Adverse Selection and Information Cascades:

Empirical Tests in China's IPO Market

by

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Abstract

This paper examines the allocation and pricing efficiency of China's IPO market through the lens of Rock's Adverse Selection Theory and Welch's Information Cascade Theory. Using a hand-collected dataset of 959 IPOs from 2019 to 2024, spanning the Main Board, STAR Market, and ChiNext Board, the study evaluates whether uninformed investors systematically face adverse outcomes and whether demand-side herding behavior is observable.

Two empirical tests are conducted. Cross-sectional regressions reveal board-level divergences: a directionally negative but insignificant allocation–return relationship on the Main Board, a reversed and significant pattern on the ChiNext Board, and no consistent result on the STAR Market. Allocation-weighted average initial returns (*AWAIR*s) show positive and stable gains on the Main Board, but negative returns on registration-based boards over five-day horizons, indicating a breakdown of classical adverse selection dynamics. The distribution of allocation rates further supports a compressed cascade effect, with over 95% of IPOs allocating less than 0.05% to retail investors. Together, the results highlight the importance of institutional context in shaping IPO outcomes and suggest that classical models require adaptation under evolving regulatory systems.

Keywords: *IPO Allocation*; *Adverse Selection*; *Information Cascades*; *Retail Investors*; *China*; *Registration-Based Reform*

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I. Introduction

China's IPO market has long been characterized by the prevalence of the so-called "IPO lottery strategy" (referred to as "打新"). This approach involves indiscriminate subscription to nearly all available new stock offerings with the belief that any successful allocation will yield immediate and substantial profits. The popularity of this strategy stems from a historical pattern in which new listings regularly experienced sharp price increases on the first day of trading. During multiple market cycles, particularly between 2015 and 2017, the number of IPOs surged (223, 227, and 438 per year, respectively), further fueling retail investor enthusiasm.

Under the pre-registration, approval-based regime, several structural factors reinforced this behavior: opaque regulatory reviews, conservative pricing to ensure successful listing, and limited supply of new shares. These conditions resulted in near-certain post-listing gains, making IPO subscriptions effectively a form of low-risk arbitrage. Due to high demand and limited allocations, subscription success rates often fell below 0.01%.

Since 2019, China has progressively implemented a registration-based IPO reform, first through the STAR Market (2019) and ChiNext Board (2020), later extended to the Beijing Stock Exchange (2021) and finally the Main Board (2023).

The registration-based system introduced a series of market-oriented changes. The IPO review process was transferred from the China Securities Regulatory Commission (CSRC) to stock exchanges, focusing on sufficiency of disclosure rather than business fundamentals. As a result, review periods shortened, issuance volume increased, and firms with diverse financial profiles gained access to public markets.

Pricing mechanisms also shifted significantly. With the adoption of institutional book-building, offer prices became more market-driven, sometimes leading to underpricing, but also to

cases of overpricing and first-day declines. Trading restrictions were relaxed, particularly on the STAR and ChiNext boards, where the first five trading days were exempted from price limits. Furthermore, retail participation declined in these boards due to heightened investor eligibility requirements, including asset thresholds and trading experience, contributing to a more institutionally dominated allocation environment.

As a result, IPO outcomes became less predictable. Some newly listed firms began trading below their offer price, and institutional investors gained greater influence in both pricing and allocation. Although retail enthusiasm for IPOs remains strong, the perception of IPO subscriptions as a guaranteed profit strategy has been challenged.

This shift raises a fundamental question: To what extent does IPO subscription still deliver favorable returns to uninformed investors? With institutional structures evolving and retail access constrained, it becomes crucial to understand how investor behavior and allocation mechanisms function in this new regime. More broadly, how well do established theoretical models explain allocation and pricing outcomes in China's IPO environment?

This study investigates these questions through the lens of two foundational theories: Rock's Adverse Selection Theory and Welch's Information Cascade Theory. While both theories have been widely applied in Western markets, their relevance in China's highly regulated, dual-channel IPO system remains underexplored. Given China's distinct regulatory framework, high retail investor presence, and dual-track allocation mechanism (offline "网下" subscriptions for institutional investors and online "网上" subscriptions for retail investors), examining these theories in this context can offer valuable insights into IPO efficiency, inform pricing strategies, and potentially guide protections for uninformed investors.

II. Hypotheses

Rock (1986) theorizes that in IPOs, uninformed investors face adverse selection: informed investors participate selectively, avoiding overpriced IPOs, while uninformed investors subscribe indiscriminately and thus receive larger allocations in less desirable offerings. If this mechanism holds in China, uninformed retail investors should consistently receive higher allocations in IPOs with poor post-listing performance.

Welch (1992), on the other hand, emphasizes the role of information cascades in IPO demand formation. When early signals about an IPO's desirability are observed—such as strong institutional bidding or oversubscription trends—other investors tend to follow, leading to either highly oversubscribed or largely neglected IPOs. In theory, this produces a bimodal distribution in allocation rates: very low allocations due to intense competition, or high allocations due to lack of interest.

In China's institutional context, however, we hypothesize a distorted cascade outcome. Due to structural supply-demand imbalance, high subscription volumes, and policy-driven restrictions that suppress undersubscription, we expect the cascade effect to collapse into a single extreme: near-universal oversubscription. This study tests whether such a compressed participation pattern is consistent with the logic of Welch's theory.

2.1 Hypothesis 1 (Rock's Adverse Selection Theory)

Uninformed investors in Chinese IPOs receive larger allocations in overpriced IPOs, resulting in lower post-listing returns.

2.2 Hypothesis 2 (Welch's Information Cascade Theory)

Investor demand in Chinese IPOs exhibits herding behavior, which manifests not through bimodal demand polarization, but through a compressed cascade regime marked by persistent oversubscription.

III. Variables

3.1 Initial Return

The market-adjusted initial return is the core performance measure used to evaluate IPO outcomes in this study. Following standard event-study conventions, we define the initial return for each IPO j as the return of its stock relative to a benchmark market index over a specified period after listing.

The five-day market-adjusted initial return is denoted as IR_j, and calculated as:

$$IR_j = \frac{P_{j,5}}{P_{j,0}} - \frac{M_{j,5}}{M_{j,0}} \tag{1}$$

where $P_{j,0}$ and $P_{j,5}$ represent the IPO issue price and the closing price on the fifth trading day, respectively. $M_{j,0}$ and $M_{j,5}$ denote the benchmark market index level onthe IPO date and on the fifth trading day. For IPOs listed on the Shanghai and Shenzhen Main Boards, the CSI 300 Index is used as the benchmark. For IPOs listed on the STAR Market, the STAR 50 Index is used, and for ChiNext listings, the ChiNext Index is adopted.

In addition to IR_j, we also compute the one-day market-adjusted return, denoted as $IR1_j$, as a robustness check. This is defined as:

$$IR1_j = \frac{P_{j,1}}{P_{j,0}} - \frac{M_{j,1}}{M_{j,0}} \tag{2}$$

where $P_{j,1}$ is the closing price on the first trading day, and $M_{j,1}$ is the corresponding market index on the same day.

Both IR_j and $IR1_j$ are calculated using synchronized trading dates with their respective benchmark indices. This adjustment controls for market-wide movements and isolates IPO-specific pricing performance.

3.2 Allocation Rate

The allocation rate measures the proportion of requested shares that were successfully allocated to retail (uninformed) investors. It captures the degree of oversubscription or undersubscription for each IPO from the perspective of public investors who participated in the online subscription process.

Formally, the allocation rate for IPO j, denoted as $ALLOC_j$, is calculated as:

$$ALLOC_j = \frac{A_j}{R_j} \tag{3}$$

where A_j denotes the number of shares actually allocated to retail investors in the online tranche, and R_j represents the number of shares they collectively requested. A lower $ALLOC_j$ implies higher oversubscription, and vice versa. Data for both Aj and Rj are sourced from pre-listing allocation announcements published by the Shanghai and Shenzhen Stock Exchanges. If A_j or R_j is missing or ambiguous, the IPO is excluded from the relevant analysis.

This variable serves as a proxy for the participation intensity of uninformed investors and is used both as an independent variable in cross-sectional regressions and as a weight in the calculation of allocation-weighted average returns.

IV. Methodology

4.1 Testing Rock's Adverse Selection Theory

To test the core prediction of Rock (1986) that uninformed investors systematically receive larger allocations in overpriced IPOs, we employ two complementary approaches.

Test 1: Cross-Sectional Regression

We estimate the following linear regression model separately for each board:

$$IR_j = \alpha + \beta \cdot ALLOC_j + \varepsilon_j \tag{4}$$

where IR_j is the five-day market-adjusted initial return, and $ALLOC_j$ is the allocation rate for retail investors. A negative and statistically significant β would support Rock's theory, as it implies that higher allocation corresponds to lower returns, suggesting that uninformed investors are disproportionately allocated poor-quality IPOs.

As a robustness check, we also estimate the same model using $IR1_j$ as the dependent variable. This allows us to assess whether the allocation-return relationship holds over shorter horizons, closer to the immediate market reaction.

Test 2: Allocation-Weighted Average Initial Return (*AWAIR*)

To evaluate the aggregate return performance of uninformed investors who subscribe indiscriminately to all IPOs, we calculate the allocation-weighted average initial return (*AWAIR*). This simulates the return of a hypothetical investor who applies the same investment amount to every IPO and receives allocations in proportion to $ALLOC_j$.

The *AWAIR* is computed as:

$$AWAIR = \frac{\sum_{j=1}^{N} ALLOC_j \cdot IR_j}{\sum_{j=1}^{N} ALLOC_j} \tag{5}$$

If *AWAIR* is close to zero, it would support Rock's hypothesis that uninformed investors cannot earn systematic excess returns due to adverse selection. A significantly positive or negative *AWAIR* would indicate deviations from this theoretical expectation and suggest either inefficiency in allocation mechanisms or differences in the investor information environment. We also report an alternative version using $IR1_j$ to evaluate short-term return outcomes under the same investor behavior simulation.

This approach is inspired by Amihud, Hauser, and Kirsh (2003), who calculate IPO-level allocation-weighted returns ($AWIR_j$) to assess adverse selection in individual offerings. In contrast, our method aggregates across IPOs and evaluates the average return from a passive subscription strategy, providing a portfolio-level view of uninformed investor outcomes.

4.2 Testing Welch's Information Cascade Theory

To evaluate the presence of herding behavior predicted by Welch (1992), we examine the empirical distribution of allocation rates across the entire sample of IPOs. According to the information cascade theory, investors may condition their subscription decisions on perceived demand signals in earlier IPOs, resulting in sharply polarized behavior. Some IPOs attract heavy participation and become oversubscribed, while others receive limited demand and are less actively contested.

Under this mechanism, the distribution of allocation rates is expected to be polarized. A significant number of IPOs should display extremely low allocation rates, reflecting intense competition among subscribers. Conversely, another group of IPOs should exhibit relatively high allocation rates, indicating weaker investor interest and reduced oversubscription. Mid-range allocation rates should occur less frequently, as investor decisions increasingly cluster toward one of the two extremes.

To test this prediction, we construct a frequency histogram of $ALLOC_j$ across all IPOs in the sample. We assess whether the observed distribution shows distinct clustering at both ends of the scale—specifically, whether there is a concentration of IPOs with very low and very high allocation rates, and fewer observations in the middle. A pattern of this kind would support the existence of cascade-driven participation dynamics, consistent with the theoretical framework proposed by Welch.

V. Data

5.1 Sample Period

This study focuses on IPOs listed on the Shanghai and Shenzhen Stock Exchanges between January 2019 and November 2024. Specifically, for the Main Boards (Shanghai and Shenzhen), which operated under the approval-based system until April 2023, the sample spans January 2019 to March 2023. For the STAR Market and ChiNext Market, which adopted the registration-based IPO mechanism earlier, the sample covers January 2020 to November 2024. This period captures the regulatory shift from an approval-based to a registration-based system, allowing for a comparative analysis of IPO pricing and allocation mechanisms under different institutional frameworks. The time window is also chosen to ensure sufficient post-listing performance data for return calculations.

5.2 Data Sources

Market and Price Data

IPO pricing data, post-listing stock performance, and relevant market indices are obtained from the Wind Financial Terminal. Specifically, market-adjusted returns are calculated using

benchmark indices that correspond to the board of each IPO: the CSI 300 Index for Main Board companies, the STAR 50 Index for firms listed on the STAR Market, and the ChiNext Index for ChiNext-listed firms. Daily data on index levels and stock prices are matched using the IPO listing date and one or five subsequent trading days.

Allocation Data and Disclosure

In Chinese financial market, allocation-related information, such as allocation rates, oversubscription ratios, and clawback mechanisms, is not consistently available in commercial financial databases such as Wind, Choice, or Eastmoney. Therefore, this study relies on official announce4ments scraped or manually collected from the websites of the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE). These include documents titled "Issuance Announcement" ("发行公告") and "Announcement on Online Subscription Results and Allotment Rate" ("网上申购情况及中签率公告"), among others.

Due to the fragmented and non-standardized nature of disclosure in China's IPO market, particularly in earlier years or in the Main Board, allocation data may appear in different documents, with inconsistent naming conventions and reporting practices. To address this, a customized web crawler was designed to prioritize document types based on empirical observation of disclosure frequency and content structure. Despite best efforts to capture all relevant files, allocation rate data were not available for some IPOs, either due to nondisclosure or ambiguous formats.

Online Allocation as a Proxy for Uninformed Investor Behavior

In the Chinese A-share IPO system, institutional investors primarily participate through offline (网下) subscriptions, where they submit price quotes and are subject to quota-based allocations. In contrast, retail investors participate through online (网上) subscriptions, which

operate under a lottery-based system with no prepayment requirements. In cases of high demand, a clawback mechanism reallocates a portion of the offline quota to online subscribers. However, due to the design of the allocation mechanism and limited access to insider information, online subscribers are generally considered uninformed investors. Consistent with this study's hypotheses, particularly Rock's Adverse Selection Theory and Welch's Information Cascade Theory, this research focuses exclusively on online allocation rates, as they best represent the behavior and return experience of uninformed market participants.

5.3 Sample Size and Dataset

The initial sample consists of 1,538 IPOs across the Shanghai and Shenzhen Stock Exchanges between January 2019 and November 2024, as reported in official listing data. This includes 429 Main Board IPOs, 509 STAR Market IPOs, and 600 ChiNext IPOs. However, two primary challenges necessitate a reduction in sample size.

First, allocation rate data were missing for a significant portion of IPOs, especially on the STAR and Main Boards. Based on the crawler's output and manual verification, 131 Main Board IPOs, 261 STAR IPOs, and 187 ChiNext IPOs did not contain retrievable or reliable allocation rate information. This is primarily due to inconsistent disclosure standards, unstructured formatting, and varying document completeness across years and boards. Notably, allocation data were often omitted in earlier years or embedded in textual content without structured tables, making automated extraction infeasible and manual completion unreliable. Given that allocation rate is a central variable in both Hypothesis 1 and Hypothesis 2, IPOs lacking this information were excluded from the empirical sample.

Second, a small number of IPOs were removed due to incomplete return information (e.g., missing post-listing prices or IPO dates mismatched with trading calendars). However, these cases were minimal compared to allocation-based exclusions.

After filtering, the final analytical sample includes 1,038 IPOs: 298 from the Main Board, 248 from the STAR Market, and 413 from the ChiNext Market. The effective coverage rates are approximately 69.5%, 48.7%, and 68.8% for each board, respectively. These final ratios are acceptable by empirical standards, particularly given the data collection environment in emerging markets such as China. Importantly, the missing observations appear to be reasonably balanced across years and industries, with no apparent clustering by firm size, sector, or pricing mechanism. Therefore, the reduced sample is considered representative and suitable for statistical inference.

Table 1. Sample Construction Summary

Board	**Initial IPOs**	**Missing Allocation Rate**	**Final Sample**	**Coverage Rate**
Main Board	429	131	298	69.5%
STAR Market	509	261	248	48.7%
ChiNext Board	600	187	413	68.8%
Total	**1,538**	**579**	**959**	**62.4%**

5.4. Sample Overview and Descriptive Statistics

Table 2. Distribution of Final Sample by Year and Trading Board

Year of Issue	**Total num.**	**Board**		
		Main Board	STAR Market	ChiNext Board
2019	57	52	—	—
2020	282	110	90	82
2021	310	85	94	131
2022	168	40	34	94
2023	118	11 (Jan-Mar)	17	90

2024 (Jan-Nov)	29	—	13	16
Total	**959**	**298**	**248**	**413**
Proportion	100%	31.1%	25.9%	43.1%

Note: This table reports the annual distribution of IPOs included in the final analytical sample, disaggregated by board. The sample includes only IPOs with non-missing allocation rate and return data. The em dash (—) indicates outside the sample period. "11 (Jan-Mar)" reflects the final period before the official closure of Main Board IPOs under the registration-based system.

VI. Empirical Findings and Analysis: Hypothesis 1 - Test 1

6.1 Descriptive Statistics

To evaluate the core implication of Rock's (1986) adverse selection theory that uninformed investors are more likely to receive larger allocations in overpriced IPOs, we begin with a summary analysis of allocation rates across different levels of initial return. Table 3 presents descriptive statistics for the full sample as well as for IPOs classified by their market-adjusted five-day initial return (IR_j).

Table 3. Allocations in IPOs

	Mean	**Median**	**Std. Dev.**	**Min**	**Max**	**Obs.**
ALLOC	0.0359%	0.0267%	0.0652%	0.00014%	1.2831%	959
Allocation classified by initial return (underpricing)						
For $IR_j < 0$: $ALLOC_j$	0.0292%	0.0252%	0.0374%	0.00014%	0.6881%	545
For $IR_j > 0$: $ALLOC_j$	0.0448%	0.0302%	0.0888%	0.00015%	1.2831%	414

Note: This table reports summary statistics of allocation rates for IPOs in the final analytical sample. $ALLOC_j$ denotes the online allocation rate of IPO j, calculated as the ratio of shares allocated to shares requested in the retail tranche. The full sample includes 959 IPOs with complete data on allocation rate and market-adjusted initial return. The bottom panel splits the sample based on the sign of IR_j, the five-day market-adjusted initial return. Observations with $IR_j < 0$ are classified as overpriced IPOs, while those with $IR_j > 0$ are classified as underpriced. Allocation rates are reported in percentages.

In the full sample of 959 IPOs, the mean allocation rate is 0.0359%, with a median of 0.0267%. The distribution is strongly right-skewed, with a relatively large standard deviation of

0.0652% and a maximum value exceeding 1.28%. This implies that while most IPOs offer extremely limited retail allocations, a small number of listings provide relatively greater access to online investors.

When we split the sample by the sign of IR_j, the data reveal a less intuitive but still economically meaningful contrast. Surprisingly, underpriced IPOs ($IR_j > 0$) exhibit a higher mean allocation rate (0.0448%) than overpriced IPOs ($IR_j < 0$), whose mean is 0.0292%. The median allocation rates for the two groups are still quite close (0.0302% vs. 0.0252%), suggesting that the difference in means may be partially influenced by the long right tail among underpriced IPOs. The standard deviation for the underpriced group is also considerably higher (0.0888% vs. 0.0374%), indicating that a small number of IPOs with strong aftermarket performance provided unusually high access to retail subscribers.

These updated observations diverge from the prediction that uninformed investors are systematically exposed to adverse selection by receiving greater allocations in overpriced offerings. Instead, the higher mean and dispersion of allocation rates among underpriced IPOs raises questions about whether certain popular offerings disproportionately benefited from preferential treatment or concentrated retail demand. These findings reinforce the need for regression-based testing, which accounts for board-level heterogeneity and nonlinear patterns in the allocation-return relationship.

The absolute magnitude of allocation rates in China's A-share IPO market remains exceptionally low, consistently falling below 0.1% due to structural oversubscription and tight retail quota constraints. This limited access for retail investors reflects a distinctive allocation mechanism, which differs sharply from practices in many international IPO markets and continues to raise important concerns for investor equality and market transparency.

6.2 Baseline Regression Results

Table 4 reports the results from the baseline regression model examining the relationship between allocation rates ($ALLOC_j$) and market-adjusted initial returns (IR_j) across three distinct IPO boards: the Main Board, the STAR Market, and the ChiNext Board.

The regression model is estimated separately for each board as follows::

$$IR_j = \alpha + \beta \cdot ALLOC_j + \varepsilon_j \tag{4}$$

Table 4. Baseline Regression of Initial Return on Allocation Rate by Board

	Main Board	**STAR Market**	**ChiNext Board**
Intercept	0.34138***	-0.05595**	-0.17494***
	(0.02074)	(0.02771)	(0.03506)
$ALLOC_j$	-4.23529	32.12138	500.49971***
	(16.52139)	(66.53514)	(162.54676)
R^2	0.000	0.001	0.023
Obs.	298	248	413

***p < 0.01, **p < 0.05, *p < 0.1. Standard errors in parentheses.

The regression results reveal substantial heterogeneity across boards in both the magnitude and direction of the estimated coefficients.

In the Main Board, the coefficient on $ALLOC_j$ is negative (–4.235), aligning with the prediction of Rock's (1986) adverse selection theory. According to this model, uninformed investors are more likely to receive higher allocations in overpriced IPOs, leading to lower post-listing returns. However, the relationship lacks statistical significance, and the R^2 is effectively zero, indicating that $ALLOC_j$ explains very little of the variation in IR_j under the approval-based regime. Nevertheless, the negative sign offers directional consistency with theoretical expectations and provides a comparative baseline for the registration-based boards.

In the ChiNext Board, the coefficient on $ALLOC_j$ is positive (500.500) and statistically significant at the 1% level. This result directly contradicts the adverse selection hypothesis, suggesting that under the registration-based system, higher allocation rates are associated with stronger post-listing performance. Although the R^2 is modest (0.023), it is the highest among the three boards, indicating that *ALLOCj* holds some explanatory value within this segment.

For the STAR Market, the estimated coefficient (32.121) is positive but not statistically significant. Combined with the near-zero R^2 (0.001), this result implies the absence of any systematic relationship between $ALLOC_j$ and IR_j. Given that the STAR Market was established as a pilot for the registration-based system and represents an institutional experiment, the lack of stable allocation-return dynamics may reflect regulatory novelty and evolving market structures.

Taken together, these findings suggest that the explanatory power and directional validity of the adverse selection mechanism are highly sensitive to institutional context. The observed cross-board differences underscore the need to examine how regulatory structures shape the relationship between allocation and post-IPO performance, motivating further robustness checks and institutional discussion in the following sections.

6.3 Robustness Check: $IR1_j$ as Alternative Return Measure

As a robustness check, we replace the five-day initial return (IR_j) with the one-day return ($IR1_j$) to test the sensitivity of our baseline findings to the return measurement window. While five-day returns may capture short-term aftermarket behavior, they are also more susceptible to volatility, event spillovers, and early momentum effects. In contrast, $IR1_j$ reflects the immediate market response on the first trading day, which is often more tightly associated with initial pricing efficiency and allocation-related effects.

The regression model is estimated separately for each board as follows:

$$IR1_j = \alpha + \beta \cdot ALLOC_j + \varepsilon_j \tag{6}$$

Table 5. Regression of One-Day Initial Return on Allocation Rate by Board

	Main Board	**STAR Market**	**ChiNext Board**
Intercept	0.43242***	1.70587***	2.02463***
	(0.00337)	(0.22401)	(0.26551)
$ALLOC_j$	− 10.20675***	− 496.56887	− 3026.52147**
	(2.68710)	(537.96973)	(1230.88142)
R^2	0.046	0.003	0.014
Obs.	298	248	413

***p < 0.01, **p < 0.05, *p < 0.1. Standard errors in parentheses.

The results using $IR1_j$ reveal meaningful differences from the baseline model and offer new insights into the timing sensitivity of the allocation-return relationship.

In the Main Board, the coefficient on $ALLOC_j$ is –10.207 and statistically significant at the 1% level. This result strengthens the case for Rock's (1986) adverse selection theory, indicating that uninformed investors who receive larger allocations in this segment are more likely to incur losses on the first trading day. Notably, this finding contrasts with the baseline model, where the coefficient was directionally consistent but not statistically significant. The improvement in R^2 (0.046) further suggests that allocation rate explains a larger portion of immediate return variation compared to the five-day measure. These results reinforce the relevance of the adverse selection mechanism under the traditional approval-based regime.

In contrast, the ChiNext Board exhibits a negative and statistically significant coefficient (–3026.521), diverging sharply from the baseline model where the coefficient was positive and significant. This reversal implies that, under a one-day horizon, allocation rate is associated with lower returns, consistent with adverse selection rather than demand-based overperformance. While this seems to support the theoretical prediction, it also highlights the fragility of the

relationship in registration-based markets, where pricing outcomes and allocation processes may be influenced by additional institutional or behavioral factors.

For the STAR Market, the coefficient is negative (–496.569) but not statistically significant. This echoes the baseline result in suggesting the absence of a robust relationship between allocation rate and return in this board. Given that the STAR Market was launched as an institutional pilot with extensive policy involvement, the lack of a consistent allocation-return pattern may reflect evolving market behavior and regulatory ambiguity.

Taken together, the $IR1_j$-based regressions offer partial confirmation of the baseline patterns while raising important questions about how return measurement windows interact with institutional structures. The Main Board's results become stronger and more consistent with theoretical expectations, whereas ChiNext reveals a fragile and possibly nonlinear relationship. The STAR Market, by contrast, continues to exhibit no systematic relationship between allocation and return, reinforcing its characterization as a structurally fluid and policy-oriented experimental board. These findings further motivate a deeper institutional interpretation, explored in the discussion section that follows.

6.4 Robustness Check: Log-Transformed Allocation Rate

To further evaluate the robustness of our findings, we apply a log-transformation to the allocation rate ($ALLOC_j$) to account for its extreme skewness and bounded support. This transformation follows the functional form adopted in Amihud, Hauser, and Kirsh (2003), who define:

$$ALLOCT_j = log((ALLOC_j + a)/(1 + ALLOC_j + a)) \tag{7}$$

where a is a small constant (set to 0.5/N, with N being the sample size) used to accommodate cases where $ALLOC_j$ approaches zero or one. This approach is designed to improve distributional

properties and preserve comparability across IPOs with highly concentrated retail allocation ratios. Given that the distribution of $ALLOC_j$ in our sample is highly right-skewed and tightly clustered around extremely small values, the use of this transformed variable provides a meaningful robustness check that accounts for potential boundary distortions and linear misspecification.

The regression model is estimated separately for each board as follows:

$$IR_j = \alpha + \beta \cdot ALLOCT_j + \varepsilon_j \tag{8}$$

Table 6. Regression of Five-Day Initial Return on Log-Transformed Allocation Rate by Board

	Main Board	**STAR Market**	**ChiNext Board**
Intercept	0.26795	0.61544	4.65381***
	(0.44806)	(1.12886)	(1.54434)
$ALLOC_j$	− 0.01155	0.10914	0.72014***
	(0.07278)	(0.18682)	(0.23527)
R^2	0.000	0.001	0.022
Obs.	298	248	413

***p < 0.01, **p < 0.05, *p < 0.1. Standard errors in parentheses.

The log-transformed results yield conclusions that are broadly consistent with those from the baseline model. In the ChiNext Board, $ALLOCT_j$ is positively and significantly associated with IR_j, mirroring the result obtained with the untransformed variable and suggesting that the positive allocation–return relationship in this segment is not sensitive to functional form. The coefficients for the Main Board and STAR Market remain statistically insignificant and directionally similar to those found in the baseline model.

These results confirm that the observed relationship between allocation and post-IPO returns is not an artifact of extreme skewness or model mis-specification. Rather, the persistence of the key patterns across alternative functional forms strengthens the internal validity of our

main findings and reinforces the conclusion that cross-board differences in the allocation–return dynamic are structurally embedded rather than model-dependent.

6.5 Discussion

The empirical findings from the Main Board, STAR Market, and ChiNext Board highlight critical divergences in the allocation–return relationship. These differences cannot be adequately interpreted without a clear understanding of the institutional context and regulatory evolution of China's IPO markets.

Regulatory Foundations: Approval and Registration-Based Systems

The empirical findings from the Main Board, STAR Market, and ChiNext Board highlight critical divergences in the allocation–return relationship. These differences cannot be adequately interpreted without a clear understanding of the institutional context and regulatory evolution oThe Main Board, which operated under an approval-based regime throughout most of the sample period (2019 to 2023), exhibits a negative allocation–return relationship that aligns with the prediction of Rock (1986). His adverse selection framework assumes that uninformed investors are more likely to receive allocations in overpriced IPOs, resulting in systematically lower post-listing returns. In this regulatory setting, characterized by tight information asymmetry and limited pricing discretion, the model's assumptions are more likely to hold.

By contrast, the STAR Market and ChiNext Board adopted China's newly introduced registration-based system. The STAR Market implemented registration immediately upon its launch in mid-2019, while the ChiNext Board followed in August 2020. Although the registration model theoretically promotes market-based pricing and enhanced disclosure, its application in China remains bounded by administrative interventions. These include regulatory

guidance on valuation, clawback adjustments, and dual-track allocation schemes involving institutional bidding and retail subscription lotteries.

Unlike the United States, where registration-based IPOs operate with decentralized price discovery mechanisms such as bookbuilding and roadshows, China's version remains partially managed by regulators. Consequently, allocation outcomes do not purely reflect investor information or price-based selection. This institutional deviation helps explain why the allocation–return relationship is insignificant in the STAR Market and reversed in the ChiNext Board.f China's IPO markets.

Investor Access and the Changing Nature of "Uninformed" Participants

A core component of Rock (1986) is the assumption of a distinct class of uninformed investors who lack price-relevant information and are disproportionately allocated unattractive IPOs. However, investor access policies under China's IPO system differ substantially across boards, as summarized below.

Table 7. Retail Investor Access Requirements by Board

Board	Regulatory System	Access Requirements
Main Board	Approval	≥ RMB 10,000 in account value; no experience required
STAR Market	Registration	≥ RMB 500,000 in funds and ≥ 24 months trading experience
ChiNext Board	Registration	≥ RMB 100,000 in funds and ≥ 24 months trading experience

On the Main Board, online IPO subscriptions are effectively open to all investors, making it the only platform in the sample that plausibly includes a large uninformed retail base. However, the STAR and ChiNext boards require substantial capital and trading experience thresholds. These constraints systematically exclude unsophisticated investors and concentrate participation among financially literate, experienced individuals.

This filtered retail base resembles a "prestige retail" segment, yet it diverges meaningfully from Rock's original conception of the uninformed class. Their participation is more likely driven by observed demand, subscription momentum, and historical return patterns. As a result, higher allocation ratios may signal high-quality IPOs rather than reflect adverse selection, especially on the ChiNext Board where the allocation–return relationship is significantly positive.

Institutional Path Dependence and Board-Level Asymmetries

Beyond investor access, each board's institutional trajectory also contributes to the observed results. The following table compares key institutional features and empirical outcomes across the three boards.

Table 8. Institutional Evolution and Allocation-Return Outcomes

Board	Launch Date	Registration Adoption	Legacy System	Allocation-Return Pattern
Main Board	1990s	April 2023	Long-term approval	Negative, not statistically significant
ChiNext Board	2009	2020	Approval to Reg.	Positive, significant under IR5; reversed under IR1
STAR Market	2019	Immediate	New regulatory pilot	No consistent relationship

The ChiNext Board operated under an approval-based regime for over a decade before transitioning to registration. As a result, legacy allocation behaviors and investor heuristics likely persisted beyond the formal regulatory shift. These path-dependent dynamics may explain the seemingly contradictory result in which higher allocation correlates with stronger performance. Investors might interpret certain allocation configurations as positive signals, based on patterns established under the old system.

The STAR Market, by contrast, began as a clean-slate experiment. It was launched to support strategic industries and to test the viability of registration-based reform in China's capital

markets. The lack of significant allocation-return relationships in this segment may reflect ongoing regulatory adjustments, immature investor learning, or the absence of ingrained allocation-based inference mechanisms.

Summary

The divergence in allocation–return dynamics across China's IPO boards cannot be explained by model specification or sampling variation alone. These differences reflect structural features embedded in regulatory design, investor eligibility, and institutional development. The Main Board aligns with the assumptions of Rock (1986), whereas the STAR Market lacks any stable pattern. The ChiNext Board reveals a striking reversal of theoretical predictions, plausibly due to a combination of participant filtering, behavioral legacies, and transitional instability.

These findings underscore the limits of applying traditional adverse selection models without adjusting for institutional realities. Emerging markets undergoing phased reform, particularly in primary capital markets, may exhibit allocation behavior that structurally deviates from classical theory. Acknowledging these divergences is critical for interpreting IPO outcomes and for assessing how regulatory transitions reshape the incentives and behavior of market participants.

VII. Empirical Findings and Analysis: Hypothesis 1 - Test 2

To evaluate the aggregate investment outcomes of uninformed investors who participate uniformly across IPOs, this section calculates the allocation-weighted average initial return (*AWAIR*). This metric simulates the performance of a strategy in which an investor applies equal capital to each IPO and receives shares in proportion to their individual allocation rate ($ALLOC_j$).

The resulting *AWAIR* reflects the return that such a passive, non-discriminating investor would realize under actual allocation conditions.s:

$$AWAIR = \frac{\sum_{j=1}^{N} ALLOC_j \cdot IR_j}{\sum_{j=1}^{N} ALLOC_j} \tag{5}$$

7.1 Allocation-Weighted Average Initial Returns

Table 9. *AWAIR*5 Using IR_j (5-Day) by Board and Year

Year of Issue	**Aggregate**	**Board**		
		Main Board	STAR Market	ChiNext Board
2019	31.38%	31.38%	—	—
2020	15.89%	29.41%	-3.44%	16.99%
2021	14.90%	40.61%	-6.59%	-13.70%
2022	5.27%	28.41%	-4.13%	-9.10%
2023	-3.91%	29.20%	-2.85%	-10.35%
2024 (Jan-Nov)	-6.51%	—	1.80%	-19.21%
Cumulative	**13.54%**	**32.96%**	**-4.10%**	**-6.04%**

Note: The sample includes only IPOs with non-missing allocation rate and return data. The em dash (—) indicates outside the sample period for a given board.

The allocation-weighted 5-day returns exhibit notable divergence across boards. Over the full sample period, the Main Board delivers a consistently strong cumulative *AWAIR*5 of 32.96%, with annual values fluctuating narrowly between 28.41% (2022) and 40.61% (2021). In contrast, the STAR Market and ChiNext Board both record negative cumulative returns, at –4.10% and –6.04%, respectively. These negative values are persistent across years. For example, the STAR Market shows –3.44% (2020), –6.59% (2021), and –2.85% (2023). The ChiNext Board follows a similar pattern, declining from 16.99% (2020) to –19.21% (2024 Jan–Nov), with negative values in each of the last four years.

From an aggregate perspective, the full-market *AWAIR*5 across all IPOs and boards is 13.54%, calculated from 2019 through November 2024. While positive overall, this value

reflects substantial asymmetry across segments. Moreover, there is a clear downward trajectory in annual *AWAIR*5: from 31.38% (2019) to –6.51% (2024 Jan–Nov). This trend, evident even after adjusting for market movement, suggests a progressive decline in post-listing gains available to allocation-weighted participants.

Table 10. *AWAIR*1 Using $IR1_j$ (1-Day) by Board and Year

Year of Issue	**Aggregate**	**Board**		
		Main Board	STAR Market	ChiNext Board
2019	36.49%	36.49%	—	—
2020	111.62%	42.46%	186.34%	161.08%
2021	125.61%	42.59%	182.45%	234.45%
2022	39.87%	38.64%	38.56%	41.91%
2023	68.53%	43.80%	49.42%	79.95%
2024 (Jan-Nov)	179.72%	—	133.50%	250.27%
Cumulative	**91.66%**	**40.40%**	**147.44%**	**133.23%**

Note: The sample includes only IPOs with non-missing allocation rate and return data. The em dash (—) indicates outside the sample period for a given board.

As for *AWAIR*1 based on 1-day returns, overall performance appears substantially stronger. The cumulative *AWAIR*1 across all IPOs is 91.66%, with each board contributing positively. The Main Board records a relatively stable cumulative return of 40.40%, ranging from 36.49% (2019) to 43.80% (2023). In contrast, the STAR Market and ChiNext Board produce markedly higher outcomes: 147.44% and 133.23%, respectively. These elevated figures are driven in part by exceptionally strong results in 2020 and 2021, where STAR Market returns reach 186.34% and 182.45%, and ChiNext Board returns climb to 161.08% and 234.45%, respectively.

Unlike the *AWAIR*5, *AWAIR*1 does not exhibit a clear temporal decline. For example, the aggregate return for 2024 (Jan–Nov) rises to 179.72%, the highest in the series, with ChiNext reaching 250.27% and STAR at 133.50%. This suggests persistent strength in immediate post-

listing performance across segments, especially in boards operating under the registration-based system.

7.2 Discussion

The results reveal meaningful asymmetries across boards and return horizons, which map closely onto institutional structures and pricing mechanisms in China's IPO market.

The Main Board, which remained under an approval-based system throughout the sample period, exhibits allocation-weighted average returns that are both consistently positive and relatively stable. The cumulative *AWAIR*5 reaches 32.96%, while *AWAIR*1 is 40.40%. This stability suggests a controlled pricing regime characterized by persistent underpricing, in line with the historical incentive structure of approval-based IPOs. Issuers and underwriters, operating within tight regulatory constraints and risk-averse oversight, tend to set offering prices conservatively. As a result, retail investors subscribing indiscriminately across Main Board IPOs can capture a substantial portion of the underpricing premium, with limited post-listing reversal.

In contrast, both the STAR Market and ChiNext Board under registration-based system, show strikingly different patterns. While their *AWAIR*1 are exceptionally high, 147.44% for STAR and 133.23% for ChiNext, *AWAIR*5 turns sharply negative: –4.10% and –6.04%, respectively. This reversal highlights a common phenomenon across these two boards: extreme IPO pop followed by short-term correction.

Such behavior reflects the regulatory and structural changes introduced under the registration system. Pricing is no longer subject to pre-listing approval and valuation caps, leading to more aggressive initial pricing, but also greater volatility. The initial demand surge, which often amplified by offline bidding signals and media attention, pushes up prices on the first trading day. However, as price limits are lifted (especially during the initial five-day

window), valuations often correct downward, eroding gains for those holding beyond the first day.

The similarity between STAR and ChiNext is particularly instructive. Although STAR was designed as a new-market experiment and ChiNext as a transitional reform board, their return dynamics are nearly identical in both magnitude and direction. This suggests that it is the registration system itself, rather than board-specific factors, that drives this pattern. The institutional logic of the registration regime emphasizes disclosure over substantive review, which enables greater market-based price discovery but also increases exposure to short-term overreaction and reversal.

These findings further support the interpretation that underpricing severity is systematically higher in the approval-based Main Board, while the registration-based boards offer larger but less durable pricing distortions. For uninformed investors, this implies that strategies relying on indiscriminate subscription may remain viable under the legacy approval regime, but become considerably riskier in registration-based systems where post-listing corrections are the norm.

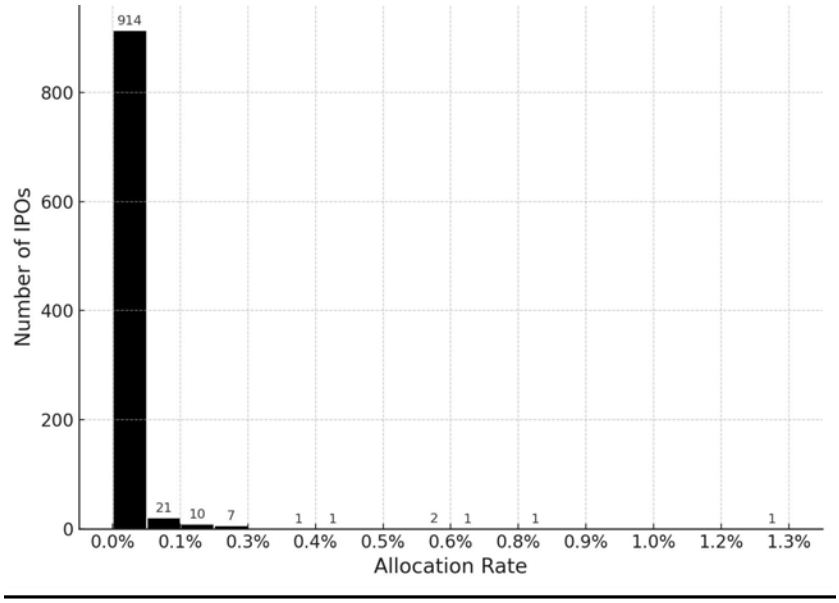
VIII. Empirical Findings and Analysis: Hypothesis 2

Retail investor behavior in China's IPO market is shaped by a widespread reliance on the IPO lottery strategy, in which participation decisions are made indiscriminately across new listings, with the expectation of guaranteed short-term gains. This behavioral regime provides fertile ground for testing Welch's (1992) information cascade theory. While the canonical form of this theory predicts a bimodal distribution of allocation outcomes, the structural characteristics of China's market suggest a distorted pattern—one in which cascading demand does not split,

but rather concentrates into a single extreme of persistent oversubscription. This section empirically evaluates whether such a compressed cascade regime is observable in practice.

8.1 Distributional Patterns of Allocation Rates

Figure 1. Distribution of Allocation Rates Across IPOs



As illustrated in Figure 1, the empirical distribution of online allocation rates ($ALLOC_j$) for 959 IPOs reveals a highly polarized structure. A total of 914 IPOs fall below the 0.05% threshold, and 21 more fall within the next bin (0.05%-0.10%). Only 24 IPOs exceed a 0.10% allocation rate, with just one IPO reaching above 1.0%. The concentration of observations in the lowest range of allocation rates indicates a dominant oversubscription effect across nearly the entire sample. There is a notable absence of mid- and high-range allocation activity, confirming the skewed nature of the distribution.

This outcome supports the adapted form of Welch's cascade hypothesis as proposed in Hypothesis 2. Rather than expecting a canonical bimodal structure, the hypothesis anticipates that China's IPO environment will produce a unidirectional and compressed cascade. The

institutional design of the IPO mechanism, including strict quota regimes, widespread investor participation, and ex-ante underpricing expectations, effectively prevents undersubscription from occurring. What remains is a structurally reinforced regime of oversubscription, where investor demand consistently converges toward the same behavioral equilibrium.

8.2 Discussion

The empirical distribution confirms the anticipated distortion of Welch's (1992) cascade mechanism. As hypothesized, investor decisions in China's IPO market are shaped by collective demand signals rather than firm-specific fundamentals. The observed oversubscription across nearly the entire sample aligns with the prediction that herding behavior would manifest through a unipolar, compressed outcome. Institutional signals, such as offline bidding strength, media coverage, and subscription momentum, appear to form a common demand anchor, guiding retail investor behavior in the absence of private information or pricing power.

The market structure further reinforces this convergence. Restricted IPO supply, persistent underpricing, and limited retail access prevent demand fragmentation and accelerate the formation of self-reinforcing cascades. The resulting system does not just allow for herding, it systematically generates it within a narrow band of behavioral outcomes.

This test of Hypothesis 2 confirms that while the original cascade structure is not preserved in form, the behavioral essence of Welch's theory holds when adjusted for institutional context. These findings complement the earlier evidence of adverse selection under Hypothesis 1. Together, the results indicate that information cascades and allocation-based asymmetries operate in tandem across China's IPO ecosystem, though their manifestations are structurally mediated. Adverse selection is more pronounced in boards where retail investor qualification is weak, while cascade-driven herding behavior is uniformly present across market segments.

IX. Conclusion

This study evaluates the relevance of two foundational theories, Rock's (1986) Adverse Selection Model and Welch's (1992) Information Cascade Theory, in the context of China's IPO market, where institutional segmentation, allocation mechanisms, and investor access are uniquely structured. By testing these frameworks empirically across board types and time periods, the analysis provides differentiated conclusions on how allocation and participation dynamics operate under regulatory transition.

Hypothesis 1 posits that uninformed investors systematically receive larger allocations in overpriced IPOs, leading to inferior post-listing performance. This prediction finds partial support. On the Main Board, which operated under an approval-based system during the study period, the allocation-return relationship is directionally negative but statistically insignificant, reflecting limited pricing discretion and moderate adverse selection. On the ChiNext Board, where investor eligibility filters are applied but behavioral legacies from the approval era persist, a statistically significant positive relationship is observed, suggesting a reversal of theoretical expectations. In the STAR Market, a newly introduced registration-based platform, no consistent pattern emerges. Regression outcomes and allocation-weighted average returns (*AWAIR*) both suggest that Rock's framework loses predictive power in markets with partial deregulation and filtered retail participation.

Hypothesis 2 examines whether investor demand exhibits herding behavior consistent with Welch's cascade mechanism. The results provide strong empirical confirmation, albeit in a compressed form. Across all IPOs, allocation rates cluster near the minimum threshold, with over 95% of offerings allocating less than 0.05% to online investors. This distribution aligns with a unidirectional cascade dynamic, where demand polarization manifests not as a bimodal

structure but as a persistent pattern of extreme oversubscription. Theoretical alignment is preserved in spirit: investor decisions appear to be driven less by firm-specific fundamentals and more by observed demand signals, including institutional bidding strength and subscription momentum.

Collectively, the two hypotheses converge toward a coherent narrative. In China's IPO market, adverse selection operates only under narrow institutional conditions, while herding behavior is widespread and structurally reinforced. Pricing inefficiencies emerge not uniformly, but contingent on regulatory design, investor filtering, and board-specific legacy effects. These findings imply that theories developed in frictionless, Western capital markets must be carefully adapted when applied to evolving systems with administrative overlays.

From an investor perspective, the study reveals that indiscriminate participation strategies, such as the widely practiced "IPO lottery" approach, remain viable only under specific regimes. The approval-based Main Board delivered modest and stable *AWAIR*s over both 1-day and 5-day horizons during the sample period. However, with its transition to a registration-based regime in April 2023, such return dynamics may no longer persist going forward. Registration-based boards exhibit volatile 1-day gains followed by rapid corrections. Investors who hold beyond the first day, particularly in STAR and ChiNext IPOs, face a material risk of return reversal. Thus, a one-size-fits-all ""IPO lottery" strategy is no longer uniformly effective, and outcome asymmetries are increasingly dependent on both timing and platform selection.

From a regulatory and policy standpoint, the findings point to structural tensions between participation fairness and price discovery. If retail investors are systematically excluded through quota compression and complex access rules, return outcomes become concentrated and disconnected from effort or information. Policymakers may consider enhancing transparency in

offline bidding results, publishing allocation statistics post-IPO, or introducing risk disclosures linked to price stabilization rules in early trading days. These measures could help mitigate information asymmetry and reduce behavioral overconcentration.

While this study provides clear evidence on allocation-based asymmetries and cascade dynamics in China's IPO system, it also presents opportunities for deeper exploration. Future research may incorporate longer-term return metrics, volatility-adjusted *AWAIR* measures, or external demand proxies such as media coverage, analyst ratings, or pre-IPO sentiment indicators. These extensions could enrich the understanding of behavioral feedback loops in capital allocation. In addition, comparative studies across international markets with different registration regimes would offer further insight into the institutional boundaries of classical allocation theories.

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