

INSTITUTIONAL INVESTOR HETEROGENEITY AND INITIAL PUBLIC OFFERING UNDERPRICING IN CHINA'S SCIENCE AND TECHNOLOGY INNOVATION BOARD: A REVIEW

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Abstract: IPO underpricing in China's STAR Market has drawn substantial academic attention. As China's securities market develops and matures, institutional investors have emerged as crucial drivers of market efficiency. The STAR Market, which is specifically designed for tech-innovation firms that are in line with the national strategy, have achieved breakthroughs in core technologies, and enjoy high market recognition, differs from the A-share main board in terms of positioning and listing standards. These differences require investors to have stronger professional expertise and risk-management capabilities. Institutional investors, with their superior analytical ability and higher risk tolerance, play a pivotal role. The market-oriented trading mechanism of the STAR Market increasingly allocates shares to institutional investors through inquiry-based pricing. As a result, understanding how institutional investor heterogeneity impacts IPO underpricing has become a critical research question. This review integrates the literature on institutional investor classification in China, the factors contributing to IPO underpricing, particularly in the STAR Market, and the interaction among market efficiency, investor behavior, and underpricing. Finally, it examines how the diverse characteristics of institutional investors affect IPO underpricing based on inquiry pricing. This comprehensive literature review validates subsequent research findings, showing a positive correlation between the overall shareholding proportion of institutional investors and IPO underpricing. It also indicates that transaction-oriented institutional investors have a more significant impact on IPO underpricing than stable institutional investors.

Keywords: Institutional investor heterogeneity; Initial public offering underpricing; China's Science and Technology Innovation Board; Marketing efficiency; Pricing efficiency

1 INTRODUCTION

The "IPO underpricing puzzle" has been widely studied, but inconsistent conclusions arise from varying research goals, perspectives, and methods. This paper reviews the impact of institutional investors on IPO underpricing, focusing on how investor heterogeneity in China's STAR Market affects this phenomenon.

Based on the research questions, this study conducted literature searches in databases such as CNKI, Google Scholar, Scopus + JSTOR, etc. Keywords such as IPO underpricing on the STAR Market, classification of institutional investors, information disclosure, market efficiency, and pricing efficiency were used. The time range for theoretical literature was relatively broad, but for studies on underpricing on the STAR Market in China, the focus was on literature since July 2019.

This paper focuses on the theme of "Institutional Investors and IPO Underpricing" and presents a literature review with the assistance of a flowchart, see Figure 1.

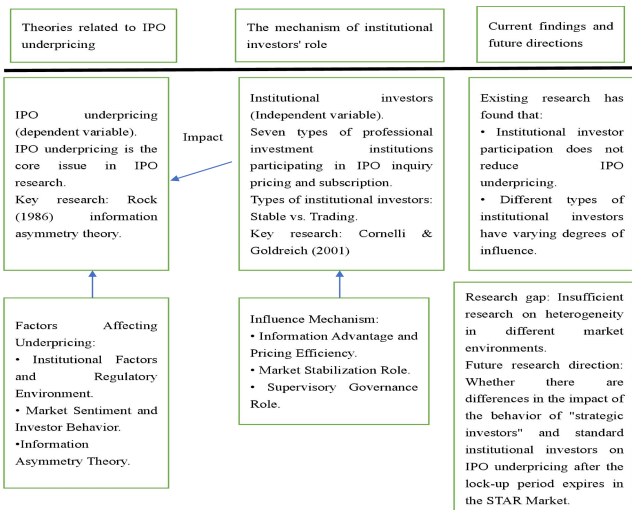


Figure 1 Flowchart

In the research on IPO underpricing, numerous scholars have conducted empirical studies on IPO underpricing in primary and secondary markets based on the relationship between issuers and investors or the correlation among intermediaries (underwriters), issuers, and investors. Some scholars explore influencing factors of IPO underpricing from macro- and micro-level perspectives as well. Regarding the research on influencing factors of IPO underpricing in China, many scholars have studied the causes and influences of high IPO underpricing from the perspectives of market environment and policies based on China's capital market characteristics. In studying the impact of institutional investor behavior, previous studies have primarily focused on how institutional investors' investment behavior affects earnings management, corporate governance, etc., in China. However, there is limited literature discussing the relationship between institutional investor heterogeneity and IPO underpricing from an influencing factor perspective. There are few systematic studies examining how institutional investor heterogeneity influences IPO underpricing in STAR Market. Scholars mostly study factors affecting IPO underpricing from perspectives such as institutional regulation and change, investor influence, information disclosure, media involvement, venture capital among others. In the research on the impact of institutional investors and inquiry mechanisms on IPO underpricing in China's STAR Market in registration system, there is limited literature exploring the relationship between inquiry objects and information content of new shares and pricing efficiency. In addition, there is a lack of systematic research on how institutional investor heterogeneity affects IPO underpricing in STAR Market through information disclosure.

This review analyzes the impact of institutional investor heterogeneity on IPO underpricing in China's STAR Market, considering market efficiency and investor behavior. It also contributes to the existing literature on IPO underpricing.

2 THE HETEROGENEITY OF INSTITUTIONAL INVESTORS

2.1 Institutional Investors Classification

Before the 1990s, scholars examined the behavior of institutional investors as a whole. In 1998, Bushee introduced a systematic classification of institutional investors based on their investment behaviors for the first time [1]. He selected three types of indicators and constructed nine variables to effectively categorize institutional investors. Subsequently, in 2001, he further enhanced the classification index system. Subsequent researchers have employed diverse approaches to categorize institutional investors and utilized various methodologies, ranging from analyzing the overall conduct of institutional investors to considering their heterogeneity.

Koh adopted Bushee's classification to categorize institutional investors into short-term and long-term focused groups [2,3]. The impact of institutional ownership on corporate strategies varies with the level of institutional shareholding, dividing them into high and low categories [4]. Based on business relationships institutional investors are classified into pressure-sensitive and pressure-resistant groups [5]. Pressure-sensitive institutions, like insurance companies and bank trusts, have existing or potential ties with investee firms, while pressure-resistant investors, such as public pension funds, lack these ties but actively participate in governance. Institutional investors are distinguished between independent long-term high-holding institutional investors and others based on factors like holding duration and independence [6]. Badrinath & Wahal proposed three categories: acquisition (entry), disposition (exit), and portfolio adjustment [7]. In summary, scholars examine institutional investor heterogeneity from various perspectives.

2.2 Institutional Investors in China and Their Classification

The development of Chinese institutional investors has been relatively delayed, progressing through three distinct stages: the preliminary stage prior to 1997, the developmental stage spanning from 1998 to 2004, and the expansion stage from 2005 until the present. During the period between 1990 and 1997, securities companies were the main institutional investors in China, and they were in their nascent phase. On March 23, 1998, China's capital market launched its first two securities investment funds, Jintai and Kaiyuan. In 2004, China issued the "Several Opinions on Promoting the Reform, Opening Up, and Stable Development of the Capital Market," advocating for growth in institutional investors. Since 2005, there has been a significant increase in both the number and quality of institutional investors. The following analysis will summarize literature on the classification of institutional investors across these three stages.

In the initial stage (1990-1997), securities investment accounted for a relatively minor share within China's capital market, with securities companies acting as the primary institutional investors. Scholars took inspiration from the developmental experiences to analyze and understand the traits exhibited by institutional investors in China's securities market. However, there was limited literature available regarding the heterogeneity of these institutional investors.

The introduction of the initial batch of securities investment funds in China's capital market on March 23, 1998, marked the initiation of the second phase of market adjustment and institutional transformation within China's capital market. Scholars have commenced utilizing previous classification methods to examine the heterogeneity of institutional investors in China's capital market. Xu Qian et al. referred to the fund classification system of the Investment Company Institute of America (ICI) as a point of reference, employing factor analysis, cluster analysis, and other statistical techniques within the realm of multivariate statistical analysis to conduct exploratory research [8]. They innovatively applied quantitative analysis methods to address the issue of fund classification and proposed a standardized framework for classifying funds in China. Qingyuan analyzed the mathematical model of institutional investors' active participation in corporate governance and found that the extent to which institutional investors actively engage in corporate governance depends on the proportion of equity held by them, supervision costs, and risk preferences [9]. Yang et al. discovered that the majority of funds exhibited deviations from the style categories specified in the fund prospectus

when examining the style categories of Chinese securities investment funds, based on a comprehensive review of previous research methods [10].

Since 2005, with the growth of institutional investors in China, scholars have used Bushee's classification method to systematically categorize these investors in the securities market [11].

Some scholars analyze the correlation between institutional investors and corporate governance using shareholding proportions. Hongbo & Shinong found that higher institutional ownership reduces the likelihood of "malicious cash allocation" by listed companies [12]. Huo et al. examined how varying holding periods and levels of institutional ownership affect capital costs in China's market [13]. Li et al. explored how concentrated institutional ownership improves environmental information disclosure quality in highly marketized regions [14].

Most scholars study the business and interest relationship between institutional investors and holding companies based on the classification of pressure-sensitive and pressure-resistant investors. Zhao et al. found that pressure-resistant investors significantly improve internal control effectiveness more than pressure-sensitive investors do [15]. Qin shows that pressure-resistant investors have a greater impact on listed company performance [16]. Cao et al. conclude that only pressure-resistant investors enhance firm investment efficiency by reducing both overinvestment and underinvestment [17]. Liu et al. find that pressure-resistant institutional investors are more effective in supervising enterprises' social responsibilities [18].

Some scholars classify institutional investors into stable and transactional types. Stable investors focus on long-term value creation through valuable investments, governance oversight, and expect profits from dividends and company growth, while transactional investors seek short-term gains from stock price fluctuations [19]. Gao, H. et al. found that stable investors more effectively reduce equity costs in Chinese high-tech firms from 2008 to 2017 compared to transactional investors [20]. Yang & Zhang showed that stable investors strengthen the negative link between accounting conservatism and stock price crash risk, while transactional investors weaken this relationship [21]. Zhang et al. found that transactional investors mitigate the negative impact of strategic deviation on financial performance, whereas stable investors dampen the positive effect on market performance [22].

Some scholars employ the classification methodology of independent institutional investors and non-independent institutional investors to examine the relationship between institutional investor heterogeneity and listed companies in China's capital market [23]. Other researchers categorize institutions based on their investment duration or holding period and investigate their distinct impacts on corporate oversight [24], innovation quality [25], and investment efficiency [26]. Massa & Zhang discovered a significant positive correlation between the substantial presence of local short-term investors and IPO underpricing [27].

In the research on the classification of institutional investors in the STAR Market, different classifications will have different impacts on the IPO underpricing rate. In the study of the impact of information disclosure in the STAR Market on institutional investors and IPO underpricing, institutional investors are divided into stable institutional investors and trading institutional investors. This approach emphasizes the observable behavioral patterns during the IPO allocation and subsequent secondary market activities. This behavioral classification method can better capture the complexity and diversity of investor behavior, especially in the context of emerging markets. Therefore, combining these two classification paradigms based on ownership and behavior, and clarifying their complementary roles, has become crucial for enhancing the analytical depth and explanatory power of IPO underpricing research.

3 INITIAL PUBLIC OFFERING (IPO) UNDERPRICING INFLUENCING FACTORS

3.1 Institutional Factors in Capital Markets

Different factors play a crucial role at various stages of the IPO process, and one key factor that significantly influences the extent of underpricing is the issuance mechanism [28]. Engelen & Van Essen discovered that country-specific characteristics account for 10% of the variation in underpricing [29]. Studies have shown that trading mechanisms [30], market manipulation regulations [31], and government risk management practices exert a substantial impact on IPO underpricing [32].

In China's capital market, institutional supervision and administrative control are key factors contributing to IPO underpricing [33]. Zhou et al. found that regulatory changes explain differences in initial returns, fair value, and overreaction across periods [34]. Yu et al. noted that institutional investors focus on regulatory oversight in IPO offerings [35]. With reforms in the issuance system, reduced administrative control, and increased marketization, IPO underpricing has significantly decreased [36]. Institutional changes impact IPO pricing. Under the approval system, substantial audits often cause high IPO underpricing [37]. The registration system, however, improves IPO pricing efficiency for STAR Market companies [38]. Liao found that while premarket underpricing decreases under the registration system, aftermarket mispricing increases [39]. This indicates enhanced premarket but diminished aftermarket pricing efficiency. Xiuliang et al. noted that policy reforms or market trends lead investors to speculate rather than focus on company fundamentals, causing inflated stock prices and undervalued IPOs on the STAR Market [40]. As more companies are included in IPO pricing samples and investor sentiment stabilizes, IPO pricing efficiency is expected to improve [41].

3.2 Investor-Related Factors

Institutional investors exert significant influence on the formation and volatility of stock prices in emerging markets, which highlights the importance of these investors in maintaining the stability of emerging stock markets [42]. The impact of investor factors can be primarily observed through the following dimensions.

Investors engage in collusion to exert influence [43]. The cartel theory posits that there is a collusion, which could be explicit or implicit, to generate monopoly profits from the 7% spread. Within China's inquiry system, institutional investors wield stronger influence on IPO pricing compared to underwriters. Some institutional investors may collude with the aim of reducing IPO prices driven by their own interests. Bian et al. concluded that collusion between underwriters and institutional investors could be another factor contributing to higher levels of underpricing [44]. Di Wei & Bai Xiaotong employ correlation regression analysis and game theory modelling to examine the impact of collaboration between institutional investors and securities traders on IPO pricing [45]. The findings indicate that such collaboration has a positive effect on enhancing IPO pricing efficiency; however, collusion within this collaborative framework has a detrimental impact on IPO pricing efficiency.

The impact of investor sentiment on IPO underpricing has been studied extensively [46]. Wang & Yao analyzed A-shares data from the Shanghai Stock Exchange (SSE) between 2014 and 2018, finding that investor sentiment positively correlates with IPO underpricing initially but becomes a stronger factor post-listing [47]. Tang & Luo examined how market-oriented reforms in China's IPO system affect investor speculation [48]. Their findings show that a registration-based IPO system reduces speculation after listing by accelerating the release of investor sentiment. Empirical tests indicate that increased institutional investor participation enhances reform efficiency, while rising investor sentiment diminishes the dampening effect of the registration system on speculation.

3.3 The Factor of Information Disclosure

The underpricing phenomenon in IPOs can be attributed to information asymmetry among key stakeholders [49], including the issuing firm, the underwriter, and investors [50]. Schrand and Verrecchia have shown that increased disclosure frequency during the pre-IPO period correlates with reduced underpricing [51]. Chahine and Filatotchev highlight that excessive disclosure may compromise a company's competitive advantage, leading to an inverted U-shaped relationship between disclosure levels and IPO discounts [52]. Yao and Zhao establish that comprehensive risk factor disclosure is essential for effective asset pricing, and they find a negative correlation between risk factor disclosure in prospectuses and IPO underpricing rates [53]. Han et al. [54], by analyzing the registration statements of 193 companies listed on the STAR Market from June 13, 2019, to January 31, 2021, demonstrate that redundant or overly complex disclosures are positively associated with higher IPO underpricing. Specifically, registration statements that are too technical or repetitively restate information contribute to increased underpricing.

3.4 Other Factors

The media exerts a significant influence on the underpricing of initial public offerings (IPOs) by listed companies [55]. Some scholars have also examined the impact of venture capital on IPO underpricing [56]. Furthermore, certain studies explore the factors influencing IPO underpricing at national levels [57], while others focus specifically on the impact of micro-level factors on IPO underpricing [58].

3.5 Reasons for IPO Underpricing in the Chinese Stock Market

Based on the unique market environment and policy background of China, the majority of existing literature examines the phenomenon of IPO underpricing in China from a market system perspective.

IPO underpricing in China is mainly due to regulatory policies on stock issuance, indicating it as institutional underpricing [59]. Before regulatory reform, the fixed P/E ratio set by regulators significantly contributed to IPO underpricing [60]. After reforms allowing underwriters discretion in pricing, this form of underpricing disappeared. Deregulation increases investors' valuation of IPOs and reduces underpricing, while relaxed listing rules enhance information provision [61]. Zhiqiang & Meijuan identify changes in the issuing system as the root cause of IPO underpricing [62]. Chu & Zhang study seven stages of stock issuance reform and find that pricing control significantly contributes to underpricing, but continuous reform has led to a downward trend [63]. Yuhui & Peng argue that "government control" in the Chinese market causes extremely high IPO underpricing [64]. Song et al. find that pricing regulation is positively related to underpricing [65]. Zou et al. note that IPO pricing characteristics vary across periods due to policy changes [66].

The implementation of stock market reforms has been instrumental in mitigating IPO underpricing in China [67]. Lv et al. have investigated the effects of the STAR Market's registration system on IPO underpricing, focusing on the follow-up investment and sponsor approval systems [68]. Their findings indicate that this system can significantly alleviate IPO underpricing. Liu Yuhui & Shen Keting attribute the high first-day IPO return rate to supply-side controls within the Chinese stock market, which contribute to elevated IPO underpricing [69]. González et al. argue that enhancing national-level governance frameworks can help reduce IPO underpricing [70]. Wenzhao posits that advancing the marketization of the IPO system is crucial for addressing the issue of high IPO underpricing rates in China, emphasizing the importance of adhering to market-oriented reforms [71].

3.6 Factors Affecting IPO Underpricing in the STAR Market

The research on the phenomenon of IPO underpricing in the STAR Market began with its inception in 2019. Theoretically, stock prices should gradually converge to their intrinsic market value over time. However, significant underpricing continues to persist in STAR Market IPOs. From an investor behavior perspective, Ma et al.'s study explores the differential impacts of primary market pricing and secondary market transactions on IPO underpricing [72]. Their findings indicate that primary market pricing exerts a limited influence on IPO underpricing in the STAR Market. With the introduction of the registration-based system, IPO pricing efficiency has notably improved. Meanwhile, irrational behaviors among investors in the secondary market, including blind optimism and structural inefficiencies within the investor base, have emerged as critical factors contributing to IPO underpricing. Consequently, investor behavior in the secondary market remains a key determinant influencing IPO underpricing dynamics. Hu et al. further argue that institutional investors, leveraging their informational advantages over individual investors, also contribute to IPO underpricing [73].

Wang et al. argued that the stock issuance registration system, centered around issuer information disclosure, can effectively mitigate IPO underpricing and other associated issues [74]. Zhang et al. investigated the correlation between information disclosure in the STAR Market and stock price co-movement (SYN), finding that more detailed information disclosure leads to a greater abundance of characteristic information, higher levels of information transparency, and lower SYN [75]. Shuang & Yu examined the link between the quantity and quality of reply letters from IPO candidate companies on the STAR Market and institutional investors' pricing decisions, and discovered an inverse relationship between these factors and both pricing divergence among institutional investors as well as IPO first-day return rate [76].

Luling & Lie investigate the impact of strategic investors on IPO underpricing within the STAR Market, employing both information asymmetry theory (pertaining to rational investors) and investor sentiment theory (pertaining to boundedly rational investors) [77]. Their findings reveal a significant positive correlation between the proportion of shares allocated to strategic investors and the degree of IPO underpricing. Hu examines the influence of technological innovation on IPO underpricing in the STAR Market, focusing on research and development (R&D) investment and output [78]. The study indicates that R&D investment, which is characterized by information asymmetry, introduces uncertainty into market valuations, thereby exacerbating IPO underpricing. Additionally, it is found that patents exert a significant signaling effect that mitigates IPO underpricing. Li & Aumeboonsuke analyze the effects of the research and development ratio, venture capital, and investor sentiment on IPO underpricing in the STAR Market [79]. Their results suggest that while venture capital and investor sentiment positively correlate with IPO underpricing, R&D investment has a negative impact on it. The conduct of employees and the organizational climate can exert a substantial influence on job performance. The majority of companies listed on the STAR Market are innovative technology enterprises. Therefore, the behavior of employees, specifically researchers, plays a pivotal role in technological innovation. As a result, the R&D ratio reflects investment in R&D personnel. In conclusion, these studies collectively explore various factors influencing IPO underpricing in the STAR Market from multiple perspectives.

4 MARKET EFFICIENCY, INVESTORS AND IPO UNDERPRICING

4.1 Market Efficiency and Investors

Institutional investors, who play an important role in the securities market, have a significant impact on market efficiency [80]. Institutional investors operate within efficient capital markets and their activities may indeed enhance market efficiency [81].

Institutional investors' behavior significantly influences the efficiency of IPO pricing [82]. Zhou et al. identified a positive correlation between institutional investors' participation, shareholding ratio, and IPO pricing efficiency [83]. Ma & Cai investigated the impact of China's stock issuance system and institutional investor characteristics on IPO pricing efficiency, concluding that institutional involvement enhances this efficiency [84]. Ong et al. found that book-built IPOs with higher institutional ownership are more accurately priced relative to their intrinsic values [85]. The divergence in opinions among institutional investors also impacts IPO pricing efficiency; when substantial differences exist regarding pricing, IPO pricing efficiency tends to be lower [86]. Gao et al. observed cognitive reference point anchoring by institutional investors during IPO auctions, which significantly affects offer prices and first-day returns [87]. Chi et al. demonstrated that overall investor inattention at the IPO level notably diminishes IPO pricing efficiency [88]. However, some studies suggest that cognitive constraints impede information processing for investors, hindering their ability to fully incorporate information into asset prices and thereby affecting pricing efficiency [89]. Therefore, it is evident that institutional investors play a pivotal role in determining IPO pricing.

The incorporation of information into security prices is facilitated by the actions of investors [90]. Institutional investors, who possess a greater number of information channels and professional analytical capabilities, are able to engage in trading activities based on analyzed company-specific information, thereby disseminating information to the market and enhancing the informational content of stock prices [91]. From an efficiency perspective regarding information transmission, sharing information among institutional investors enables market participants to better comprehend information about listed companies ultimately contributing to improved pricing efficiency [92]. Ya-nan & Dong-min contend that heightened competition among institutional investors leads to narrower bid-ask spreads in the stock market, consequently reducing information asymmetry and bolstering the market information efficiency [93]. However, it should be noted that information asymmetry directly affects IPO pricing and attracts the attention of investors, leading

to the "lemon market" problem [94]. Jenkinson & Jones find that price-related disclosures made by institutional investors do not exert significant influence during the book-building process [95]. Additionally, Ni & Jin reveal that distractions experienced by institutional investor distraction significantly undermine price efficiency within China's financial market due to reduced informativeness of stock prices and diminished reliance on disclosed information [96].

4.2 Institutional Investors, IPO Underpricing and Market Efficiency

Institutional investors may disclose non-public information in response to anticipated IPO underpricing and discriminatory placement, thereby enhancing IPO pricing efficiency [97]. Lowry & Schwert observe that public information is not fully reflected in the initial price range or the final offer price [98]. The limited economic significance of this relationship suggests that the IPO pricing process remains highly efficient. Welch posits that IPO pricing inefficiency arises from information asymmetry between issuing firms and investors [99]. This asymmetry contributes to IPO underpricing, with greater degrees of asymmetry leading to more pronounced underpricing [100], which in turn diminishes IPO pricing efficiency. Reducing information asymmetry can mitigate IPO underpricing and enhance IPO pricing efficiency [101]. Ang & Brau contend that improving information disclosure and corporate transparency can help issuing firms reduce the informational gap with investors, thereby alleviating IPO underpricing [102].

Many scholars have conducted extensive research on the effectiveness of financial market efficiency in China, focusing on the transition from the fixed price mechanism to the book-building mechanism [103]. Jin et al. have demonstrated that gradual market-oriented reforms in China's issuance mechanism have enhanced IPO pricing capabilities [104]. Chen & Wang [105], through a selection of 31 references, categorize the efficiency of IPO pricing in the Chinese capital market based on different stages of system transformation and find negligible disparities in the examination of IPO pricing efficiency across various time intervals. The registration system reform has proven effective in improving Chinese IPO pricing efficiency [106]. Liang Peng discovered that the reform of the registration system significantly reduces IPO underpricing and promotes improved pricing efficiency by enhancing information transparency [107]. He also observed that this reform exhibits a lower inhibition rate for IPOs, supporting its action mechanism as an enhancer of information symmetry. The registration system reform implemented in the STAR Market strengthens issuer responsibility for information disclosure while emphasizing quality and supervision standards to ensure comprehensive and accurate disclosures by IPO enterprises. This reduction in information asymmetry contributes to improved IPO pricing efficiency. Additionally, in the inquiry process, it can exploit informational advantages, investment experience, and professional judgment offered by institutional investors [108], effectively reducing IPO underpricing while enhancing resource allocation efficiency.

5 INSTITUTIONAL INVESTOR HETEROGENEITY AND IPO UNDERPRICING

The IPO inquiry system is extensively utilized in the pricing of new shares in the capital market, and its design and allocation rules have garnered significant attention. Institutional investors, who are one of the participants in price discrimination (pricing of new shares), can be influenced by various valuation and pricing factors. In a typical IPO, only approximately half of institutional investors develop their own valuation models, while the remaining investors rely on research reports generated by analysts and engage in discussions with sell-side professionals and management, and there is strong evidence indicating that investors bid differently based on their perception of how well-subscribed the issue is [109].

Güçbilmez & Briain examine the bidding behavior of institutional investors in initial public offering (IPO) auctions [110]. Their study reveals that the majority of institutional investors are classified as "occasional bidders," who rarely receive share allocations, while "regular bidders" form a smaller proportion but contribute significantly to overall demand. Furthermore, the findings indicate that regular bidders tend to adopt a conservative bidding strategy, with only a limited number categorized as "well-informed bidders" who submit more aggressive bids for highly sought-after IPOs compared to less popular ones. Additionally, the use of placement can mitigate the extent of IPO underpricing [111]. Mehmood et al. investigate how pricing mechanisms and oversubscription influence investor perceptions of IPO valuation heterogeneity [112]. Their results suggest that these factors play a critical role in shaping the intensity of investors' heterogeneous opinions.

5.1 Institutional Investors and Inquiry Pricing

The bookbuilding mechanism is a kind of information collection mechanism. The earliest research on the theory of bookbuilding mechanisms was conducted by Benveniste & Spindt [111], Benveniste & Wilhelm and Spatt & Srivastava who proposed the theory of cumulative bookbuilding mechanisms [97,113]. According to theoretical research, due to information asymmetry, when underwriters collect issuers' real information from institutional investors through inquiries or "road shows" to price an IPO, institutional investors face the problem of the "winner's curse" and may conceal their demand information and provide false quotes, underwriters need to compensate for this lack of information in order to determine the true price. Hanley suggests that lead underwriters revise the offering price (relative to the initial inquiry range) after obtaining valuable information during the inquiry process [114]. "Price discrimination" - IPO underpricing serves as an incentive for investors to provide more accurate information.

Cornelli & Goldreich conducted an analysis of the book-keeping data from 39 international stock offerings and found that investors who provided more accurate information were given preference in the placement under the inquiry system [115]. Public information can explain only 35%-50% of IPO underpricing [116]. Underwriters are typically conservative in pricing, however if investors offer higher bids during the IPO process, it can lead to an increased issue price [117]. Song & Tang analyzed bid data from 380 Chinese IPOs and found that higher investor sentiment leads to higher institutional bids, prompting underwriters to raise the issue price accordingly [118].

Furthermore, the optimal allocation of IPO shares is intricately linked to potential collusion between underwriters and investors. In scenarios involving collusion, institutional investors' information acquisition exhibits a positive correlation with the number of subscribed shares but a negative correlation with the IPO price [119]. Li & Chen examine low-price collusion in the inquiry market of China's Sci-Tech Innovation Board (STAR Market) through the lens of strategic interactions among large institutional investors (LIIs), small and medium-sized institutional investors (SMIIs), and regulatory authorities [120]. Their findings reveal that both the supervisory behavior of the Securities Regulatory Commission (SRC) and the quotation behavior of institutional investors are influenced by regulatory conditions. Specifically, when the returns from stringent supervision fall significantly below those from lenient supervision (under lenient supervision conditions), the SRC opts for lenient supervision, leading institutional investors to engage in illegal quotations, thereby establishing a stable equilibrium of low-price collusion. Conversely, under stringent supervision conditions, both parties choose strict supervision and legal quotations.

5.2 Institutional Investors, China's Inquiry System and Pricing

In the early stage of our country's capital market reform, the stock issuance system mainly consisted of a quota system and an examination and approval system. The IPO mechanism exerted a significant impact on the underpricing of China's A shares during the implementation of the approval system from March 2001 to 2005 [121]. Hoque & Mu discovered that compared to the approval system, the sponsor system resulted in lower levels of IPO underpricing [122]. Furthermore, they found that as marketization increased, IPO underpricing levels decreased. These findings indicate that reducing state control enhances efficiency in China's IPO market. Since 2005, China's A-share market has continued to experience high rates of IPO underpricing due to extensive regulations on various inquiry details which discourage institutional investors from exercising their professional judgment and pricing power. Additionally, there were fewer institutional investors at that time leading to limited competition in the market and an increased likelihood for collusion among participants seeking substantial benefits upon accessing the secondary market, and influencing market forces of IPO pricing.

In recent years, the implementation of a registration system for stock issuance has prompted corresponding responses in the regulations and rules of the securities market [123]. When subscribing for new shares online, institutional investors can assess the quality of IPO companies and provide quotations during the IPO inquiry stage to enhance pricing efficiency [124]. The inquiry procedure on the STAR Market is conducted by institutional investors, who adjust allocation ratios and oversubscription ratios accordingly are adjusted to improve the lot winning rate and participation rate of institutional investors [125]. Moreover, under the registration system of the STAR Market, raising the threshold for inquiry objects helps prevent excessive competition among inquiry institutions and encourages investors to make rational decisions. Thus, IPO pricing efficiency is improved [126]. Dong et al. measured the initial public offering (IPO) pricing efficiency of the STAR Market under a registration-based IPO system with a novel focus on mandatory sponsor co-investment [127]. Their findings reveal that implementing a co-investment ratio reduces inquiry divergence among institutional investors and enhances pricing efficiency.

The quotation strategy of institutional investors directly impacts the determination of the issue price. Under the premise that inquiry is divided into two stages, namely preliminary inquiry and accumulative bidding inquiry, institutional investors intentionally conceal their demands and deliberately lower their quotations during the preliminary inquiry, and the final equilibrium price represents the upper limit of the issuing price range determined by underwriters after completing the preliminary inquiry [128]. To maximize the utility of institutional investors, Zhou Xiao-hua et al. conducted a study on the optimal quotation strategy for institutional investors when the total amount of pre-IPO subscription was determined [129]. Their research concluded that the linear equilibrium quotation strategy outperformed the nonlinear equilibrium quotation strategy and found a positive correlation between institutional investors' demand hiding and IPO net underpricing. Additionally, according to Lv Ming [130], the government's "supportive hand" hypothesis suggests that institutional investors' quotations play an intermediary role in the process of political connections influencing IPO pricing. With the reform of China's inquiry system, institutional investors are adopting the high quotation strategy. In order to qualify for IPO allocation, inquiry institutions opt for a high quotation approach [131]. Hu Zhiqiang et al. discovered that during the four reforms of China's inquiry system, inquiry system reforms improved the competition level among inquiry investors, reduced the underpricing rate of new shares, and thus improved the pricing efficiency of new shares overall [132].

On the other hand, institutional investors, driven by their pursuit of maximizing returns, may engage in collusive practices with other institutional investors during the inquiry process to collectively drive down prices [133]. Simultaneously, the pricing pressure exerted by institutional investors is influenced by the relationship network among inquiry participants [134], and the strength and nature of this network significantly impact IPO pricing through their influence on quotation behavior [135]. The significant impact of collusive behavior on IPO outcomes in emerging markets underscores its profound effects on market stability, pricing efficiency, and investor welfare within a globally

implemented registration-based system [136]. However, increasing the online proportion of new shares to enhance the prudence of inquiry object pricing, coupled with the elimination of lock-up periods for offline rights offerings, has exacerbated speculation in the secondary market [137]. Xu Guanglu et al. [138], in conjunction with the new share allocation rules, discovered that due to profit from information in the secondary market, there exists a moral hazard where inquiry institutions "leave information on the table," while maximizing subscribed shares from high-quotation-price investors helps mitigate false quotation moral hazards.

The abnormally high IPO price is also attributed to the scarcity of new shares approved under the current system, resulting in institutional investors valuing them at a persistently elevated level despite market irrationality [139]. Yan-ni discovered that inquiry institutions had high expectations for new shares in the secondary market and capitalized on the limited availability by increasing their offers to secure allocations for "hitting the new" stocks [140]. Jiang Ting & Zhou Xiaohua argued that, within the framework of diluting new share pricing window guidance, quotation behavior of inquiry institutions was influenced by their prior estimations of underpricing rates for new shares [141]. Furthermore, the relationship between mean and variance in initial empirical estimations of underpricing by these institutions would impact the evolutionary game formed through game outcomes.

5.3 Institutional Investor Heterogeneity and Pricing Influencing Factors

5.3.1 Different decision-making concepts of institutional investors

The decision-making process of institutional investors is influenced by their behavioral deviations [142]. Taffler points out that it should be recognized that real-world investors are not entirely rational and are susceptible to psychological biases and conscious emotions when making decisions [143].

The first is the valuation decisions made by institutional investors. The theories explaining the divergence in investor opinions include gradual information flow, limited attention, and heterogeneous priors [144]. Xu discovered that investors hold varying views on the accuracy of public information [145]. In the case of good information, stock prices will be determined by the valuation of investors who think the accuracy is higher, but in the case of bad information, stock price will be determined by the valuation of investors who think the accuracy is lower, resulting in a strong reaction to positive information. Hirshleifer & Teoh emphasize limited attention as a contributing factor where investors may only notice differences in part of information, leading to differences in opinion [146]. Kandel & Pearson argue that investors possess prior decision biases which prevent them from forming completely consistent judgments [147]. In situations where there is no transaction record for IPO stocks, "prior heterogeneity" tends to occur among investors, resulting in variations in valuation.

Bookbuilding system, the differences in valuation of new shares among investors are primarily reflected in the initial inquiry stage and post-listing trading. In the primary market, the reversal of valuation differences reflects the anticipation of secondary market valuation differences, and the valuation differences or underpricing fluctuation in the early stage of IPO can predict the quotation difference or underpricing fluctuations of institutions [148]. Institutional investors' quotations play a crucial role in IPO pricing, as variations in institutional quotations can impact stock price declines and market downturn severity [86]. Due to disparities in information acquisition and interpretation among investors regarding listed companies, different expected returns on the same equity arise [149]. Institutional investors often have motives for intentional underpricing during inquiries; when they align with issuers on new share value, IPO underpricing is solely intentional without unintentional underpricing, and when discrepancies exist between them, IPO underpricing becomes positively correlated with divergence, affecting only the unintentional underpricing component [150]. Ikeda discovered that both optimism and divergence contribute to overvaluation issues in an IPO's first-day market price [151]. Albada et al. argue that excessive investor demand for IPOs intensifies the IPO underpricing issue caused by diverging beliefs among investors, leading to greater inefficiency in the stock market [152].

The theory of heterogeneous beliefs explains the phenomenon of IPO underpricing [153], arguing that investors have more divergent views on the new issue. Due to short sale restrictions, the stock price of a new issue tends to better reflect the opinions or emotions of optimistic investors, leading to overvaluation. Differences in investor opinions account for the reasons behind IPO underpricing on the first day and its subsequent low long-term performance [154]. Xu & Zheng find that during China's reform process of the IPO inquiry system, increased regulatory interventions, divergent investor opinions, and weakened IPO pricing efficiency have led to the failure of market-based inquiry mechanisms [155]. Zhang et al. demonstrate that regardless of whether fixed-price or bookbuilding mechanisms are employed, it is impossible to eliminate IPO underpricing; however, when investors' expectations are homogeneous, bookbuilding can achieve lower levels of IPO underpricing compared to fixed-price offerings.

This is followed by the impact of the offering behavior of institutional investors. In addition to the impact of agency problems caused by information asymmetry [156], the irrational behavior of investors is also a reason for the unreasonable IPO pricing [157]. Analyzing the reasons behind the high underpricing of IPOs on China's STAR Market, Ma et al. emphasize that investor behavior in the secondary market consistently influences underpricing [72]. Sun et al. provide evidence suggesting that connections between institutional investors and sponsors lead to variations in quoted prices and quotation frequency within China's stock market, and find that during periods characterized by "three highs" (high issue price, high price-to-earnings ratio, and over-raised proceeds), when "favoring offer" is common, a stronger association between sponsors and institutional investors increases the likelihood of institutional investors participating in sponsors' main board IPO offers [158].

Investor sentiment plays an important role in asset pricing [159]. Emotional investors are highly susceptible to market noise, leading to biased expectations and irrational valuation behaviors, which can result in excessively optimistic or pessimistic pricing [160]. Wu & Bu demonstrate that when there is investor heterogeneity, overly optimistic investor sentiment is incorporated into IPO pricing, ultimately leading to poor IPO performance [161]. Dong & Huang investigate the impact of first-day listing price limits on IPO underpricing within the book-building system and find that the implementation of price limits significantly amplifies IPO underpricing by intensifying investor sentiment and encouraging market speculation [162]. Chen et al. [163], using a sample of 2955 Chinese A-share listed stocks from 2003 to 2020, examine the relationship between investor sentiment and IPO underpricing, and the findings indicate that positive investor sentiment affects IPO demand and IPO underpricing through market turnover rate.

Investor sentiment will influence investors' trading behavior to a certain extent and significantly impact IPO underpricing. Campbell et al. examine the impact of market-wide sentiment on IPO pricing prior to secondary market trading and find that higher levels of sentiment result in higher initial filing price multiples for IPOs [164]. Moreover, changes in sentiment also significantly affect the final offer price multiples. Due to the institutionalization of IPO pricing in China, the IPO price exhibits a distinct lower boundary feature compared to mature capital markets. However, after the implementation of inquiry offering, IPO pricing begins to display significant upper boundary characteristics similar to those observed in mature capital markets. The extent of underpricing is primarily associated with the issue price in the primary market but is more influenced by investor sentiment and market conditions in the secondary market [165]. Ren Cheng-lin et al. [166], based on their empirical analysis within the context of IPO issuance under China's inquiry mechanism, find that high premium rates on the first day of an IPO are a result of interactions between irrational behaviors among individual investors and rational strategies among institutional investors, and positively correlate with irrational behaviors among individual investors and rational strategies among institutional investors. Shanchong et al. examine the impact of different types of investor sentiment on IPO underpricing, revealing that positive sentiment among institutional investors significantly influences IPO underpricing on the main board of Shenzhen and Shanghai in China, while negative sentiment among institutional investors does not have a significant effect on IPO underpricing [167]. The implementation of the registration system reform in China's STAR Market has liberalized limits on price fluctuations and introduced margin trading during IPO listings. To some extent, this curbs speculative investor sentiment, strengthens market-oriented pricing mechanisms, reduces speculative tendencies in the stock market, and promotes healthy development of the capital market [107].

5.3.2 Differences in the analysis methods of institutional investors' valuation models

The valuation ability of institutional investors impacts the market's issue valuation [168]. Institutional investors possess the capability to continuously update their investment models and develop reasonable expectations regarding asset returns by leveraging abundant data [169]. Ong et al. analyze that book-built IPOs with fair valuations tend to generate higher initial returns for investors [170]. Chang and Kwon posit that the technology industry exhibits the highest level of underpricing on the first trading day due to increased valuation uncertainty [171]. Li et al. investigated the determinants of heterogeneous bidding behavior among institutional investors in China's capital market and its economic consequences, revealing a significant positive correlation between pre-IPO quality of listed companies and both the book-building reform in China's capital market and diversity in institutional investors' opinions [172]. Additionally, a higher degree of diversity in bidding opinions is inversely related to firms' post-IPO stock price performance. Shen et al. examined institutional investors' preference for lottery-like IPO shares during Chinese IPOs [173]. Their research indicates that IPOs with higher expected skewness attract greater institutional bidding prices and offline oversubscription ratios, particularly within sub-samples characterized by heightened investor sentiment or elevated valuation uncertainty.

6 DISCUSSION AND SYNTHESIS

Scholars' research on the classification of Chinese institutional investors is closely intertwined with their developmental process. Drawing from previous classification methods and standards for institutional investors, scholars combine these with the unique characteristics of China's capital market to explore various classification methodologies that examine the relationship between institutional investors and their holding companies. The focus of most scholars lies in analyzing how institutional investors impact internal control aspects of a company (such as investment and financing decisions, earnings management, supervision, information disclosure decisions, corporate performance, and quality innovation) as well as their influence on the market (including stock prices and stock trading). Recently, scholars' research on different types of institutional investors has begun to focus on their diverse impacts on the Chinese market reaction, such as assuming stock price risk, influencing information disclosure, and playing a role in innovation and R&D.

According to the theory of information economics, existing literature posits that in the IPO market, the asymmetry of issuer information leads to underpricing. Scholars have proposed various hypotheses and models based on asymmetric information theory, investigating and demonstrating the causes of IPO underpricing and factors influencing high underpricing rates. Some studies suggest that the fundamental reason for IPO underpricing lies in the conflicting interests among listed companies, intermediary service organizations (such as underwriters), and investors. However, with the development of capital markets, many researchers argue that compensating uninformed investors for potential losses through an underpricing issuance system that deviates from intrinsic enterprise value results in a high rate of underpricing. Yet, it has been found that the "winner's curse" hypothesis is not entirely applicable when studying

China's A-share market. Under the registration-based system, the Shanghai Stock Exchange's STAR Market has established a multi-layered risk prevention framework from an institutional design perspective, incorporating mechanisms such as price stabilization measures. Whether the "winner's curse" manifests in the STAR Market necessitates empirical verification based on market data. In research literature, scholars believe that listed companies possess more informational advantages than investors; thus, setting a lower issue price aims to sell additional stocks at higher prices in future markets, leading to a phenomenon of high underpricing. Due to China's unique stock market system, literature research has observed little correlation between low-priced IPOs and transaction prices in secondary markets.

Due to the unique characteristics of China's capital market environment and policies, much of the existing research primarily focuses on examining the influence of China's securities market system and policies on IPO underpricing. With the introduction of the STAR Market in 2019, there is limited existing literature specifically related to IPO underpricing in this new market. Existing studies have explored the impact of system reform and institutional investors' behavior on IPO underpricing following the implementation of a registration system for the STAR Market. Different conclusions have been drawn regarding the phenomenon of IPO underpricing in the STAR Market: while some studies suggest that it still exists without significant correlation with the registration system, others argue that institutional reforms and increased participation from institutional investors have mitigated the phenomenon of IPO underpricing, promoting greater efficiency in IPO pricing.

Furthermore, the literature review in the field of market efficiency primarily focuses on the impact of investors on market efficiency, emphasizing their crucial role in participating in the securities market. Scholars investigate how investors' behavior influences IPOs and IPO underpricing, considering both pricing efficiency and information efficiency. Subsequently, it summarizes the research findings regarding whether institutional investors enhance pricing efficiency and information efficiency with respect to IPO underpricing.

The subsequent research literature on institutional investors and pricing, with a focus on pricing efficiency, primarily reviews the impact of factors defined by the offering mechanism and quantitative model analysis methods on IPO pricing. There is considerable attention in the literature to institutional investors' involvement in price discrimination (IPO pricing) through the IPO bookbuilding mechanism. Building upon a review of theoretical research on the bookbuilding mechanism and the influence of institutional investors, this paper organizes the influencing factors based on the relationship between institutional investors and valuation. Specifically, it explores how differences in opinions affect valuation decisions and quotation behavior of institutional investors, as well as how valuation methods systematically influence institutional investors' assessment of enterprise value. Recently, scholars have been paying attention to the theoretical and empirical research on the factors related to the bookbuilding mechanism of institutional investors in China.

7 CONCLUSION

Since the implementation of the registration system in China's STAR Market, along with the increasing number of institutional investors, research on the impact of institutional investors on IPO underpricing has become a focus for scholars. By reviewing and synthesizing existing knowledge on institutional investor heterogeneity and IPO underpricing, this literature argues that the STAR Market in China can effectively leverage the potential of institutional investors in IPO pricing. The strategic placement ratio represents a distinctive institutional feature of IPOs on the STAR Market. A higher strategic placement ratio may mitigate information asymmetry and reduce underpricing; however, it could simultaneously constrain first-day market supply due to the lock-up of long-term capital, potentially inflating short-term prices. Future research should test whether 'strategic investors' in the STAR market exhibit different lock-up expiration behaviors compared to standard institutional investors. Furthermore, by implementing stricter information disclosure measures, institutional investors are expected to respond rationally to IPO offers, alleviating the problem of mispricing. This review provides substantial literature support for further exploration into the phenomenon of IPO underpricing in China and its underlying factors, as well as research aimed at enhancing IPO pricing efficiency and harnessing the positive role played by institutional investors within China's multi-level capital market.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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REFERENCES

- [1] Bushee B J. The influence of institutional investors on myopic R&D investment behavior. *Accounting Review*, 1998: 305-333.

- [2] Koh P S. Institutional investor type, earnings management and benchmark beaters. *Journal of Accounting and Public Policy*, 2007, 26(3): 267-299.
- [3] Bushee B J. Do institutional investors prefer near-term earnings over long-run value? *Contemporary Accounting Research*, 2001, 18(2): 207-246.
- [4] Gillan S L, Starks L T. Corporate governance proposals and shareholder activism: The role of institutional investors. *Journal of Financial Economics*, 2000, 57(2): 275-305.
- [5] Brickley J A, Lease R C, Smith Jr C W. Ownership structure and voting on antitakeover amendments. *Journal of Financial Economics*, 1988, 20: 267-291.
- [6] Chen X, Harford J, Li K. Monitoring: Which institutions matter? *Journal of Financial Economics*, 2007, 86(2): 279-305.
- [7] Badrinath S G, Wahal S. Momentum trading by institutions. *The Journal of Finance*, 2002, 57(6): 2449-2478.
- [8] Xu Q, Zhang S, Zhang F, et al. Empirical study on mutual fund classification in China. *Securities Market Herald*, 2003(10): 4-7+79.
- [9] Li Q Y. Talking about the roles localization in corporate governance for institutional investors and suggestions. *Nankai Business Review*, 2003(02): 28-33.
- [10] Yang C J, Cai M C, Xu H Q. Style classification analysis of Chinese mutual funds. *Journal of Shanghai Jiaotong University*, 2004(03): 359-361+367.
- [11] Lin L, Puchniak D W. Institutional investors in China: Corporate governance and policy channeling in the market within the state. *Colum. J. Asian L.*, 2022, 35: 74.
- [12] Weng H B, Wu S N. Institutional investors, corporate governance and pay out policy of listed companies. *China Accounting Review*, 2007, 10: 22-27.
- [13] Huo X, Lin H, Meng Y, Woods P. Institutional investors and cost of capital: The moderating effect of ownership structure. *PLoS One*, 2021, 16(4): e0249963.
- [14] Li Q, Ruan W, Li R, et al. Do institutional investors' holdings affect corporate environmental information disclosure? Evidence from China. *Environment, Development and Sustainability*, 2023, 25(12): 14733-14751.
- [15] Zhao H F, Xiang G Y, Zhang X. The impact of institutional investors on the effectiveness of internal control. *East China Economic Management*, 2015, 3: 132-138.
- [16] Qin Y. Study on the performance of heterogeneous institutional investors and A-share enterprises. *Highlights in Business, Economics and Management*, 2023, 18: 221-233.
- [17] Cao Y, Dong Y, Lu Y, et al. Does institutional ownership improve firm investment efficiency? *Emerging Markets Finance and Trade*, 2020, 56(12): 2772-2792.
- [18] Liu Y, Jin X M, Ly K C, et al. The relationship between heterogeneous institutional investors' shareholdings and corporate ESG performance: Evidence from China. *Research in International Business and Finance*, 2024: 102457.
- [19] Li Z, Zhao X, Cao F, et al. Institutional investors heterogeneity and firm performance: Empirical evidence from Chinese listed companies. *Audit & Economy Research*, 2014, 29(5): 77-87.
- [20] Gao H, Shen Z, Li Y, et al. Institutional investors, real earnings management and cost of equity: Evidence from listed high-tech firms in China. *Emerging Markets Finance and Trade*, 2020, 56(14): 3490-3506.
- [21] Yang M, Zhang Y. Accounting conservatism, institutional investors' heterogeneity and stock price crash risk: Empirical evidence from China A-share listed companies. *Journal of Audit & Economics*, 2016(05): 61-71.
- [22] Zhang S, Fu J, Zhu W, et al. How does strategic deviation affect firm performance? The roles of financing constraints and institutional investors. *Business Process Management Journal*, 2024, 30(2): 550-570. DOI: 10.1108/BPMJ-10-2023-0794.
- [23] Wang J, Ke Y, Zhang H, et al. Which institutional investors can improve the level of corporate ESG information disclosure? *Plos One*, 2023, 18(11): e0290008.
- [24] Du Y, Sun F, Deng X. Common institutional ownership and corporate earnings management. *China Industrial Economics*, 2021, 6: 155-173.
- [25] Li Z Z. Does institutional holdings promote the quality of corporate innovation. *Journal of Shanxi University of Finance and Economics*, 2020(11): 85-98. DOI: 10.13781/j.cnki.1007-9556.2020.11.007.
- [26] Bai Y, He L, Zhang T. Common institutional ownership and investment efficiency: Empirical evidence from China. *Borsa Istanbul Review*, 2023, 23(5): 1067-1077.
- [27] Massa M, Zhang L. Local investor horizon clientele and IPO underpricing. *Journal of Financial Markets*, 2021, 54: 100587.
- [28] Katti S, Phani B V. Underpricing of initial public offerings: A literature review. *Universal Journal of Accounting and Finance*, 2016, 4(2): 35-52.
- [29] Engelen P J, Van Essen M. Underpricing of IPOs: Firm-, issue- and country-specific characteristics. *Journal of Banking & Finance*, 2010, 34: 1958-1969. DOI: 10.1016/j.jbankfin.2010.01.002.
- [30] Amihud Y, Mendelson H. Trading mechanisms and stock returns: An empirical investigation. *The Journal of Finance*, 1987, 42(3): 533-553.
- [31] Duong H N, Goyal A, Kallinterakis V, et al. Market manipulation rules and IPO underpricing. *Journal of Corporate Finance*, 2021, 67: 101846.
- [32] Baker E D, Boulton T J, Braga-Alves M V, et al. ESG government risk and international IPO underpricing. *Journal of Corporate Finance*, 2021, 67: 101913.

- [33] Qian Y, Ritter J R, Shao X. Initial public offerings Chinese style. *Journal of Financial and Quantitative Analysis*, 2024, 59(1): 1-38.
- [34] Zhou Z G, Hussein M, Deng Q. ChiNext IPOs' initial returns before and after the 2013 stock market reform: What can we learn? *Emerging Markets Review*, 2021, 48: 100817.
- [35] Yu X, Tsang A, Wu Y, et al. Stock exchange oversight and investor quotes: Evidence from initial public offering comment letters in China. *The British Accounting Review*, 2024: 101361.
- [36] Su C, Brookfield D. An evaluation of the impact of stock market reforms on IPO under-pricing in China: The certification role of underwriters. *International Review of Financial Analysis*, 2013, 28: 20-33.
- [37] Chen J. Approval system and registration system: Encouraging IPO bubble or suppressing IPO bubble? - Take the growth enterprise market as an example. *Journal of Zhongnan University of Economics and Law*, 2015(04): 88-94.
- [38] Deng Q, Dai L, Yang Z, et al. The impacts of regulation regime changes on ChiNext IPOs: Effects of 2013 and 2020 reforms on initial return, fair value and overreaction. *International Review of Financial Analysis*, 2023, 89: 102794.
- [39] Liao X. Registration system and IPO pricing efficiency: Evidence from China. *Applied Economics*, 2024, 56(39): 4730-4743.
- [40] Dong X, Liu J, Man Y. Research on the reasonability of IPO pricing and the causes of high return under the registration system of the STAR Market. *Journal of Shanghai University of Finance and Economics*, 2020, 22(06): 65-78.
- [41] Pan H, Ma Y. Analysis of IPO pricing efficiency under the registration system. *Applied Mathematics and Nonlinear Sciences*, 2022, 8(2): 457-468.
- [42] Dumrongwong K. Do institutional investors stabilize stock returns? Evidence from emerging IPO markets. *Pacific Accounting Review*, 2020, 32(4): 585-600.
- [43] Malakhov A. The role of uninformed investors in an optimal IPO mechanism (Working Paper). Sam M. Walton College of Business, University of Arkansas, 2007.
- [44] Bian Y, Hu T, Liu H, et al. The JOBS act and IPO underpricing. *The North American Journal of Economics and Finance*, 2024, 70: 102080.
- [45] Di W, Bai X. The impact of synergy between institutional investors and brokers on IPO pricing efficiency-based on the data analysis of the Chinese second-board market. *Journal of Jiangsu University of Science and Technology (Social Science Edition)*, 2020(03): 97-104. DOI: 10.16148/j.cnki.cn32-1743/c.2020.03.015.
- [46] Daniel K, Hirshleifer D, Subrahmanyam A. Investor psychology and security market under-and overreactions. *The Journal of Finance*, 1998, 53(6): 1839-1885.
- [47] Wang Y, Yao J. Investor sentiment, issuance cost, and IPO underpricing: an empirical analysis of Shanghai Stock Exchange A-shares. *Applied Economics Letters*, 2021, 28(6): 508-511.
- [48] Tang S, Luo R. Price deregulation and investors' IPO speculation: Evidence from Chinese registration system reform. *Research in International Business and Finance*, 2024: 102493.
- [49] Rock K. Why new issues are underpriced. *Journal of Financial Economics*, 1986, 15(1-2): 187-212. DOI: 10.1016/0304-405X(86)90054-1.
- [50] Jamaani F, Alidarous M. Review of theoretical explanations of IPO underpricing. *Journal of Accounting, Business and Finance Research*, 2019, 6(1): 1-18.
- [51] Schrand C M, Verrecchia R E. Information disclosure and adverse selection explanations for IPO underpricing. SSRN 316824, 2005.
- [52] Chahine S, Filatotchev I. The effects of information disclosure and board independence on IPO discount. *Journal of Small Business Management*, 2008, 46(2): 219-241.
- [53] Yao Y, Zhao M. Chinese styled risk disclosure, disclosure level and the market reaction. *Economic Research Journal*, 2016, 7: 158-172.
- [54] Han C, Liang D, Huang J, et al. The impact of disclosure characteristics of the registration statement for science and technology innovation board on the IPO underpricing. *Procedia Computer Science*, 2022, 199: 238-245.
- [55] Gupta V, Singh S, Yadav S S. The impact of media sentiments on IPO underpricing. *Journal of Asia Business Studies*, 2022, 16(5): 786-801.
- [56] Wang S, Wang P, Cebula R J, et al. Board characteristics and IPO underpricing in China: The perspective of moderating effect of venture capitalists. *Finance Research Letters*, 2023, 52: 103491.
- [57] Jamaani F, Alidarous M, Alharasis E. The combined impact of IFRS mandatory adoption and institutional quality on the IPO companies' underpricing. *Journal of Financial Reporting and Accounting*, 2024, 22(4): 811-841.
- [58] Podedworna-Tarnowska D. Fundamental factors and the level of underpricing. *Journal of Management and Financial Sciences*, 2023(50): 239-256.
- [59] Tian L H. Financial regulation, investment risk and excess underpricing of new share issuance. *Journal of Financial Research*, 2010, 4(8): 85-100.
- [60] Cheung Y L, Ouyang Z, Tan W. How regulatory changes affect IPO underpricing in China. *China Economic Review*, 2009, 20(4): 692-702.
- [61] Wu D, Cheng X, Chan K C, et al. Unintended consequence of high bid price exclusion in IPO auctions: Evidence from China. SSRN 4709846, 2024.
- [62] Zhiqiang H, Meijuan Z. Study on the IPO system and underpricing under multivariate skewed student's t copula model: Empirical analysis based on the main board, SME board and GEM. *Economic Review*, 2016(03): 148-160.

- [63] Chu K J, Zhang H Y. The effect of the evolution of China's IPO issuance system on the pricing--efficiency of new stocks: a pricing control perspective. *Financial Economics Research*, 2019, 34(1): 83-93.
- [64] Liu Y H, Xiong P. Equity separation, government regulations, and Chinese IPO underpricing puzzle. *Economic Research Journal*, 2005, 5: 85-95.
- [65] Song S, Tan J, Yi Y. IPO initial returns in China: Underpricing or overvaluation? *China Journal of Accounting Research*, 2014, 7(1): 31-49.
- [66] Zou G, Cheng Q, Chen W, et al. What causes the IPO underpricing? New evidence from China's SME market. *Applied Economics*, 2020, 52(23): 2493-2507.
- [67] Khurshed A, Tong Y, Wang M. Split-share structure reform and the underpricing of Chinese initial public offerings. *The European Journal of Finance*, 2018, 24(16): 1485-1505.
- [68] Lv H L, Jia W J, Li W L. Individual investment bankers' sponsoring experience and IPO underpricing in STAR Market: Evidence from China. *Accounting Research*, 2021, 5(8): 95-106.
- [69] Liu Y, Shen K. Is it the primary market underpricing or the secondary market premium - a test and an explanation of the high underpricing of new shares in China. *Journal of Financial Research*, 2011(11): 183-196.
- [70] González M, Guzmán A, Tellez-Falla D F, et al. The impact of governance on IPO underpricing and performance at the country and corporate level: literature review and research directions. *Review of Development Finance*, 2020, 10(1): 1-16.
- [71] Wang W. Earnings management, corporate quality and IPO pricing efficiency. *Finance & Economics*, 2017(01): 37-46.
- [72] Ma Y, Liu G, Qi C. IPO pricing, investor behavior, and IPO underpricing of high-tech companies: Evidence from SSE STAR Market and Nasdaq Market. *Discrete Dynamics in Nature and Society*, 2022, 2022(1): 1711645.
- [73] Hu Y, Dai T, Li Y, et al. Underwriter reputation and IPO underpricing: The role of institutional investors in the Chinese growth enterprise market. *International Review of Financial Analysis*, 2021, 78: 101956.
- [74] Wang N Y, Zhu Y X, Chen S J H, et al. The reference and enlightenment of American securities registration system and securities supervision to China. *Southwest Finance*, 2019, 10(6): 46-56.
- [75] Zhang B, Shi Y, Zhang Z. Research on IPO information disclosure and stock price synchronicity of STAR Market--Text mining based on inquiry and prospectus. *Procedia Computer Science*, 2022, 202: 430-435.
- [76] Shuang X, Yu W. Can responses to comment letters improve the efficiency of IPO pricing in the STAR market? Evidence from divergence of institutional investors' bids. *Journal of Finance and Economics*, 2022, 48(01): 138-153.
- [77] He L, Shen L. The impact of strategic investors on IPO underpricing: evidence from China STAR Market. *Collected Essays on Finance and Economics*, 2023, 39(4): 47.
- [78] Hu S. The impact of innovation on IPO underpricing in the STAR Market. In: *International Conference on Computational Finance and Business Analytics*. Cham: Springer Nature Switzerland, 2023: 125-133.
- [79] Li M, Aumeboonsuke V. Investor sentiment, venture capital, R&D investment, and IPO underpricing: An empirical analysis of Chinese STAR Market. *ABAC Journal*, 2024, 44(3): 179-192.
- [80] Blommestein H. Impact of institutional investors on financial markets. *Institutional Investors in the New Financial Landscape*, 1998: 29.
- [81] Davis E P, Steil B. *Institutional investors*. The MIT Press, 2004.
- [82] Ljungqvist A P, Wilhelm Jr W J. IPO allocations: Discriminatory or discretionary? *Journal of Financial Economics*, 2002, 65(2): 167-201.
- [83] Zhou L, Zhao L, Zhou X H. Venture capital, behavior characteristics and IPO underpricing: Evidence from China's GEM board. *Modern Finance and Economics-Journal of Tianjin University of Finance and Economics*, 2017(05): 101-113.
- [84] Ma Y R, Cai J F. The effects of the IPO policy and venture capital characteristics on the IPO underpricing phenomenon of newly-established firms—Based on data of China's growth enterprise market from 2009 to 2015. *Economic Survey*, 2018(3): 160-164.
- [85] Ong C Z, Mohd-Rashid R, Taufil-Mohd K N. Do institutional investors drive the IPO valuation? *Borsa Istanbul Review*, 2020, 20(4): 307-321.
- [86] Li D, Li X, Yu H, et al. Research on the divergence of opinions in the quotation of inquiry institutions and IPO pricing mechanism. *Economic Research Journal*, 2014(07): 151-164.
- [87] Gao S, Meng Q, Chan J Y, et al. Cognitive reference points, institutional investors' bid prices, and IPO pricing: Evidence from IPO auctions in China. *Journal of Financial Markets*, 2018, 38: 124-140.
- [88] Chi Y, He J, Ma X, et al. Institutional investor inattention bias in auctioned IPOs. *Journal of Banking & Finance*, 2023, 150: 106831.
- [89] Grossman S J, Stiglitz J E. Information and competitive price systems. *The American Economic Review*, 1976: 246-253.
- [90] Bagehot W. The only game in town. *Financial Analysts Journal*, 1971, 27(2): 12-14.
- [91] Chakravarty S. Stealth-trading: Which traders' trades move stock prices? *Journal of Financial Economics*, 2001, 61(2): 289-307.
- [92] Soltes E. Private interaction between firm management and sell-side analysts. *Journal of Accounting Research*, 2014, 52(1): 245-272.

- [93] Wang Y N, Kong D M. Institutional investors competition and the efficiency of market information. *Jiang Han Academic*, 2013, 32(3): 28.
- [94] Su D. Adverse-selection versus signaling: evidence from the pricing of Chinese IPOs. *Journal of Economics and Business*, 2004, 56(1): 1-19.
- [95] Jenkinson T, Jones H. Bids and allocations in European IPO bookbuilding. *The Journal of Finance*, 2004, 59(5): 2309-2338.
- [96] Ni X, Jin Q. Institutional investors' limited attention and stock price informativeness in emerging markets: Evidence from China. *Pacific-Basin Finance Journal*, 2024, 84: 102285.
- [97] Benveniste L M, Wilhelm W J. A comparative analysis of IPO proceeds under alternative regulatory environments. *Journal of Financial Economics*, 1990, 28(1-2): 173-207.
- [98] Lowry M, Schwert G W. Is the IPO pricing process efficient? *Journal of Financial Economics*, 2004, 71(1): 3-26.
- [99] Welch I. Seasoned offerings, imitation costs, and the underpricing of initial public offerings. *The Journal of Finance*, 1989, 44(2): 421-449.
- [100] Ritter J R, Welch I. A review of IPO activity, pricing, and allocations. *The Journal of Finance*, 2002, 57(4): 1795-1828.
- [101] Park H D, Patel P C. How does ambiguity influence IPO underpricing? The role of the signalling environment. *Journal of Management Studies*, 2015, 52(6): 796-818.
- [102] Ang J S, Brau J C. Firm transparency and the costs of going public. *Journal of Financial Research*, 2002, 25(1): 1-17.
- [103] Yu Y, Shao J, Yi R. The effectiveness of IPO institution reform in China: From the view of pricing efficiency changing and international comparison. In: *Journal of Physics: Conference Series*. IOP Publishing, 2021, 1978(1): 012061.
- [104] Jin S, Wang X, Wang Z, et al. Bayesian piecewise stochastic frontier model to estimate initial public offering pricing efficiency under issuance policy reforms. *Applied Stochastic Models in Business and Industry*, 2021, 37(3): 545-559.
- [105] Chen Z, Wang Y. A research on IPO pricing efficiency under the approval system and registration system. In: *SHS Web of Conferences*. EDP Sciences, 2024, 188: 01028.
- [106] Lyu J. Impact of registration system reform on IPO pricing efficiency in China's capital market. In: *2022 International Conference on Economics, Smart Finance and Contemporary Trade (ESFCT 2022)*. Atlantis Press, 2022: 1169-1178.
- [107] Liang P. Does the registration system reform help to improve IPO pricing efficiency: based on empirical evidence of the science and technology innovation board? *Modern Economic Research*, 2021(10): 68-76. DOI: 10.13891/j.cnki.mer.2021.10.009.
- [108] Field L C, Lowry M. Institutional versus individual investment in IPOs: The importance of firm fundamentals. *Journal of Financial and Quantitative Analysis*, 2009, 44(3): 489-516.
- [109] Jenkinson T, Jones H. IPO pricing and allocation: a survey of the views of institutional investors. *The Review of Financial Studies*, 2009, 22(4): 1477-1504.
- [110] Güçbilmmez U, Briain T Ó. Bidding styles of institutional investors in IPO auctions. *Journal of Financial Markets*, 2021, 53: 100579.
- [111] Benveniste L M, Spindt P A. How investment bankers determine the offer price and allocation of new issues. *Journal of Financial Economics*, 1989, 24(2): 343-361.
- [112] Mehmood W, Mohd-Rashid R, Che-Yahya N, et al. Determinants of heterogeneity in investors' opinions on IPO valuation: evidence from the Pakistan stock market. *Review of Behavioral Finance*, 2021, 13(5): 631-646.
- [113] Spatt C, Srivastava S. Preplay communication, participation restrictions, and efficiency in initial public offerings. *The Review of Financial Studies*, 1991, 4(4): 709-726.
- [114] Hanley K W. The underpricing of initial public offerings and the partial adjustment phenomenon. *Journal of Financial Economics*, 1993, 34(2): 231-250.
- [115] Cornelli F, Goldreich D. Bookbuilding and strategic allocation. *The Journal of Finance*, 2001, 56(6): 2337-2369.
- [116] Bradley D J, Jordan B D. Partial adjustment to public information and IPO underpricing. *Journal of Financial and Quantitative Analysis*, 2002, 37(4): 595-616.
- [117] Edelen R M, Kadlec G B. Issuer surplus and the partial adjustment of IPO prices to public information. *Journal of Financial Economics*, 2005, 77(2): 347-373.
- [118] Song S, Tang S. Investor sentiment, underwriters' behaviour and IPO pricing: Empirical analysis from off-line institutional investors' bids. *China Journal of Accounting Studies*, 2015, 3(4): 348-373.
- [119] Biais B, Bossaerts P, Rochet J C. An optimal IPO mechanism. *The Review of Economic Studies*, 2002, 69(1): 117-146.
- [120] Li X, Chen Z. Strategic interaction between institutional investors and supervision department: a theoretical analysis of low-price collusion in SBIC. *Financial Innovation*, 2023, 9(1): 51.
- [121] Guo H, Brooks R. Underpricing of Chinese A-share IPOs and short-run underperformance under the approval system from 2001 to 2005. *International Review of Financial Analysis*, 2008, 17(5): 984-997.
- [122] Hoque H, Mu S. Does a reduction of state control affect IPO underpricing? Evidence from the Chinese A-share market. *Journal of International Money and Finance*, 2021, 115: 102384.

- [123] Xing H Q. Logical conversion and legal response of China's capital market reform. *Hebei Law Science*, 2019(05): 26-39. DOI: 10.16494/j.cnki.1002-3933.2019.05.003.
- [124] Yang M, Chen X H, He Z C. Can institutional investors identify the IPO firms whose earnings deteriorate after listing? *China Soft Science*, 2016(06): 121-128.
- [125] Chen Y. The science and technology innovation board will be expected to reduce the IPO underpricing rate of Chinese companies. *Tsinghua Financial Review*, 2020(01): 75-76. DOI: 10.19409/j.cnki.thf-review.2020.01.020.
- [126] Zhang Z, Teng J. Can registration inquiry reform improve IPO pricing efficiency? - Based on the research perspective of the innovation board pilot registration system reform. *Shanghai Finance*, 2020(08): 24-30. DOI: 10.13910/j.cnki.shjr.2020.08.003.
- [127] Dong X, Wang Y, Zhang J, et al. Sponsor co-investment, inquiry divergence, and IPO pricing efficiency. *Finance Research Letters*, 2024, 62: 104951.
- [128] Zhou X, Jiang T, Dong Y. IPO price formation and demands shading study in two-stage bookbuilding. *Journal of Systems Engineering*, 2013(02): 187-193.
- [129] Zhou X H, Xiong W Q, Meng W D. Optimal auction strategy and net underpricing in IPO book-building system. *Journal of Management Sciences in China*, 2009(04): 129-134.
- [130] Lv M. Political connection, institutional investors' pricing and IPO pricing. *Communication of Finance and Accounting*, 2018(15): 95-99. DOI: 10.16144/j.cnki.issn1002-8072.2018.15.019.
- [131] Yu H, Liu Y, Li X. IPO book-building reform and the problem of IPO "three highs" in China stock market: A perspective of offline institutional investors' quotes. *Journal of Financial Research*, 2013(10): 167-180.
- [132] Hu Z, Cheng L, Hu Y. An empirical research on inquiry institutions' bidding behavior under bookbuilding system reform by dynamic game model. *Wuhan University Journal (Philosophy & Social Science)*, 2017(05): 96-105. DOI: 10.14086/j.cnki.wujss.2017.05.010.
- [133] Liu Z, Zheng K, He Y. Competition or collusion between inquiry objects. *Securities Market Herald*, 2011(03): 35-44.
- [134] Liu S, Lin Q, Song D, et al. The influence on the IPO price from the collusion of institutional investors. *Management Review*, 2013, 25(12): 15-24.
- [135] Zheng K, Ruan Y P, He Y Q. The effect of inquiry objects' relationship networks on IPO pricing. *Journal of Management Sciences in China*, 2017(07): 57-67.
- [136] Fan Z, Tang D, Wang Y, et al. Institution grouping in IPO pricing: Evidence from China's STAR Market. SSRN 4884977, 2023.
- [137] Zhang J. Bidding behavior of inquiry object under bookbuilding system of IPO in China: Empirical analysis based on characteristics of bidding in offline application. *Technology Economics*, 2014(02): 104-111.
- [138] Xu G, Ma C, Cai Z, et al. Information-based profits, moral hazard, and institutional investors' bids. *Systems Engineering-Theory & Practice*, 2020(04): 817-830.
- [139] Hu Z Q, Jiang Y S. Bidding strategies of institutional investors after book-building reform. *Scientific Decision Making*, 2016(11): 1-17.
- [140] Zhang H, Liu Y. Study on reformation of IPO system by evolutionary games theory. *Journal of Central University of Finance & Economics*, 2009(12): 48-52.
- [141] Jiang T, Zhou X. Evolutionary game of institutional investors' bidding behavior and IPO price formation. *Journal of Systems Engineering*, 2015(05): 642-649. DOI: 10.13383/j.cnki.jse.2015.05.009.
- [142] Assia K, Ibenrissoul N. Behavioral biases influencing the investment decision-making process of institutional investors. *African Scientific Journal*, 2023, 3(18): 073-073.
- [143] Taffler R. Emotional finance: investment and the unconscious. *The European Journal of Finance*, 2018, 24(7-8): 630-653.
- [144] Hong H, Stein J C. Disagreement and the stock market. *Journal of Economic Perspectives*, 2007, 21(2): 109-128.
- [145] Xu J. Price convexity and skewness. *The Journal of Finance*, 2007, 62(5): 2521-2552.
- [146] Hirshleifer D, Teoh S H. Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics*, 2003, 36(1-3): 337-386.
- [147] Kandel E, Pearson N D. Differential interpretation of public signals and trade in speculative markets. *Journal of Political Economy*, 1995, 103(4): 831-872.
- [148] Huang S W, Wang N, Yu K. Correlation of valuation divergences of IPO: The bidding difference of institutions and the variability of initial returns. *Journal of Guizhou University of Finance and Economics*, 2018, 36(04): 21-34.
- [149] Morris S. Speculative investor behavior and learning. *The Quarterly Journal of Economics*, 1996, 111(4): 1111-1133.
- [150] Zhang X C, Meng W D, Zhou X H. The effect of heterogeneous expectation to IPO underpricing based on bookbuilding. *Chinese Journal of Management Science*, 2008, 16(6): 168-175.
- [151] Ikeda N. Optimism, divergence of investors' opinions, and the long-run underperformance of IPOs. *Journal of Financial Markets*, 2023, 64: 100800.
- [152] Albada A, Low S W, Toh M Y. Divergence of beliefs and IPO initial return: the quasi-moderating role of investor demand. *Journal of Asian Business and Economic Studies*, 2023, 30(4): 296-308.
- [153] Miller E M. Risk, uncertainty, and divergence of opinion. *The Journal of Finance*, 1977, 32(4): 1151-1168.

- [154] Houge T, Loughran T, Suchanek G, et al. Divergence of opinion, uncertainty, and the quality of initial public offerings. *Financial Management*, 2001: 5-23.
- [155] Xu Y, Zheng G Q. Disagreement of institutional investors' bids and IPO pricing efficiency. *On Economic Problems*, 2016(04): 73-78.
- [156] Beatty R P, Ritter J R. Investment banking, reputation, and the underpricing of initial public offerings. *Journal of Financial Economics*, 1986, 15(1-2): 213-232.
- [157] Cornelli F, Goldreich D, Ljungqvist A. Investor sentiment and pre-IPO markets. *The Journal of Finance*, 2006, 61(3): 1187-1216.
- [158] Sun R, Guo J, Yu W. Sponsor, institutional investor, and quotation behavior: Theory and evidence from China. *Journal of Economic Behavior & Organization*, 2023, 211: 411-428.
- [159] Sakariyahu R, Paterson A, Chatzivgeri E, et al. Chasing noise in the stock market: an inquiry into the dynamics of investor sentiment and asset pricing. *Review of Quantitative Finance and Accounting*, 2024, 62(1): 135-169.
- [160] Derrien F. IPO pricing in "hot" market conditions: Who leaves money on the table? *The Journal of Finance*, 2005, 60(1): 487-521.
- [161] Wu D, Bu D. Sentiment and information: How 'over-optimistic' investors influence differences of opinion and IPO pricing? *International Review of Financial Analysis*, 2024, 95: 103436.
- [162] Dong Y, Huang J. Price limits, investor sentiment, and initial public offering underpricing: A quasi-natural experiment based on ChiNext. *Emerging Markets Review*, 2022, 51: 100893.
- [163] Chen B, Liu J, Zhu B. The impact of investor sentiment on IPO underpricing. In: 2021 International Conference on Public Relations and Social Sciences (ICPRSS 2021). Atlantis Press, 2021: 1235-1242.
- [164] Campbell C J, Du Y, Rhee S G, et al. Does market sentiment affect IPO pricing? *International Journal of Behavioural Accounting and Finance*, 2024, 7(2): 214-232.
- [165] Zou G F, Zhang W, Xu X W. Factors affecting IPO underpricing and its composition in Chinese market. *Journal of Management Sciences in China*, 2012(04): 12-22+30.
- [166] Ren C L, Cao G H, Lin C. Rational sentiment, irrational sentiment and IPO pricing. *Journal of Industrial Engineering and Engineering Management*, 2019(04): 88-96. DOI: 10.13587/j.cnki.jieem.2019.04.010.
- [167] Shanchong S, Kaili K, Zhigang Z. Research on the influence of institutional and individual investor sentiment on IPO underpricing. *Economy and Management*, 2019(01): 51-58.
- [168] Brous P A, Kini O. The valuation effects of equity issues and the level of institutional ownership: Evidence from analysts' earnings forecasts. *Financial Management*, 1994: 33-46.
- [169] Adrian T, Etula E, Muir T. Financial intermediaries and the cross-section of asset returns. *The Journal of Finance*, 2014, 69(6): 2557-2596.
- [170] Ong C Z, Mohd-Rashid R, Taufil-Mohd K N. IPO valuation using the price-multiple methods: Evidence from Malaysia. *Journal of Financial Reporting and Accounting*, 2021, 19(4): 540-570.
- [171] Chang Y, Kwon Y. Attention-grabbing IPOs in early stages for IT firms: An empirical analysis of post-IPO performance. *Journal of Business Research*, 2020, 109: 111-119. DOI: 10.1016/j.jbusres.2019.10.061.
- [172] Li A, Li X, Liu J, et al. Diversity of institutional investors' bidding opinions in shaping the sustainability of IPO performance. *Sustainability*, 2024, 16(11): 4418.
- [173] Shen H, Cheng X, Han L, et al. Are institutional investors subject to gambling preference? Evidence from detailed investor bids of IPO auctions in China. *Asia-Pacific Journal of Accounting & Economics*, 2022, 29(4): 964-980.