks in the top (bottom) half among all banks. We find that, in general, deliberate underpricing is lower in IPOs underwritten by pro-issuer banks. More importantly, the effects of the favoritism towards commission-paying mutual funds are largely mitigated with these pro-issuer banks. This finding suggests that investment banks discount the offer prices to include commission-paying mutual funds for allocation, but this effect is less pronounced with banks that depend more on investment banking revenues and weigh more on the interests of the issuing firms. The above results are robust after controlling for the information extraction effect documented in Cornelli and Goldreich (2003) for offer price-setting, the long-term investor effect documented by Jenkinson and Jones (2004) for IPO share allocation, and other mutual fund characteristics. Taken together, we find strong and robust evidence on deliberate underpricing and banks balance the interests of their investor and corporate clients when making pricing decisions.

Third, we perform investor-level analyses on the determination of investors' eligibility for allocation. Results suggest that the odds ratio that a mutual fund's bid is included for allocation is 0.3 times higher if it pays commissions to the bank. This effect doesn't exist among pro-issuer banks. That is, banks' favoritism towards mutual funds is insignificant if it values the issuers more, which is consistent with our conjecture that banks' favor-issuer incentives can mitigate the effects of the favoritism towards commission-paying mutual funds.

Next, we consider the economic consequences of banks' deliberate underpricing. We first investigate how this practice affects IPO underpricing, which is related both to the issuers' gains from the offer and investors' performance. We find that the discount is fully reflected in underpricing in the subsample of IPOs underwritten by pro-investor banks, suggesting that the discount can be attributed to the favoritism towards commission-paying mutual funds, which transfers wealth from the issuer to the investors. There is, however, no such pattern in the subsample of IPOs underwritten by pro-issuer banks, as the effects of favoritism is mitigated and the discount could be explained by firm fundamentals. After controlling for the same set of variables in the discount regressions, the discount variable is insignificant in the underpricing analysis.

We then attempt to rationalize investment banks' incentives to favor the investors and the issuers. We implicitly assume that by favoring the investor clients or the corporate clients in the pricing process, banks are able to benefit from obtaining more business from them in the future. That is, the favoritism towards the mutual funds can generate future brokerage commissions.

Meanwhile, banks can have more investment banking business with the issuers if they act in the latter's interest and set the offer price higher. Our evidence shows that mutual funds increase commissions to pro-issuer banks that bear a larger cost to favor them. Pro-investor banks that discount the offer prices to accommodate their investor clients are more likely to lose investment banking business opportunities in the future. These are consistent with the notion that when favoring commission-paying investors and discounting offer prices, pro-issuer banks are compensated for their loss on the issuers with brokerage commissions, and pro-investor banks are punished by the issuers and lose investment banking business.

In the final part of the paper, we first test banks' favoritism towards other groups of investors. We don't find similar results for trust firms and financial firms. Interestingly, our evidence suggests that banks are likely to increase the offer price to exclude other investment banks for allocation, which may be due to the competition among investment banks. Banks also favor insurance companies to some extent, which may be due to that fact they are seeking brokerage business opportunities with insurance companies. Second, we attempt to rule out an alternative tipping mechanism that may explain our main findings on banks' favoritism towards mutual funds. This mechanism suggests that banks could give advice or leak information to commission-paying institutions to bid a somewhat higher price to get more IPO allocation. We argue that, in practice, it is not rational for either investors or banks to use such an illegal mechanism frequently due to the resulting higher offer prices and greater legal risks. Empirically, we do not find evidence that the effect of brokerage commissions is less pronounced for more compliant banks, as predicted by the tipping mechanism. We therefore conclude that a tipping mechanism is unlikely to be at work in generating our results.

The rest of the paper is organized as follows. Section 2 discusses the relation of our paper to the existing literature. Section 3 describes the institutional background of Chinese IPO markets. Section 4 reports our sample selection procedures and presents summary statistics. Section 5 presents our results on deliberate underpricing. Section 6 presents our results on underpricing and economic consequences for investment banks. Section 7 reports additional testing results. Section 8 concludes. Appendix A provides a figure giving the distances of IPO prices from regulatory price caps. Appendix B lists the definitions of various variables.

2. RELATION TO THE EXISTING LITERATURE

Our paper makes contributions to two strands of the IPO literature. First, we contribute to the IPO underpricing literature on how banks' favor-investor (favor-issuer) incentives interact with their rent-seeking incentives and affect offer price-setting, which allows us to develop a better understanding of agency problems in IPOs. Since the money left on the table (received by investors and banks with an implicit profit-sharing mechanism such as brokerage commissions) is determined not only by allocation (the quantity effect) but also by IPO underpricing (the price effect), the rent-seeking theory predicts lower IPO offer prices besides favorable IPO share allocation to commission-paying investors (Ritter, 2011). Consistent with this conjecture, we find evidence that the brokerage commissions paid by investors to banks make the latter lower the offer prices directly, resulting in underpricing to a greater extent. More importantly, the effects of the favoritism towards commission-paying investors are absent among pro-issuer banks that weight the issuers' interest more, suggesting that banks are balancing investor and corporate clients' interests when pricing IPOs. To the best of our knowledge, this paper is the first study that tests the predictions of the favor-investor and the favor-issuer incentives on IPO pricing simultaneously. Additionally, our study focuses on the pricing effect, rather than the allocation effect, which can also complement the existing literature.

Second, our research complements the existing literature by providing details and direct evidence on IPO pricing and allocation dynamics. Despite the large body of literature on IPO pricing and share allocation, there remains little evidence on how the actual IPO process works in practice, since underwriters' books are proprietary information (in the US, for example). An important paper that studies how IPO price setting works in practice is Cornelli and Goldreich (2003). They show that European investment banks use information in IPO order books to set the IPO offer price, by documenting that informative limit prices have a strong influence on the IPO offer prices. Using similar Chinese bidding data, Cao et al. (2016) find IPOs with higher levels of bid dispersion experience greater first-day returns than other IPOs. These findings are consistent with Benveniste and Spindt (1989)'s information extraction hypothesis. Regarding how IPO share allocation work in practice, Cornelli and Goldreich (2001) show that investment banks allocate more shares to bidders who provide information in their bids, which is also consistent with the information extraction hypothesis. Jenkinson and Jones (2004) show that bidding investors who are perceived to be long-term holders of the IPO stock are favored in share allocation, supporting the market stabilization hypothesis as in Aggarwal (2000). The findings of our empirical study suggest that banks search for the optimal offer price to set price levels from high to low along the demand schedule, choosing their final IPO offer price based on their own objectives as well as other motivations important to the IPO issuers. While we test the rent-seeking theory (conditional on investment characteristics) against the information extraction and the price stabilization theories, we find that the rent-seeking theory dominates.

Finally, to the extent that the first stage of the IPO pricing process in China can be viewed as an auction open to institutions, our paper is also distantly related to the literature on auctioned IPOs: see, e.g., Kandel, Sarig, and Wohl (1999), Amihud, Hauser, and Kirsh (2003), Chiang et al. (2011), Chiang et al. (2010), and Degeorge, Derrien, and Womack (2010). These studies, however, have focused on the implications of asymmetric information, with the exception of Chiang et al. (2011), who focus on naïve learning by frequent IPO investors.

3. INSTITUTIONAL BACKGROUND

3.1 The IPO mechanism in China

The Chinese IPO market has been heavily regulated since its inception in early 1990s. Historically, Chinese regulators have tried several selling mechanisms for IPOs over time due to different market and political considerations, including fixed-price offerings based on price-earning ratios (1992-1994, 1995-1999, 2002-2004) and on-line auctions (1994-1995, 1999-2001). In 2005, the CSRC introduced a hybrid IPO mechanism and kept revising it in many aspects such as investor qualifications, allocation rules, and information disclosure. This mixed mechanism is in use until now, and the basic design has stayed unchanged.

As shown in Figure 1, under the hybrid IPO mechanism a typical Chinese IPO consists of two tranches. The first tranche is a "crippled" book-building process, in which only institutional investors are allowed to participate, after which the IPO offer price is determined. We call this tranche "crippled book-building" since investment banks in this mechanism do not have any discretion on the allocation of shares, which are distributed to eligible investors on a *pro-rata* basis instead.[5] The second tranche is a fixed-price offering to retail investors, who accept the IPO

[5] This tranche may also be viewed as an IPO auction open only to institutional investors. Cao et al. (2006) call this tranche a "dirty multi-unit uniform price auction", and Ritter (2011) describes it as "procedures with some aspects of book-building". In this study we call it "a crippled book-building" because it inherits very similar procedures from the traditional book-building mechanism except allocation rules, which are discussed in detail in Section 3.2.

offer price determined in the book-building tranche passively, and place orders only with the number of shares demanded at this fixed offer price. The pre-determined fraction of new shares sold in the first tranche varies from 20% to 50%, and is subject to adjustment to balance different demand levels from the two tranches.

3.2 The book-building tranche

The offering procedure in the crippled book-building tranche is somewhat similar to those of the traditional book-building procedure that is popular in the US. Figure 1 demonstrates the timeline of these steps with an illustrative example. Day *T* is the day when the new shares are sold to investors officially, i.e. the offering day. On day *T-7* (7 trading days before day *T*), the new offer is announced and a preliminary version of the prospectus is disclosed, which contains information on the offering firm and the offer but not on the offer price and allocation.

Roadshows are then organized to publicize the offer. This step usually takes 2-3 trading days, and only intuitional investors are allowed to participate in them. In roadshows, a valuation report prepared by the bank's analysts is disseminated among institutional investors. The report contains the suggested price range for the offer.

From the beginning of roadshows to 3 trading days before the offer (day *T-6* ~ day *T-3* in the example), institutional investors are invited to submit their indications of interest to the bank via an electronic system provided by the exchange. Unlike those in the US, these preliminary bids are all limit-price orders, in which the maximum price an investor is willing to pay for a given number of shares is specified. An investor is allowed to place three bids with different combinations of price and quantity, which is equivalent to the step bids in the traditional book-building process, as described in Cornelli and Goldreich (2001).

Once the order book is built, the bank is able to compile a demand schedule for the offer. The demand schedule shows, at each price level submitted by investors, how many shares are demanded and whom the demand is from. The price-setting process often starts in the evening of day *T-3*, and may last until the midnight if it is difficult to reach a consensus. In practice, the bank starts from the highest price level that clears the market and searches price levels from high to low along the demand schedule to determine the optimal offer price that balances the interests of the issuer, market investors, and the bank itself.[6] Usually, the investment banking division in the bank represents the issuer, and the sales division represents the investors in the price-setting meeting. The issuer is consulted for opinions during this process, but it is not permitted to sit in the meeting. The pricing decision and other supporting materials are filed with the CSRC on the next day (day *T-2*) and announced to the market on day *T-1*.

On day *T*, the formal offering day, institutional investors confirm their eligible orders, that is, preliminary orders with prices above or equal to the offer price, via the electronic system. The fixed-price offer to retail investors occurs on the same day, in which the fixed-price is the offer price determined on day *T-2* in the book-building tranche.

The most important difference between IPO book-buildings in China and those in the US is IPO share allocation. The Chinese banks do not have any discretion in share allocation, and shares are rationed on a *pro rata* basis to investors placing eligible orders.[7] Thus, if a bank wishes to favor an investor in the offering, the main strategy it can use is to lower the offer price so that the investor is eligible for share allocation even when it places a low-price order. The IPO share allocation results are announced on days *T+1* and *T+2* for institutional investors and retail investors, respectively.

Finally, it takes 3-5 trading days for the bank to register the new shares with the central registry, and the trading of new shares starts on day *T+6* in our example.

4. DATA AND SAMPLE CONSTRUCTION

4.1 Data

Since 2010 Chinese banks are required to disclose IPO bidding information to the market. We hand collect the data from disclosures from IPO firms, including bidders' names, institutions the bidders are affiliated with, prices, quantities, and the number of shares allocated.[8] We then classify bidders into the following 5 categories: mutual funds, insurance companies, investment

[6] The CSRC used to give informal guidelines to underwriters on IPO pricing, which are typically price caps. These guidelines, however, are not binding, and are completely removed for some periods. We discuss the impact of these guidelines on our sample construction in detail in Section 4.1.

[7] In late 2010 the Shenzhen Stock Exchange introduced a lottery mechanism for IPO share allocation. The new allocation mechanism still allocates share on a *pro rata* basis but increases the number of shares per unit of allocation significantly. With the traditional method, the number of shares allocated to an investor is rounded down to whole shares; with the new method, the new shares are divided into a few lots, each of which may consist of several million shares. Then these lots are awarded to investors using a lottery mechanism.

[8] The Shenzhen Stock Exchange provides us bidding information on Shenzhen IPOs from June 2009 to November 2010.

banks, trust firms, and financial firms. Mutual fund brokerage commission data are from the CSMAR database, which includes semiannual commission payments a mutual fund making to each brokerage service it has used in the past 6 months. The dollar amount of trades is also reported in the CSMAR database.

IPO information is obtained from the Wind database. It provides information on IPO dates, shares offered, proceeds, offer prices, investment banks, and industry classifications. We use stock price and firm fundamental data from the CSMAR database to calculate returns and other IPO firm-level controls. Other mutual fund information, including size, type, past investment returns, and end-of-period stock holdings, is also retrieved from the CSMAR database. For investment banks, their revenue information is also from Wind, and compliance ratings are collected by hand from the CSRC's website.

4.2 Sample construction

We have bidding information for 850 IPOs. As mentioned in Section 3.2, the CSRC influences the pricing of IPOs with informal price caps in some periods. Though these guidelines are not compulsory and not followed in many IPOs, they may plague price-related research on Chinese IPOs. To construct a sample that is subject to the CSRC's intervention to the least extent, we use the 196 IPOs taking place between October, 2011 and October, 2012. During this period, the CSRC takes initiatives to make IPOs more market-based and stops giving guidelines on IPO pricing. We exclude 6 offers priced at the market clearing price, because the primary goal for their banks is to sell out the new shares rather than other information-based or agency-based considerations.[9] We also drop one IPO we don't have complete information. Our final sample includes 189 IPOs.

Figure A1 in Appendix A plots the distances from the offer prices to the most recent price caps used before October 2011 for IPOs in our sample period.[10] The distance is defined as the difference between the offer price and the cap, divided by the cap. Only a very small fraction

[9] The Chinese security law states that for a firm with a total equity of fewer than 400 million shares, at least 25% of total shares outstanding should be sold to the public during the offering to make the IPO successful; for larger firms with a total equity of more than 400 million shares, at least 10% should be sold to the public. It is common in China that the pre-determined number of shares offered is the minimum number satisfying this requirement, so the most important objective for the underwriters is to sell the new shares out.

[10] According to several major investment banks, the price cap is defined as the maximum of simple mean, share-weighed mean, and median of prices calculated with all bids, and simple mean, share-weighed mean, and median of prices calculated with mutual fund bids in that period.

(8%) of the offers is susceptible to interventions. In the final sample of 189 IPOs, 85% are priced above the price caps, showing that the guidelines on pricing are removed during this period. Hence, we believe that our results are not biased by the regulator's influences.

4.3 Summary statistics

Table 1 reports descriptive statistics of our sample. According to Panel A, 85 and 78 IPOs are from the ChiNext and Small and Medium Enterprise (SME) market in the Shenzhen Stock Exchange, respectively, and the remaining 26 are from the main board in the Shanghai Stock Exchange. An average IPO in our sample sells 4.5 million new shares to the public. A reasonable number of new shares (6.0% of the total shares) are sold to the institutional investors in the book-building tranche. The average IPO raises 670 million RMB, and IPOs in the main board are three times the size of those from the CHINext market in terms of IPO proceeds. 59.3% of our sample firms are backed by VC investors. On average the offer price is 7.7% higher than the hypothetical price cap, suggesting that the pricing guidelines are not effective in our sample period. The average underpricing is 26.8%, which is smaller than that reported in Cao et al. (2016) for the 2009 – 2012 period, suggesting that the magnitude of underpricing decreases during that period.

Panel B reports the statistics on the investors' bidding patterns in the book-building tranche. For an average IPO, there are 85.4 bidders that are affiliated with 47.2 institutions who place 97.5 bids. Our sample IPOs are heavily oversubscribed with an average overall subscription ratio of 43.0. In the book-building tranche, the subscription ratio is 21.5. IPOs are priced 9% lower than the share-weighted average bidding price. The standard deviation of bidding prices is 15.2%, and the concentration ratio of demand, measured by the Herfindal index of top 5 largest orders in terms of shares, is 3.8. Consistent with Degorge, Derrien, and Womack (2010), banks choose the price level with a high demand elasticity of 64.9 (calculated as percentage change in demand/percentage change in price from the offer price to the price immediate above) as the offer price.

Panel C reports the statistics on investor participation in our sample IPOs. In total, 1,130 bidders from 351 institutions place 18,422 bids in the sample IPOs. Mutual funds, investment banks, and insurance companies are the three largest IPO investors in terms of the number of investors, demand in shares and dollars, and shares allocated. For example, there are 486 mutual fund bidders who bid for 42.6% of the shares offered and 43.4% of shares are distributed to them. Insurance companies have the largest average order size of 7.7 million shares or 81.1 million RMB. They, however, are relatively conservative in the bidding process, since the fraction of their eligible demand, that is, demand with price above or equal to the offer price, is 9.1%, which is smaller than their fraction in demand for shares (12.6%).

5. BANK INCENTIVES AND DELIBERATE UNDERPRICING

We define deliberate underpricing as the discount from the market clearing price to the offer price. This discount is observable in the demand schedule, and captures an investment bank's effort to set the offer price below the level at which new shares could be sold out completely. We focus on the interaction of two incentives in this price-setting process: banks' favor-investor incentive to underprice the offer and reward commission-paying investor clients, and their favor-issuer incentive to raise the offer price in the interest of the issuer for future investment banking business. Specifically, we test whether banks favor commission-paying investors by deliberately discounting IPOs in exchange for brokerage commissions, and to what extent this effect is mitigated for banks that depend more on investment banking business.

5.1 Testable Hypotheses

5.1.1 Investment banks' incentives in the price-setting process

We argue that when setting the offer prices, investment banks have two considerations. The first consideration is about their relationship with investors clients. According to previous studies (e.g., Reuter (2006); Jenkinson, Jones, and Suntheim (2017)), banks have incentives to reward commission-paying investors by allocating underpriced shares to them. The second consideration is about their relationship with the issuers. The banks have incentives to maintain goodwill with the issuers by increasing the offer prices or allocating shares to stakeholders for future investment banking business (e.g., Liu and Ritter (2010)). These two layers of tensions don't necessarily conflict with each other in the US setting, because banks are able to price the offer at levels acceptable to the issuer, and compensate the commission-paying investors with more allocation.

In the Chinese market, both the two incentives are reflected in the offer price, allowing us to compare their influences empirically. First, since banks aren't able to allocate more shares to reward commission-paying investors due to the rationing system, they can only establish a profit-sharing mechanism by lowering the offer price to 1) include more orders from commission-paying investors so as to eventually allocate them more IPO shares; and 2) to increase the magnitude of their initial returns. According to the rent-seeking theory, the favor-investor incentive will result in a larger discount in the offer price.

Meanwhile, though issuers can tolerate reasonable amount of money left on the table for some reasons (Loughran and Ritter, 2002, 2004), it is in their best interest to price the offers at a higher level and dilute the original shareholders' interests less. Banks are likely to discount the offer less to maintain a good relationship with the issuers for future investment banking business. This argument suggests that the favor-issuer incentive is associated with a smaller discount in the offer price.

5.1.2 Hypotheses

Specifically, the favor-investor incentive suggests when a bank observes a demand schedule in which bids from commission-paying investors are at relatively lower prices, the banks will have to choose a lower IPO offer price in order to make more of the bids from such investors eligible for IPO share allocation. It is worth noting that mutual funds pay significantly higher brokerage commissions to banks than other types of investors (0.08% versus 0.03% on average). They also have long-term business relationships with banks, which is helpful for establishing an implicit profit-sharing mechanism. Thus, in general, it is reasonable to expect that there exists favoritism towards commission-paying mutual funds, which, in turn, affects IPO pricing. Based on these arguments, we develop the following testable hypothesis:

H1 (the favor-investor incentive): *If the distribution of commission-paying mutual fund orders is skewed towards lower bid prices, investment banks discount the IPO offer price more.*

Banks are facing a tradeoff between a good relationship with investors and that with the issuers when pricing IPOs. When observing the demand schedule, banks are willing to lower offer prices to favor commission-paying investors, which could hurt the issuers. If the banks want to have goodwill with the issuers for future investment banking business, they have to balance the interests of the investors and the issuers and discount the offer price less. Apparently, if a bank makes a large profit from corporate clients and depends heavily on revenues from the investment banking business, it should have a stronger favor-issuer incentive. The effect of the favoritism towards investor clients should be mitigated among these banks. Based on these arguments, we develop the second hypothesis:

H2 (the favor-issuer incentive): *The effect of the skewness of commission-paying mutual fund demand is less pronounced if the bank values the issuer's interest more.*

5.2 Empirical framework

Our basic approach to test how the favor-investor and favor-issuer incentives interact with each other is to examine 1) whether banks take the distribution of the commission-paying investors' orders into consideration when they price equity in IPOs; and 2) whether this consideration is weakened among pro-issuer banks. Because we can classify the bidding investors into different groups by a variety of characteristics, such as commissions paid, industry expertise, and investment performance, we are able to pin down the effect of this interaction by controlling for the distribution of orders from the group of investors with specific characteristics.

5.2.1 Main variables

We measure deliberate underpricing *Discount*, the discount from market clearing price to the offer price, as the difference between the market clearing price and the offer price, divided by the market clearing price. This measure could be calculated with information in banks' books, and better captures the banks' efforts to lower the offer prices than the traditional initial return measure.

To describe the distribution of investor orders across different price levels in a demand schedule, we first define *SkewDemand*, a skewness measure for the overall demand schedule

$$SkewDemand = 1 - \frac{Demand\ with\ top\ 1/3\ prices}{All\ demand} \tag{1}$$

The second part is the fraction of orders with high prices in the demand schedule, where prices in the top tercile of the range from the market clearing price to the lowest bidding price as is defined as "high price", and *SkewDemand* measures how much of the demand is below high prices. Intuitively, if a large fraction of the orders is with a relatively low price, the banks are going to set the offer price at lower levels.

Besides the overall demand schedule, we compile the demand schedules for different types of bidding investors, including mutual funds (*Fund*), investment banks (*Inv. Bank*), insurance companies (*Insurance*), trust firms (*Trust*), and financial firms (*Financial*). Then we define *SkewInvs*, a similar skewness measure for each investor type's demand schedule

$$SkewInvs = 1 - \left(\frac{\text{Invs demand with top 1/3 prices}}{\text{All Invs demand}}\right) / \left(\frac{\text{Demand with top 1/3 prices}}{\text{All demand}}\right) \quad (2)$$

where *Invs* could be replaced with *Fund*, *Inv. Bank*, *Insurance*, *Trust*, and *Financial* to calculate the skewness of demand from different types of investors. The investor skewness measures are adjusted for the skewness of the overall demand schedule.

We further distinguish the mutual funds that pay large commissions from those that pay smaller or zero commissions and define the following skewness measure:

$$SkewPay = 1 - \left(\frac{\text{Comm-paying fund demand with top 1/3 prices}}{\text{All comm paying fund demand}}\right) / \left(\frac{\text{Demand with top 1/3 prices}}{\text{All demand}}\right) \quad (3)$$

where *SkewPay* captures the skewness of the demand schedule of mutual funds whose families pay commissions (commission>0) to the bank in the year prior to the IPO. This measure is adjusted for the skewness of the overall demand schedule. Similarly, we define *SkewNoPay* that captures the skewness of the demand schedule of mutual funds that don't pay commissions. We also define *SkewHighComm* (*SkewLowComm*) that captures the skewness of the demand schedule of mutual funds whose families' commission payments in the most recent year rank in the top (bottom) half among all mutual funds bidding for the offer. Because investment banks are only able to choose the offer price among price levels below the market clearing price, we only use bids with prices below the market clearing price to construct the variables in equations (1)-(3).

In our sample, 41% of the mutual fund orders are within the top tercile price range and 41% of the commission-paying fund orders are within the top tercile price range. This observation suggests that there is a large fraction of orders (from commission-paying investors) with relatively low bidding prices, and it is reasonable to conjecture that banks have the incentive to lower offer prices to include some of those low-price orders from their friends for allocation.

5.2.2 Regression models

We test H1 by estimating the following Tobit model:

$$Discount = a + bSkew + cControls + \varepsilon \quad (4)$$

where *Skew* is our main independent variable of interest as defined in equations (2) and (3). *Controls* contains a vector of variables that may affect *Discount*. First, we control for

SkewDemand, which captures the impact of the skewness of the overall demand schedule on deliberate underpricing. A positive relation is expected since if most of the orders are with low prices, banks could price the issue lower. We control for the information content of the demand schedule with the dispersion of bidding prices in regressions, as suggested by Cao et al. (2016). Following Cornelli and Goldreich (2003), we include *TDemand*, the total demand in times of shares offered to control for overall demand for the offer. To absorb the impacts of the free-riding problem, that is, investors submit quasi-market orders by placing bids at very high price, we include in the regressions *HighBids*, calculated as the change in the clearing price if orders with the 5% highest prices are removed, divided by the current market clearing price.[11] To control for the possibility that banks simply discount the offer price to include large bids or large investors, we include *LargeIns*, defined as the number of institutions in the largest bid size decile divided by the number of institutions with prices between the clearing price and the offer price (See Degorge, Derrien, and Womack (2010)).

We follow the IPO underpricing literature to include a few other controls, including *Proceeds*, the natural logarithm of proceeds; *Age*, the natural logarithm of firm age; and *IPOrtn*, time-weighted initial returns for IPOs in the most recent year, respectively. We also include exchange fixed effects, year fixed effects, bank fixed effects, and industry fixed effects in the analysis to absorb any influences varying only with stock exchange, year, bank, and industry. We provide detailed variable definitions in Appendix B.

To test H2, we interact the skewness measures with a proxy capturing banks' favor-issuer incentives, *PowerU*, a dummy variable that equals one if a bank's revenue from the investment banking business relative to total revenue ranks in the top half among all banks, and zero otherwise. Then we estimate the following model:

$$Discount = a + bSkew*PowerU + cSkew + dPowerU + dControls + \varepsilon \tag{5}$$

where the skewness measures and other variables are defined in equation (4).

Table 2 reports the correlations among main variables. The skewness measures (*SkewFund*, *SkewPay*, and *SkewNoPay*) are not highly correlated to other control variables. In particular, the correlations between *Dispersion* and the skewness measures are very low. For

[11] The free-riding problem has been formally shown in auction theory for Dutch auctions. Other studies, such as Biais and Faugeron-Crouzet (2002), show that in the French Mise en Vente mechanism, it is not advantages for bidders in an auction to bid artificially high prices.

example, the correlation between *Dispersion* and *SkewPay* is 0.01 and statistically insignificant. This observation suggests that our skewness measures, designed to capture investment banks' incentives to favor the investors, contain information different from those contained in the information proxy *Dispersion* used by Cao et al. (2016).

5.3 Main results

5.3.1 Tests for the favor-investor incentive

Table 3 reports the Tobit regression results testing H1 by estimating equation (4). H1 argues that, banks discount the offer price more if the demand schedule of mutual funds is skewed towards low prices. We first test whether banks favor mutual fund, an investor group that pay large commissions, in column (1). We observe significant results that are consistent with the hypothesis. The coefficient estimate on *SkewFund* is positive and significant at the 5% level, suggesting that the discount from the market clearing price to the offer price is larger if more mutual fund bids are at lower prices. The magnitude of this effect is sizable. With a one standard deviation increase in *SkewFund*, the discount increase by 0.9%, accounting for 7.2% of the average discount. This number could be translated to a 1.0% direct decrease in the offer price.

In columns (2) and (3), we directly test H1 by comparing the effects of the skewness of demand schedules for mutual funds that pay commissions to those of the skewness of the demand schedules for those mutual funds that don't pay. The coefficient estimate on *SkewPay* is positive and significant at the 1% level in column (2). With a one standard deviation increase in *SkewPay*, *Discount* increases by 1.2%, which could be translated to a 1.4% increase in the offer price. In contrast, the coefficient estimate on the skewness of demand schedule from non-paying mutual funds, *SkewNoPay*, is insignificant statistically in column (3). These results suggest that banks discount the offer price to include the orders from commission-paying mutual funds for allocation. There is, however, no such favoritism toward mutual funds that don't pay commissions to them.

Our second set of measures on the relationship between banks and investors, *SkewHighcomm* and *SkewLowComm*, depends on the ranking of the mutual fund among all mutual funds bidding for the IPOs by the amount of commissions their families pay to the bank. The coefficients estimate on *SkewHighComm* is positive and significant in column (4), but that on *SkewLowComm* is insignificant in column (5). These results suggest that banks only favor mutual funds that pay above-median commissions by deliberately discounting offer prices.

In above regressions the coefficient estimates on the skewness of the overall demand schedule, *SkewDemand*, are significantly positive, suggesting that the higher the price that institutions bid, the higher is the offer price. The coefficient estimate on *Dispersion* is positive and significant in three out of five regressions, which is consistent with Cao et al. (2016) and suggests banks use large underpricing to reward investor submitting informative bids. We find that the discount is larger when the overall demand for IPOs (*Tdemand*) is high. We include *HighBids* to control for the effects of investors' free-riding behavior. We find that banks take the free-riding issue into consideration since the coefficient estimates are positive and significant, which is consistent with Degorge, Derrien, and Womack (2010). We don't observe significant coefficient estimates on *LargeIns*, suggesting that banks do not appear to discount the offer price to favor large institutions.

So far we have documented that banks' favor-investor incentive leads to large discount in offer prices, because banks deliberately discount offer prices to include more bids from commission-paying mutual funds for allocation. This finding supports H1 and establishes a robust link from the favor-investor incentive and IPO pricing, which is consistent with previous evidence on IPO allocation (e.g., Reuter (2006), Nimalendran, Ritter, and Zhang (2007), Jenkinson, Jones, and Suntheim (2017)).

5.3.2 Tests for the favor-issuer incentives

Table 3 reports the results from estimating equation (5), which tests H2. In the first column, we simply regress *Discount* on the pro-issuer dummy *PowerU* and the set of control variables from equation (4). The coefficient estimate is negative and significant at the 5% level, suggesting that banks with above-median investment banking revenues and value the issuers more discount the offer price by 22.4% less on average, after adjusting for other influences. In column (2), we test the effect of the favor-issuer incentive on the favoritism toward mutual funds by interacting *PowerU* with the mutual fund skewness measure, *SkewFund*. The coefficient estimate on *SkewFund* is 4.2 and significant at the 5% level, which is consistent with our findings in Table 3. More importantly, the coefficient estimate on the interaction term, *PowerU*SkewFund*, is -3.8 and significant. These two observations suggest that, for pro-issuer banks (*PowerU*=1), the effective coefficient on *SkewFund* is 0.4 (=-3.8+4.2). That is, the favoritism towards mutual funds caused by the favor-investor incentive is mitigated among pro-issuer banks.

In columns (3) and (4), we compare the effects of the favor-issuer incentive on banks' favoritism towards mutual fund that pay commissions and those that don't pay commissions. Column (3) shows that the coefficient estimate on *SkewPay* is 4.3 and significant at the 1% level, pointing to strong favoritism towards commission-paying mutual funds. The coefficient estimate on the interaction term, *PowerU*SkewPay*, is -4.1 and significant at the 5% level. This finding suggests that for pro-issuer banks that depends more on investment banking business (*PowerU*=1), the coefficient estimate on *SkewPay* shrinks to 0.2 (=-4.1+4.3). The effect of the favor-investor incentive is largely absent. In contrast, column (4) shows that banks don't favor mutual funds that don't pay commissions and there is no such patterns observed in column (3). In columns (5) and (6), we distinguish the mutual funds by whether the amount of commissions they pay is above the median and re-estimate equation (5). Results stay qualitatively similar. Banks favor mutual funds that pay high commissions but this effect is mitigated among pro-issuer banks, as shown in column (5). There is, however, no such patterns among pro-investor banks in column (6).

Results in Table 4 are consistent with our H2. That is, banks balance the interests of investor and corporate clients when pricing IPOs. They discount the offer prices to include commission-paying mutual funds for allocation, but this effect is mitigated for banks depending more on investment banking business and expecting more future business from the issuers.

5.4 Robustness Checks

Our findings are consistent with our hypotheses on the interaction of the favor-investor and the favor-issuer incentives. In this subsection, we run additional robustness tests to rule out the possibilities that our results are driven by other major mechanisms documented in the literature.

5.4.1 The information production effect

In the first set of tests, we compare the effects of the interaction terms between *PowerU* and *SkewPay* against those of the information production proxies involved in various regressions.

Benveniste and Spindt (1989) suggest that banks use underpricing to compensate bidders for the private information useful in pricing the IPO that they provide. We construct 3 measures to capture the private information possessed by mutual funds. The first measure is an industry expertise measure of private information, denoted by *SkewIndExp*, which is based on Reuter (2006), defined as the skewness of the demand schedule of mutual funds whose holdings in the same industry as the IPO firm rank in the top half among all mutual funds bidding for the offer. We use equation (3) to calculate the measure. The second measure, *SkewInvRtn*, is a skewness measure based on the ranking of mutual funds' investment performance in the secondary market, assuming investors with superior past investment returns have better private information. The third measure, *SkewIPORtn*, is defined similarly but with mutual funds' past investment performance in the IPO market (as opposed to the secondary market). Details on the construction of these measures are provided in Appendix B.

Columns (1) to (3) in Table 5 report the regression results with the information proxies controlled. We find that the coefficient estimates on the favor-investor proxy, *SkewPay*, is still significant and positive and that on the interaction term is significant and negative. These information proxies don't have significant effects as shown in columns (1) to (3). These findings suggest that our results are robust after considering the effects of the information production mechanism.

5.4.2 The stabilization effect

The IPO book-building literature suggests that banks are likely to reward long-term investors who choose to implement a buy-and-hold strategy so as to stabilize the aftermarket for the new shares (Aggarwal (2000), Fishe (2002), Jenkinson and Jones (2004)). In the second set of robustness tests, we attempt to control for this stabilization effect by including two flipping measures when estimating equation (5). The first measure, *SkewHold*, is defined as the skewness of the demand schedule of mutual funds ranking in the top half by the duration they hold their allocation, which is inferred from their most recent two semi-annual reports. The second measure, *SkewNoFlip*, is based on the fraction of IPOs of which mutual fund hold their allocation longer than one month, according to the most recent two semiannual reports.

Columns (4) and (5) in Table 5 report the regression results after controlling for the two stabilization measures. The coefficient estimates on *SkewPay* are still positive and with similar magnitudes. The coefficient estimate on the interaction term is negative and statistically significant, suggesting that the favoritism towards commission-paying mutual funds is mitigated. The coefficient estimates on *SkewHold* and *SkewNoFlip* are not significant statistically, suggesting that stabilization incentive does not appear to play a significant role in determining the offer price. Overall, our results are robust to controlling for the stabilization effect.

In columns (6) to (8), we further control for the skewness measures of mutual fund demand schedules based on their size, history, and management fee when estimating equation (5). The evidence shows that our main results are robust to controlling for these variables. We therefore conclude that our finding is not driven by other major mechanisms documented in the literature.

5.5 Investor-level tests

The analyses at the deal level show evidence consistent with our hypotheses on how banks' favor-investor and favor-issuer incentives interact in the price-setting process. In this subsection, we follow previous studies to perform investor-level analyses on the determination of investors' eligibility for allocation. According to H1, banks discount the offer price to include more commission-paying mutual funds for allocation. That is, if a mutual fund pays commission to the bank, the offer price is more likely to be set below the price it bids. H2 argues the favoritism is less pronounced for pro-issuer banks. At the investor level, we postulate that the commission-eligibility relation is weakened in IPOs underwritten by banks value corporate clients more.

Specifically, we test the effect of brokerage commissions on the likelihood of a mutual fund being included for allocation using the conditional logit model. The dependent variable is an eligibility dummy, *Eligible*, that equals one if at least part of a mutual fund's bid is eligible for allocation (i.e. the offer price is set below or equal to the maximum price the fund bids), and zero otherwise. The main independent variable of interest is *PayComm*, a dummy variable that equals one if the mutual fund's family pays commissions to the bank, and zero otherwise. We also use *HighComm* to capture the bank-fund relation, which is a dummy variable that equals one if the mutual fund's family pays above-median commissions among all funds bidding for the offer, and zero otherwise. We follow Jenkinson, Jones, and Suntheim (2017) to include the following control variables in our regression: *Stepbid*, a dummy variable that equals one if a mutual fund uses a step bid, and zero otherwise; *LargeBid*, a dummy variable that equals one if the size of a bid ranks in the top half, and zero otherwise; and *FrequentBidder*, a dummy variable that equals one if a mutual fund bids for more than 20 issues in our sample, and zero otherwise. We also include deal fixed effects to absorb any influences varying across issues.

We divide our sample into a pro-investor subsample containing offers underwritten by pro-investor banks (*PowerU*=0) and a pro-issuer subsample containing offers underwritten by pro-issuer banks (*PowerU*=1), and run conditional logit regressions separately. There are 7,102 investor-issue pairs in our sample, and 3,495 of which are from issues underwritten by pro-investor banks.

Table 6 reports the regression results. Column (1) shows that the odds ratio that its bid is included for allocation is 0.3 times higher for mutual funds paying commissions to the bank than that for funds who don't pay commissions. This effect only exits when the bank is pro-investor as we observe a positive and significant coefficient estimate on *PayComm* in column (2). There is no such pattern if the bank is pro-issuer, because the coefficient estimate is insignificant in column (3). Results stay qualitatively unchanged if we use *HighComm* as a proxy for the banks' pro-investor incentive in columns (4) to (6). These results suggest that mutual funds that pay (high) commissions to the banks are more likely to be include for allocation, which is consistent with H1. Meanwhile, this favoritism towards mutual funds doesn't hold if the bank values the issuer more, which is consistent with H2.

Note that the coefficient estimate on *StepBid* is positive and significant in columns (2) and (5), suggesting that pro-investor banks are more likely to include mutual funds that provide pricing information for allocation. Banks are also rewarding mutual funds that submit large bids with more allocation opportunities as the coefficient estimate on *LargeBid* is above 1 and significant at the 1% level across regressions, which is consistent with Jenkinson, Jones, and Suntheim (2017). Interestingly, the coefficient estimate on *FrequentBidder* is smaller than 1 and statistically significant, suggesting that Chinese banks don't favor frequent investors. This observation may be explained by the naïve reinforcement learning theory in Chiang et al. (2011), i.e., frequent investor bids don't carry much information but noises.

In summary, results on the propensity that a mutual fund's bid is included for allocation suggest that banks favor commission-paying mutual funds, but this favoritism is largely mitigated in the pro-issuer subsample. This finding is consistent with our hypotheses on the effects of the interaction of banks' favor-investor and favor-issuer incentives on IPO pricing and allocation.

6. INITIAL RETURNS AND FUTURE BUSINESS RELATIONSHIP

In this section, we consider the economic consequences of the banks' deliberate underpricing. We first investigate how this practice affects IPO underpricing, which is related both to the issuers' gains from the offers and investors' performance. Second, we attempt to rationalize the banks' favor-investor and favor-issuer incentives. Our hypotheses implicitly assumes that by favoring the investor or the corporate clients in the pricing process, banks are able to benefit from more businesses with these clients in the future. That is, the favoritism towards the mutual funds can generate future brokerage commissions. Meanwhile, banks can have more investment banking business with the issuers if they act in the latter's interests when pricing the offers.

6.1 Evidence on initial returns

We postulate that banks are more likely to discount the offer price when the orders from mutual funds that pay commissions to them are concentrated around low prices in the demand schedules and the bank is pro-investor. We conjecture that the initial returns are positively affected by the discount from the market clearing price to the offer price in the pro-investor subsample, which implies a larger distance from the intrinsic value (proxied by the first-day closing price) to the offer price.

To test this conjecture, we regress IPO underpricing (*IR*) on the discount. Besides the same set of controls in equation (3), we follow the underpricing literature to control for firm profitability (*ROE*), ownership (*SOE*), and market conditions (*MktRtn* and *MktVola*) in our analysis. Year, bank, exchange, and industry fixed effects are also included.

Table 7 reports the OLS regression results. Column (1) shows that in the full sample, with a 1% increase in *Discount*, initial returns increase by 1.1%. In fact this finding suggests a full reflection of the discount in the initial return, as a simple calculation shows that if the bank discount the offer by 1% relative to the market clearing price, the offer price will decrease by 1.14% because the average market clearing prices is 1.13 times of the average offer prices. Columns (2) and (3) report the regression results in the subsample of IPOs underwritten by pro-investor and pro-issuer banks, respectively. The coefficient estimate on *Discount* is 1.5 and significant at the 5% level for pro-investor banks in column (2), and insignificant for pro-issuer banks in column (3). The reason is that, for offers underwritten by pro-investor banks, the discounts can be attributed to the favoritism towards commission-paying mutual funds and are unrelated to the issuers' fundamentals. They should be fully reflected in underpricing, given the intrinsic values are constant and the offer prices are lower. For offers underwritten by pro-issuer banks, the effect of favoritism toward mutual funds is mitigated as shown in subsection 5.3.2. That is, the discounts are driven by fundamentals rather than the agency issue. Therefore, as we control for the same factors in the underpricing regression, the discounts have no significant effect on underpricing in this subsample.

6.2 Evidence on future brokerage commissions

In this subsection, we attempt to further rationalize banks' favor-investor incentives by testing the relation between favoritism and future brokerage commissions from mutual funds. In our baseline analysis in subsections 5.2 and 5.3, we use the brokerage commissions paid by the mutual fund to the bank as a proxy for the connection between these two parties. We further explore the dynamics of this relationship and examine whether banks' favoritism towards mutual funds, which is costly to issuers and harmful for future investment banking revenues, can generate more brokerage commissions in the future.

We use the 149 IPO completed in 2012 as the test sample and run OLS regressions to explore the relation. Specifically, for each bank-fund family pair, we are able to compute the change in commissions from 2012 to 2013, *ChgComm*, by subtracting the amount of commissions paid by the family to the bank in 2012 from the amount paid in 2013. The main variable of interest is the number of favors received by the family in 2012, which is defined as the number of offers that are priced within 5% below the fund's bidding price. We then normalize the variable with the number of IPOs the family participates in and name the variable *Pfavor*. We also control for the number of participations (*Ndeal*) and lagged commissions (*Lcomm*) in all regressions. Fund and bank fixed effects are included to absorb any influences varying with funds and banks.

Table 8 reports the OLS regression results. The coefficient estimate on *Pfavor* is insignificant in the full sample in column (1) and in the pro-investor subsample in column (2), suggesting that mutual funds don't increase commissions to the pro-investor banks. The original level of commissions is enough to maintain a profit-sharing mechanism with these banks. In contrast, the coefficient estimate is positive and significant at the 5% level in the pro-issuer subsample. This result suggests that mutual funds reward banks that value the corporate clients more and bear larger costs to favor the mutual funds with increased brokerage commissions in the next year.

6.3 Evidence on future investment banking business

Next, we attempt to further rationalize banks' favor-issuer incentives by examining whether pro-issuer banks can generate more investment banking business from the issuers. As we find above, pro-issuer banks don't favor mutual funds by discounting offer prices, implying that they are not able to receive large brokerage commissions in the future. Therefore, we postulate that these banks should have more investment banking business from the issuers to make up the loss.

We perform logit regressions to test this conjecture. The dependent variable, *ChgBank*, is a dummy variable if the issuing firm hires another investment bank in the next SEO, rights offering, convertible bonds, and M&A deal within 5 years after the IPO. The main independent variable of interest is *SkewPay*Discount*, which is defined in equation (3). We also control for the size of the IPO (*Proceeds*) and the duration from the IPO to the next investment banking deal (*Duration*) in the analysis. Year, bank, and exchange fixed effects are also included.

Table 9 reports the logit regression results. The coefficient estimate on *Discount* is insignificant across regressions. Column (2) shows that the coefficient estimate on *SkewPay*Discount* is positive and significant at the 5% level in the pro-investor subsample. We interpret this as the issuer punish the pro-investor banks that discount the offer price to favor the commission-paying mutual funds by switching to other banks for the next deals. There is no such pattern in the pro-issuer subsample in column (3), because the discount is attributed to firm fundamentals and the banks that don't favor other clients at their costs. Columns (4) to (6) perform the tests with *SkewHighComm*Discount* as the main variable of interest, and the results are qualitatively the same. Our results on future investment banking business suggest that, pro-investor banks that discount the offer prices to accommodate their investor clients are more likely to lose future investment banking business. Meanwhile, pro-issuer banks are not punished by the issuing firms since they don't discount the offer prices and transfer wealth from the issuers to their investor clients.

7. ADDITIONAL TESTS

7.1 Effects on other investor groups

To check whether the above findings are driven by chance, we run placebo tests for the above findings on mutual funds by estimating equation (5) with the skewness of other major investor groups' demand schedule as the key independent variable. Results for investment banks (*Inv. Bank*), insurance companies (*Insurance*), trust firms (*Trust*), and financial firms (*Financial*) are reported in columns (1) and (2), (3) and (4), (5) and (6), and (7) and (8) in Table 10, respectively.

We don't find significant results for trust firms and financial firms. Interestingly, columns (1) and (2) show that the skewness of investment banks' demand schedule has a negative effect on *Discount*. That is, banks are likely to increase the offer price to exclude other investment banks for allocation, which may be due to the competition among banks. There is weak evidence in columns (3) and (4) that banks favor insurance companies. This is also reasonable since banks are trying to get potential brokerage services from the insurance companies in that period, as the regulator was considering the cancellation of insurance companies' own seats in the exchange.

7.2 Alternative explanations to favoritism

In subsection 5.3.1, we show a strong relation between brokerage commissions paid to banks and IPO discounts. We interpret these findings as banks deliberately lower the IPO offer price to include more orders from their commission-paying brokerage clients for share allocation. An alternative explanation of our findings, however, is that banks may give advice or leak information to the institutional investors that they want to favor to bid a somewhat higher price to get more IPO share allocation. That is, investors use brokerage commissions to "tip" banks for the confidential book-building information and take advantage of other investors.

However, this tipping mechanism, while it may be plausible occasionally in some individual IPOs, is unlikely to be sustainable across all IPOs in our sample. It is hard to rationalize such behavior in practice in China. First, in case the offer prices are set higher due to such high-price bids, it is not only costly for institutional investors, but favors offering firms and banks as well. In fact, this mechanism implies that institutional investors are paying banks for receiving lower IPO returns. Second, it is illegal for banks to leak information about their books to investors during the pricing process. If the information leakage is caught by the CSRC or other market participants, banks may incur huge costs, including large fines, suspension or revocation of investment banking licenses, loss of investor clients, damaged reputation, and even lawsuits. It is very unlikely that the profits from tipping would justify such potentially large costs.

We next do additional tests, attempting to rule out this alternative tipping explanation of our results. To conduct these tests, we make use of a unique institutional feature of Chinese stock markets. In China, every year the CSRC issues a compliance rating for all investment banks based on their capital adequacy, corporate governance and legal compliance, risk monitoring, and some other indicators. If the illegal tipping mechanism works, its effect on IPO pricing should be less pronounced among banks with higher rating scores and hence smaller risk of violating regulations. If, however, we observe similar results on brokerage commissions regardless of banks' compliance rating scores, the tipping explanation is less likely to hold.

We estimate equation (5) and replace the *PowerU* dummy with a *Compliance* dummy that equals one if a bank is rated as an AA bank (the highest rating) by the CSRC in the year prior to the IPO, and zero otherwise. The main independent variable of interest is the interaction term, *SkewPay*Compliance*. If the tipping mechanism holds, we expect the coefficient on the interaction term to have the signs opposite to those on *SkewPay*, suggesting a less pronounced tipping effect for more compliant banks. We report the results in Table 11.

We do not find significant results consistent with the predictions of the tipping explanation. The coefficient estimates are insignificant across regressions. Finally, it should be noted that, while our findings cannot be explained by the tipping mechanism, we are not claiming that lowering the offer price is the only way a Chinese investment bank can do to favor commission-paying investors. One objective in this paper is to provide evidence that there exists an important (and legal) way through which IPO banks are able to favor certain institutions by lowering IPO offer prices, making more of their orders qualify for pro rata share allocation.

8. CONCLUSION

In this paper, we have examined the effects of investment banks' favor-investor and favor-issuer incentives on IPO pricing. Using a unique dataset containing investor bidding data from 189 Chinese IPOs, we find Chinese investment banks, with no discretion to allocate more shares to favored investors, exhibit strong favoritism towards mutual funds that pay brokerage commissions to them when pricing IPOs. They favor these mutual funds by discounting offer prices to make more orders from them eligible for IPO share allocation. However, this effect is largely mitigated in IPOs underwritten by pro-issuer banks that depend heavily on investment banking revenues and put more weight on the issuing firms' interests, suggesting that banks are balancing the interests of investor and corporate clients when pricing IPOs. The discount caused by the favoritism is reflected in IPO underpricing. For the favoritism towards mutual funds, pro-issuer banks are compensated with increased brokerage commissions, and pro-investor banks are punished by losing future investment banking business from the issuers. This paper is the first study that tests the predictions of the favor-investor and the favor-issuer incentives on IPO pricing simultaneously. Additionally, our study focuses on the pricing effect, rather than the allocation effect, which complements the existing literature.

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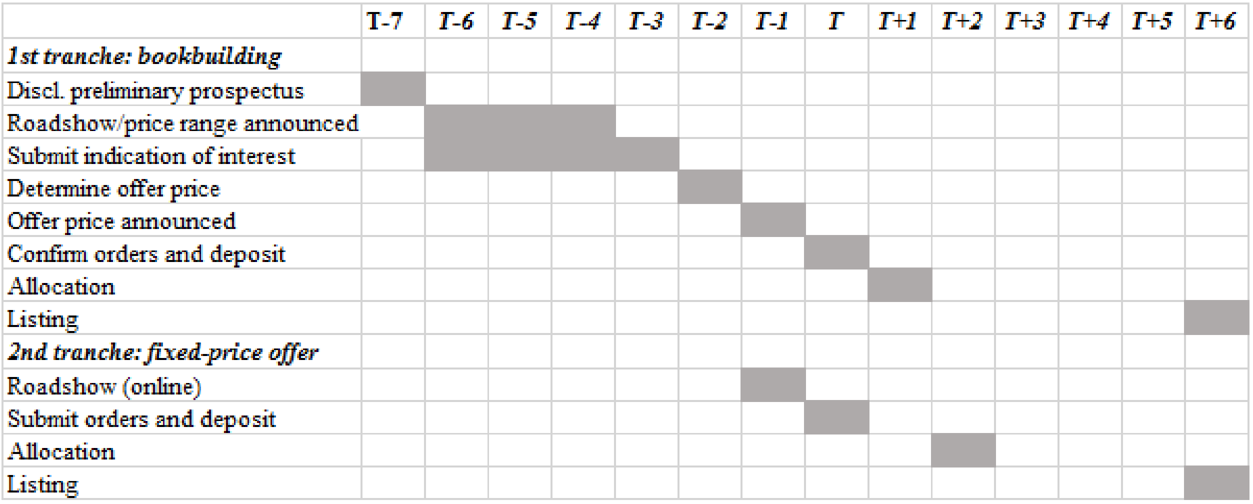
Figure 1
The structure and timeline of a typical Chinese IPO



* *T* denotes the official issuance/offering date.

Table 1

Summary statistics.

This table reports summary statistics for characteristics on the offers, bidding patterns, and investor participation. The sample consists of 189 Chinese IPOs between October 2011 and October 2012.

Panel A: Deal Characteristics

Market	N. Deals	Shares Offered (millions)	Bookbuild Shares (%)	Proceeds (billion RMB)	Firm Age (years)	VC-backed (%)	Distance (%)	Distance>0 (%)	Initial Return (%)
CHINext	85	2.31	6.40	0.47	10.67	68.24	8.18	83.53	22.41
SME	78	3.66	5.74	0.63	10.58	50.00	7.76	83.33	27.66
MAIN	26	13.95	5.53	1.43	11.47	57.69	6.04	92.31	39.00
All	189	4.47	6.01	0.67	10.74	59.26	7.71	84.66	26.86

Panel B: Bidding Characteristics

Market	N. Bids	N. Inst.	N. Bidders	Total Demand	Bookbuild Demand	Offer/Bidding Price	Price STD%	Elasticity at offer price	Order Concen.
CHINext	84.91	44.92	77.58	41.84	20.75	0.91	15.23	60.33	3.49
SME	95.63	46.36	84.09	49.04	23.33	0.90	15.14	81.21	4.11
MAIN	144.08	56.88	115.12	28.55	18.38	0.93	15.49	30.88	3.76
All	97.47	47.16	85.43	42.98	21.49	0.91	15.23	64.90	3.78

Panel C: Investor Participation Characteristics

Investor Type	N. Bids	N. Inst.	N. Bidders	Demand in Shares (%)	Demand in Dollars (%)	Eligible Shares (%)	Bid Size (million shares)	Bid Size (million RMB)	Allocation (%)
Fund	8,183	61	486	42.62	45.04	43.58	5.41	73.60	43.35
Inv. bank	4,597	75	211	23.02	23.38	24.60	5.20	68.00	25.38
Insurance	1,689	12	116	12.60	10.24	9.06	7.74	81.07	7.43
Trust	966	26	42	5.79	5.62	6.53	6.22	77.75	6.67
Financial	677	25	27	4.07	3.75	3.85	6.23	73.97	4.16
Other	2,310	152	248	11.90	11.98	12.38	5.34	69.34	13.02
All	18,422	351	1,130	100.00	100.00	100.00	5.63	72.58	100.00

Table 2

Correlations of main variables.

This table reports correlations among main variables used in regression analyses. The sample consists of 189 Chinese IPOs priced below the market clearing price between October 2011 and October 2012.

	Discount	*SkewFund*	*SkewPay*	*SkewNopay*	*SkewDemand*	*Proceeds*	*Age*	*Tdemand*	*Dispersion*	*LargeIns*	*HighBids*
Discount	1										
SkewFund	0.11	1									
SkewPay	0.13	0.67	1								
SkewNopay	-0.09	0.07	-0.29	1							
SkewDemand	0.47	0	0.09	-0.05	1						
Proceeds	-0.23	-0.26	-0.19	-0.01	-0.23	1					
Age	0.07	-0.04	-0.03	0.11	0.05	-0.04	1				
Tdemand	0.48	0.07	0.05	0.07	0.1	-0.39	0.05	1			
Dispersion	0.11	-0.14	0.01	-0.03	0.26	0.03	0.02	-0.09	1		
LargeIns	-0.03	0.03	0.01	0.05	-0.08	-0.03	-0.08	-0.03	0.06	1	
HighBids	0.53	-0.01	0.1	-0.08	0.53	-0.29	0.06	0.36	0.09	-0.06	1

Table 3

Favor-investor incentives and deliberate underpricing.

This table reports deal-level Tobit regression results on the relation between mutual funds' demand schedule and IPO pricing discounts. The sample consists of 189 Chinese IPOs priced below the market clearing price between October 2011 and October 2012. The dependent variable is the percentage discount from the market clearing price, calculated by (market clearing price – offer price)/market clearing price*100. The skewness of the demand schedule of mutual fund is calculated as 1– (fund demand with top 1/3 prices/total fund demand)/(demand with top 1/3 prices/total demand). See Appendix B for definitions of variables. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Y = Discount%	(1) *Fund*	(2) *Pay*	(3) *NoPay*	(4) *HighComm*	(5) *LowComm*
Skew-	1.685**	2.229***	-0.337	1.246*	0.052
	(0.786)	(0.721)	(0.553)	(0.726)	(0.157)
SkewDemand	0.117***	0.104***	0.098**	0.121***	0.101***
	(0.031)	(0.032)	(0.037)	(0.032)	(0.037)
Proceeds	-0.486	-0.135	-0.037	-0.531	-0.021
	(0.965)	(0.997)	(1.272)	(0.960)	(1.272)
Age	-0.107	-0.281	-0.701	-0.211	-0.742
	(0.645)	(0.673)	(0.795)	(0.645)	(0.776)
TDemand	0.056***	0.058***	0.006	0.057***	0.007
	(0.006)	(0.006)	(0.046)	(0.006)	(0.046)
Dispersion	0.314*	0.300*	0.284	0.295*	0.295
	(0.167)	(0.172)	(0.218)	(0.170)	(0.219)
LargeIns	0.007	0.009	0.021	0.006	0.018
	(0.031)	(0.031)	(0.046)	(0.032)	(0.047)
HighBids	0.420***	0.435***	0.384**	0.394***	0.390**
	(0.139)	(0.139)	(0.150)	(0.144)	(0.152)
IPORtn	-0.100	-0.064	-0.075	-0.126	-0.060
	(0.148)	(0.151)	(0.403)	(0.140)	(0.404)
Constant	15.753**	12.660	11.420	17.850**	10.523
	(7.824)	(7.667)	(15.528)	(7.402)	(15.684)
Year., bank, exch., and ind. FEs	YES	YES	YES	YES	YES
Observations	189	185	106	188	105
Pseudo R^2	0.271	0.276	0.160	0.270	0.159

Table 4

The effects of the favor-issuer incentives.

This table reports deal-level Tobit regression results on the effects of the incentives of the underwriting business on the relation between mutual funds' demand schedule and IPO pricing discounts. The sample consists of 189 Chinese IPOs priced below the market clearing price between October 2011 and October 2012. Powerful banks (*PowerU*) are those with above-median underwriting revenues. Other variables are as defined in Table 3. See Appendix B for definitions of variables. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Y = Discount%	(1)	(2) *Fund*	(3) *Pay*	(4) *NoPay*	(5) *HighComm*	(6) *LowComm*
PowerU	-22.389**	-21.816***	-21.843***	0.707	-21.806***	-0.977
	(8.854)	(8.222)	(8.139)	(2.886)	(8.041)	(2.868)
Skew-		4.190**	4.332***	0.879	3.627***	0.100
		(1.745)	(1.276)	(0.728)	(1.169)	(0.144)
*PowerU*Skew-*		-3.844*	-4.079**	-1.828*	-5.090***	-0.671*
		(2.224)	(1.916)	(0.978)	(1.565)	(0.373)
SkewDemand	0.105***	0.106***	0.096***	0.095**	0.115***	0.093**
	(0.032)	(0.030)	(0.031)	(0.038)	(0.030)	(0.038)
Proceeds	0.300	0.977	0.897	-0.123	0.518	0.034
	(0.861)	(0.913)	(0.903)	(1.266)	(0.890)	(1.289)
Age	0.425	0.363	0.201	-0.603	0.296	-0.790
	(0.646)	(0.637)	(0.666)	(0.810)	(0.649)	(0.794)
TDemand	0.060***	0.059***	0.058***	0.006	0.056***	0.001
	(0.008)	(0.008)	(0.007)	(0.046)	(0.007)	(0.046)
Dispersion	0.211	0.220	0.196	0.293	0.164	0.287
	(0.171)	(0.167)	(0.174)	(0.217)	(0.170)	(0.224)
LargeIns	-0.017	-0.029	-0.031	0.019	-0.030	0.023
	(0.032)	(0.035)	(0.035)	(0.047)	(0.032)	(0.046)
HighBids	0.374***	0.393***	0.412***	0.361**	0.390***	0.392**
	(0.137)	(0.132)	(0.131)	(0.154)	(0.124)	(0.151)
IPORtn	-0.131	-0.123	-0.102	-0.057	-0.142	-0.063
	(0.159)	(0.161)	(0.159)	(0.404)	(0.153)	(0.408)
Constant	34.302***	29.746***	29.734***	9.942	33.673***	10.230
	(10.342)	(9.508)	(9.652)	(15.606)	(9.270)	(16.141)
Year., bank, exch., and ind. FEs	YES	YES	YES	YES	YES	YES
Observations	189	189	185	106	188	105
Pseudo R^2	0.163	0.171	0.177	0.162	0.177	0.161

Table 5

Robustness checks.

This table reports deal-level Tobit regression results on the relation between mutual funds' demand schedule and IPO pricing discounts, controlling for other fund characteristics. The sample consists of 189 Chinese IPOs priced below the market clearing price between October 2011 and October 2012. The control variable for a characteristic is the skewness of demand from mutual fund of which the characteristic ranks in the top half among mutual funds bidding for the issue. Other variables are defined as in Table 3. See Appendix B for definitions of variables. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	With controls for other fund characteristics, Control = Skew-							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Y = Discount%	*IndExp*	*InvRtn*	*IPORtn*	*Hold*	*NoFlip*	*Assets*	*History*	*Fee*
PowerU	-21.449**	-21.928***	-21.931***	-21.571***	-22.000***	-21.758***	-21.653***	-22.948***
	(8.217)	(8.012)	(8.143)	(8.087)	(8.155)	(8.301)	(8.120)	(7.891)
SkewPay	5.198***	4.488***	3.919***	5.171***	3.670**	4.815***	5.674***	6.290***
	(1.409)	(1.512)	(1.399)	(1.406)	(1.462)	(1.204)	(1.236)	(1.300)
*PowerU*SkewPay*	-3.466*	-4.426**	-4.075**	-4.116**	-4.058**	-3.541*	-4.171**	-4.139**
	(1.970)	(1.971)	(1.961)	(1.802)	(2.007)	(2.123)	(1.821)	(1.762)
Control	-1.317	-0.451	0.502	-0.947	0.777	-1.065	-1.960**	-2.496***
	(1.008)	(1.054)	(1.115)	(1.101)	(1.107)	(1.406)	(0.898)	(0.757)
SkewDemand	0.093***	0.090***	0.097***	0.094***	0.097***	0.095***	0.092***	0.081**
	(0.031)	(0.032)	(0.031)	(0.031)	(0.031)	(0.031)	(0.032)	(0.032)
Proceeds	0.920	0.540	0.959	0.779	0.942	0.880	0.677	0.016
	(0.889)	(0.869)	(0.900)	(0.929)	(0.883)	(0.896)	(0.888)	(0.914)
Age	0.186	0.380	0.226	0.191	0.227	0.247	0.125	0.234
	(0.652)	(0.670)	(0.660)	(0.671)	(0.654)	(0.646)	(0.657)	(0.656)
TDemand	0.058***	0.055***	0.058***	0.057***	0.058***	0.059***	0.055***	0.053***
	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)
Dispersion	0.172	-0.002	0.203	0.194	0.200	0.195	0.136	-0.019
	(0.182)	(0.131)	(0.175)	(0.180)	(0.171)	(0.173)	(0.163)	(0.130)
LargeIns	-0.020	-0.024	-0.034	-0.033	-0.029	-0.032	-0.031	-0.033
	(0.035)	(0.034)	(0.035)	(0.034)	(0.034)	(0.035)	(0.035)	(0.035)
HighBids	0.427***	0.452***	0.412***	0.422***	0.409***	0.417***	0.436***	0.484***

	(0.136)	(0.136)	(0.129)	(0.131)	(0.129)	(0.130)	(0.132)	(0.136)
IPORtn	-0.156	-0.091	-0.112	-0.084	-0.117	-0.106	-0.112	-0.104
	(0.155)	(0.156)	(0.158)	(0.158)	(0.157)	(0.158)	(0.155)	(0.156)
Constant	30.192***	32.865***	29.702***	29.553***	29.764***	29.425***	31.702***	37.979***
	(9.525)	(9.374)	(9.603)	(9.733)	(9.535)	(9.861)	(9.458)	(9.758)
Year., bank, exch., and ind. FEs	YES	YES	YES	YES	YES	YES	YES	YES
Observations	185	183	185	185	185	185	185	185
Pseudo R^2	0.179	0.184	0.177	0.178	0.178	0.178	0.180	0.187

Table 6

Investor-level evidence.

This table reports investor-level conditional logistic regression results on the probability that a mutual fund investor has at least one bid with price above the issue price and eligible for allocation. The sample consists of 7,102 IPO-investor pairs from 178 Chinese IPOs between October 2011 and October 2012.The main independent variable is whether the mutual fund's family pays commissions to the bank in columns (1)-(3), and whether the commission paid ranks by the family in the top half among all investors bidding for the issue in columns (4)-(6). See Appendix B for definitions of variables. Odds ratios are reported. Standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Y = Eligible	(1) *Full Sample*	(2) *PowerU=0*	(3) *PowerU=1*	(4) *Full Sample*	(5) *PowerU=0*	(6) *PowerU=1*
PayComm	1.308**	1.732***	0.889			
	(0.158)	(0.277)	(0.163)			
HighComm				1.044	1.154*	0.950
				(0.062)	(0.099)	(0.079)
StepBid	1.175	1.419**	0.956	1.175	1.434**	0.954
	(0.132)	(0.224)	(0.155)	(0.132)	(0.226)	(0.155)
LargeBid	2.710***	2.777***	2.653***	2.715***	2.797***	2.660***
	(0.166)	(0.244)	(0.227)	(0.166)	(0.245)	(0.229)
FrequentBidder	0.671***	0.641***	0.699***	0.672***	0.647***	0.699***
	(0.046)	(0.062)	(0.069)	(0.046)	(0.062)	(0.069)
IPO FEs	YES	YES	YES	YES	YES	YES
Observations	7,102	3,495	3,607	7,102	3,495	3,607
Pseudo R^2	0.047	0.054	0.042	0.046	0.052	0.042

Table 7
The effects on IPO underpricing.

This table reports deal-level Tobit regression results on the effects of pricing discounts and IPO underpricing. The sample consists of 189 Chinese IPOs priced below the market clearing price between October 2011 and October 2012. The dependent variable is IPO initial return, calculated by (first-day closing price – offer price)/offer price*100. Other variables are as defined in Table 3. See Appendix B for definitions of variables. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Y = IR%	(1) *Full Sample*	(2) *PowerU=0*	(3) *PowerU=1*
Discount	1.138*	1.460**	0.172
	(0.589)	(0.510)	(0.392)
Proceeds	-16.305***	-8.835	-26.196***
	(2.802)	(6.028)	(5.197)
Age	-0.548	1.621	-1.622
	(4.978)	(4.955)	(9.386)
ROE	0.046	-0.219	0.385**
	(0.096)	(0.263)	(0.143)
SOE	15.191	22.690	-9.036
	(13.053)	(13.408)	(15.880)
TDemand	0.667***	0.694***	0.171
	(0.066)	(0.073)	(0.118)
Dispersion	0.759	2.585	0.223
	(0.429)	(2.424)	(0.343)
LargeIns	-0.278**	-0.080	-0.133
	(0.106)	(0.140)	(0.420)
HighBids	-0.074	-0.514	0.402
	(0.914)	(1.109)	(0.735)
IPORtn	-8.281***	-12.569***	-3.716*
	(1.429)	(2.346)	(1.858)
MktRtn	0.826	1.582*	-0.164
	(0.475)	(0.699)	(0.755)
MktVola	101.920***	159.679***	46.023***
	(12.076)	(17.980)	(3.338)
Constant	119.143**	115.870**	185.783*
	(40.704)	(34.230)	(84.776)
Year., bank, exch., and ind. FEs	YES	YES	YES
Observations	189	98	91
R^2	0.843	0.913	0.674

Table 8

Future brokerage commissions.

This table reports bank-fund family level OLS regression results on the effects of price discounting on future brokerage commission revenues. The sample consists of 1,152 bank-fund family pairs from the 149 IPOs completed in 2012. The dependent variable is the increase in commission revenue in 2013. The main independent variable *Pfavor* is calculated as the probability the prices of the bids from the fund family is 0~5% higher than the offer price. See Appendix B for definitions of variables. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Y = ChgComm	(1) *Full Sample*	(2) *PowerU=0*	(3) *PowerU=1*
Pfavor	12.014	-0.298	36.475**
	(13.432)	(22.339)	(16.369)
Ndeal	0.563	-1.865	1.454
	(0.918)	(1.227)	(1.207)
LComm	-0.106	-0.079	-0.125*
	(0.066)	(0.075)	(0.065)
Constant	1.939	78.650***	3.814
	(28.046)	(28.521)	(29.347)
Fund and bank FEs	YES	YES	YES
Observations	1,152	611	541
R^2	0.269	0.269	0.331

Table 9
Future investment banking business.
This table reports deal level logit regression results on the effects of price discounting on issuing firms' decision of switching banks. The sample consists of 130 issuing firms for which investment banking business opportunities within the 5 years after IPO are counted. The dependent variable is a dummy that equals one if the issuing firm switches to another investment in the next SEO, rights offering, convertible bonds, and M&A deal. See Appendix B for definitions of variables. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Y=ChgBank		*Pay*			*HighComm*	
	(1) *Full Sample*	(2) *PowerU=0*	(3) *PowerU=1*	(4) *Full Sample*	(5) *PowerU=0*	(6) *PowerU=1*
Skew-	-0.096	-1.436**	0.310	-0.058	-0.543	0.169
	(0.203)	(0.601)	(0.287)	(0.149)	(0.355)	(0.199)
Discount	0.008	0.011	0.006	0.009	0.014	0.005
	(0.007)	(0.012)	(0.009)	(0.006)	(0.012)	(0.009)
*Discount*Skew-*	0.008	0.070**	-0.016	0.007	0.032**	-0.011
	(0.013)	(0.029)	(0.020)	(0.008)	(0.016)	(0.014)
Proceeds	-0.108	0.126	-0.079	-0.099	0.082	-0.104
	(0.121)	(0.185)	(0.131)	(0.120)	(0.186)	(0.131)
Duration	0.103**	0.127	0.089**	0.107**	0.068	0.087**
	(0.049)	(0.119)	(0.037)	(0.049)	(0.133)	(0.038)
Year, bank, and exch. FEs	YES	YES	YES	YES	YES	YES
Observations	99	40	57	99	40	57
Pseudo R^2	0.189	0.381	0.192	0.192	0.359	0.183

Table 10

The effects on other investors.

This table reports deal-level Tobit regression results on the effects of the incentives of the underwriting business on the relation between investors' demand schedule and IPO pricing discounts. The sample consists of 189 Chinese IPOs priced below the market clearing price between October 2011 and October 2012. The skewness for an investor type's demand schedules is calculated as (demand with top 1/3 prices from investor/total demand from investor)/(demand with top 1/3 prices/total demand). Other variables are as defined in Table 4. See Appendix B for definitions of variables. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Investment Bank		*Insurance*		*Trust*		*Financial*	
Y = Discount%	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PowerU	-12.223***	-12.481***	0.764	0.815	-8.696**	-8.052**	-10.369***	-10.267***
	(3.555)	(3.487)	(0.918)	(1.005)	(3.701)	(3.805)	(3.311)	(3.478)
Skew-	-2.339***	-3.282***	1.046*	1.102*	0.044	0.464	0.209	0.276
	(0.882)	(0.811)	(0.571)	(0.646)	(0.283)	(0.463)	(0.386)	(0.499)
*PowerU*Skew-*		2.519		-0.142		-0.628		-0.160
		(2.113)		(1.179)		(0.532)		(0.905)
SkewDemand	0.103***	0.108***	0.134**	0.133**	0.109***	0.106***	0.118***	0.119***
	(0.030)	(0.029)	(0.053)	(0.053)	(0.030)	(0.030)	(0.034)	(0.035)
Proceeds	-0.264	-0.252	0.058	0.037	-0.248	-0.174	-0.208	-0.210
	(0.960)	(0.952)	(0.994)	(0.978)	(0.841)	(0.855)	(0.991)	(0.992)
Age	-0.056	-0.266	-0.014	0.005	0.490	0.457	-0.416	-0.428
	(0.607)	(0.646)	(1.188)	(1.202)	(0.522)	(0.530)	(0.685)	(0.683)
TDemand	0.058***	0.057***	0.047***	0.047***	0.057***	0.056***	0.057***	0.058***
	(0.007)	(0.007)	(0.004)	(0.004)	(0.006)	(0.006)	(0.007)	(0.007)
Dispersion	0.302*	0.276	-0.203	-0.206	0.021	-0.014	0.288	0.297
	(0.161)	(0.183)	(0.126)	(0.132)	(0.110)	(0.117)	(0.177)	(0.179)
LargeIns	0.014	0.008	-0.004	-0.004	0.007	0.008	0.028	0.027
	(0.031)	(0.029)	(0.026)	(0.026)	(0.028)	(0.028)	(0.036)	(0.036)
HighBids	0.369***	0.380***	0.551***	0.551***	0.419***	0.444***	0.429***	0.427***
	(0.137)	(0.136)	(0.153)	(0.154)	(0.144)	(0.145)	(0.146)	(0.146)
IPORtn	-0.007	-0.012	0.062	0.067	-0.098	-0.078	-0.111	-0.119
	(0.142)	(0.143)	(0.181)	(0.189)	(0.148)	(0.144)	(0.156)	(0.166)
Constant	15.228	16.595*	17.555*	17.546*	19.559**	18.666**	19.399**	19.633**
	(9.347)	(9.497)	(9.347)	(9.356)	(8.036)	(7.864)	(8.904)	(9.209)
Year., bank, exch., and ind. FEs	YES	YES	YES	YES	YES	YES	YES	YES
Observations	189	189	110	110	179	179	177	177
Pseudo R^2	0.278	0.281	0.231	0.231	0.297	0.298	0.273	0.273

Table 11
Tests on the tipping mechanism.
This table reports regression results on the effects of bank compliance status on the relation between mutual funds' demand schedule and IPO pricing discounts.. *Compliance* is a dummy variable that equals one if an bank is rated as an AA bank by the CSRC, and zero otherwise. See Appendix B for definitions of variables. Odds ratios are reported in Panel C. Standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Y = Discount%	(1) *Fund*	(2) *Pay*	(4) *HighComm*
Compliance	1.877	1.533	1.836
	(4.899)	(5.020)	(4.991)
Skew-	3.020	3.403**	2.817**
	(2.167)	(1.442)	(1.409)
*Compliance*Skew* -	-0.415	-0.321	-2.158
	(2.543)	(2.118)	(1.843)
SkewDemand	0.112***	0.100***	0.110***
	(0.031)	(0.032)	(0.032)
Proceeds	0.781	0.826	0.337
	(0.933)	(0.915)	(0.916)
Age	0.256	0.079	0.096
	(0.610)	(0.650)	(0.628)
TDemand	0.058***	0.058***	0.058***
	(0.008)	(0.007)	(0.007)
Dispersion	0.223	0.219	0.192
	(0.167)	(0.171)	(0.171)
LargeIns	-0.020	-0.020	-0.027
	(0.034)	(0.034)	(0.034)
HighBids	0.405***	0.402***	0.359***
	(0.137)	(0.140)	(0.137)
IPORtn	-0.161	-0.132	-0.142
	(0.167)	(0.172)	(0.166)
Constant	9.712	8.649	14.097*
	(7.701)	(7.676)	(7.338)
Year., bank, exch., and ind. FEs	YES	YES	YES
Observations	189	185	189
Pseudo R^2	0.158	0.163	0.158

Appendix A
Distribution of IPO pricing distances.

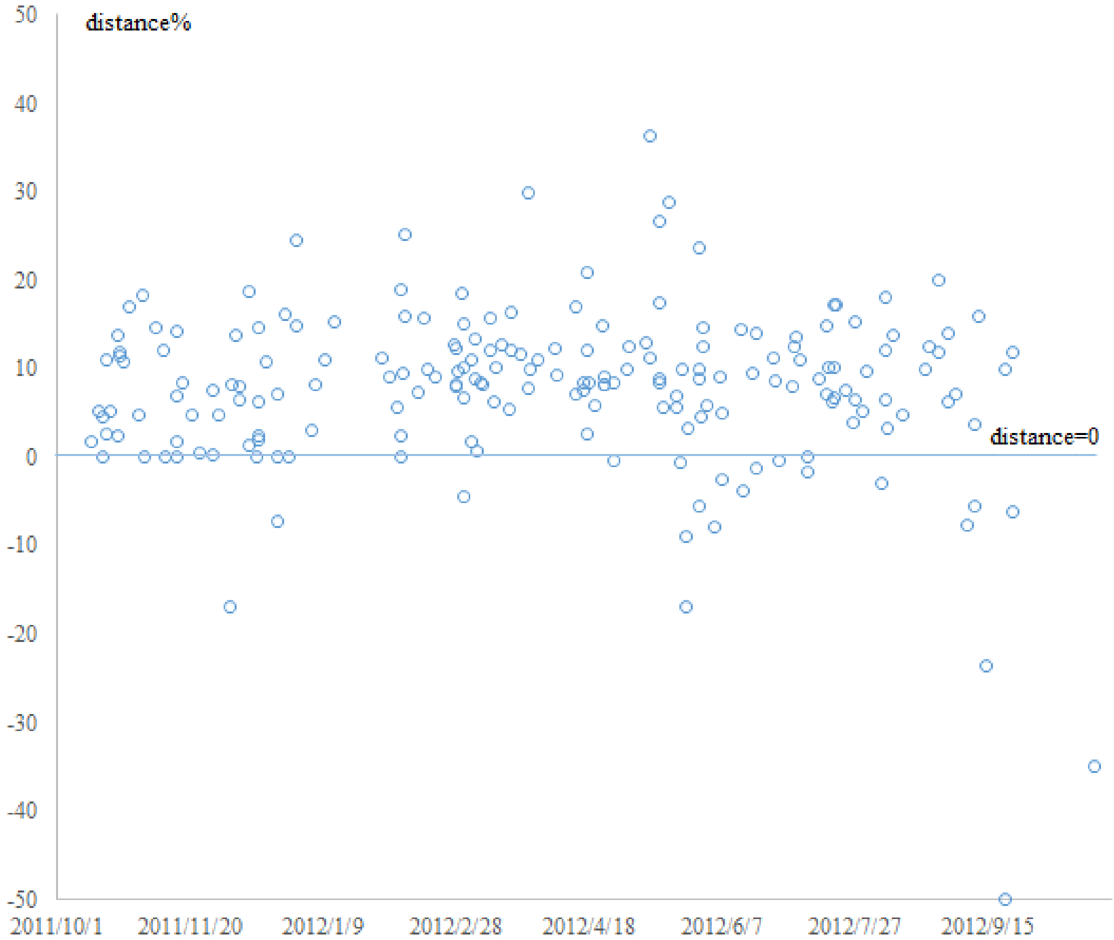


Figure A1
IPO pricing between October 2011 and October 2012.
This figure plots the distances from IPO offer prices to the regulatory price caps for 196 Chinese IPOs between October 2011 and October 2012, defined as (offer price – price cap)/price cap*100. Price caps are calculated as the maximum of the simple average, weighted average, and median of bidding prices from all investors and mutual funds,

Appendix B
Definitions of variables.

Variable	Definition
Discount	Discount from the market clearing price *mktclrprc* to the offer price *p*, calculated as (*mktclrprc* - *p*)/*mktclrprc**100
SkewInvs	Adjusted skewness of the demand schedule of investor type *Invs*, calculated as *1 - (demand with top 1/3 prices from Invs/total demand from Invs)/(demand with top 1/3 prices/total demand). Invs* could be replaced with *Fund, Inv. Bank, Insurance, Trust* and *Financial* to calculate the skewness of demand from mutual funds, investment banks, insurance companies, trust firms, and financial firms, respectively.
SkewPayComm	Adjusted skewness of the demand schedule of mutual funds whose families pay commissions to the bank, calculated as *1 - (demand with top 1/3 prices from mutual funds whose family pays commission to the bank/total demand from mutual funds whose family pays commission to the bank)/(demand with top 1/3 prices/total demand)*
SkewNoPay	Adjusted skewness of the demand schedule of mutual funds whose families don't pay commissions to the bank
SkewHighComm	Adjusted skewness of the demand schedule of mutual funds whose families pay above-median commissions to the bank among all mutual funds bidding for the issue
SkewLowComm	Adjusted skewness of the demand schedule of mutual funds whose families pay below-median commissions to the bank among all mutual funds bidding for the issue
SkewDemand	Skewness of the overall demand schedule, calculated as *total demand with top 1/3 prices/total demand*100*
Proceeds	The natural logarithm of proceeds raised
Age	The natural logarithm of the issuing firm's age
TDemand	Total demand in times of shares offered in the full demand schedule
Dispersion	The standard deviation of bidding prices in an issue
LargeIns	Number of institutions in the largest bid size decile divided by number of institutions with prices between the clearing price and the offer price
HighBids	The difference between the current clearing price and the clearing price if orders with the 5% highest prices, are removed, divided by the current clearing price
IPORtn	Time-weighted average of IPO underpricing% during the 360 days prior to the issue
PowerU	A dummy variable that equals one if an bank's revenue from the investment banking business relative to total revenue ranks in the top half among all banks, and zero otherwise
SkewInvRtn	Adjusted skewness of the demand schedule of mutual funds ranking in the top half by investment performance among all mutual funds bidding for the deal, measured by Jensen' alpha, calculated as *(demand from mutual funds ranking in the top half by investment performance with top 1/3 (1/4) prices/total demand from mutual funds ranking in the top half by investment performance)/(demand with top 1/3 (1/4) prices/total demand)*
SkewIndExp	Adjusted skewness of the demand schedule of mutual funds ranking in the top half by the fraction of amount they invest in the same industry of the IPO firm
SkewNIPO	Adjusted skewness of the demand schedule of mutual funds ranking in the top half by the number of IPOs they bided for in the most recent 360 days
SkewIPORtn	Adjusted skewness of the demand schedule of mutual funds ranking in the top half by the average 1-year returns of the IPOs they bided for in the most recent 360 days
SkewHold	Adjusted skewness of the demand schedule of mutual funds ranking in the top half by the duration they hold their allocation, as inferred from the most recent two semi-annual reports
SkewNoFlip	Adjusted skewness of the demand schedule of mutual funds ranking in the top half by

	the fraction of IPOs they did not sell their allocation within 1 month, as inferred from the most recent two semi-annual reports
SkewAssets	Adjusted skewness of the demand schedule of mutual funds ranking in the top half by the size of total assets
SkewHistory	Adjusted skewness of the demand schedule of mutual funds ranking in the top half by the duration since the funds' establishment
SkewFee	Adjusted skewness of the demand schedule of mutual funds ranking in the top half by the rate of management fee
PayComm	A dummy variable that equals one if a mutual fund's family pays brokerage commissions to the bank, and zero otherwise
HighComm	A dummy variable that equals one if the commission paid by a mutual fund's family ranks in the top half among all investors bidding for the issue, and zero otherwise
StepBid	A dummy variable that equals one if a mutual fund submits a step bid, and zero otherwise
LargeBid	A dummy variable that equals one if a bid's size ranks in the top half, and zero otherwise
FrequentBidder	A dummy variable that equals one if a mutual fund bids for more than 20 issues, and zero otherwise
MktVola	Standard deviation of daily market returns during the 3 months prior to the offer
MktRtn	Market return for the 3 months prior to the offer
Pfavor	The frequency that the prices of the bids from the fund family is 0~5% higher than the offer price, divided by the number of the bank's IPO that the family participates in
Ndeal	The number of the bank's IPO that the family participates in
LComm	The brokerage commissions received from the fund family in 2012
ChgBank	A dummy variable that equals one if the issuing firm switches to another investment bank in the next SEO, rights offering, convertible bonds, and M&A deal within the 5 years after IPO.
Duration	The duration in years from IPO to the next investment banking business
Compliance	A dummy variable that equals one if an bank is rated as an AA bank by the CSRC in the year prior to the offer, and zero otherwise