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Are Chinese REIT IPOs Unique? Initial Return Performance Evidence

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The underpricing of initial public offerings (IPOs) remains a significant puzzle in the finance literature. While international studies have documented the underpricing anomaly in real estate investment trust (REIT) IPOs, the Chinese REIT (C-REIT) market, now the second largest globally, has received limited attention regarding IPO initial returns. This paper addresses this gap by examining the initial price performance of C-REIT IPOs by using first-day returns and the capital asset pricing model (CAPM). The study further investigates differences in initial returns across various investor types, asset classes, and market development phases. Consistent with global trends, C-REIT IPOs exhibit underpricing, with a mean first-day return of 7.51%. Returns tend to decline after the first day, improving in only 30% of cases by Day 5. The market experienced significant underpricing from 2021 to 2022 but showed recovery in 2024. A regression analysis indicates that issuance size and time to listing are negatively correlated with underpricing, while subscription multiples and performance clauses are positively correlated. The results support the information asymmetry explanation for underpricing. Recommendations are provided for investors and regulators to enhance market efficiency and stability.

Keywords

Real estate investment trust, Underpricing, Initial public offering, Initial return performance

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1. Introduction

Real estate investment trusts (REITs) were first created by the United States (US) Congress in the 1960s to give retail investors access to commercial property investments. Their success in the US and Australia made them attractive globally. On June 21, 2021, nine publicly offered Chinese REITs (C-REITs) were floated on the Shanghai (SSE) and Shenzhen (SZSE) Stock Exchanges, which raised a total of 30 billion RMB (USD 4.7 billion). Since the National Development and Reform Commission (NDRC) encouraged regular issuance of REITs, the number of C-REITs has grown massively. C-REITs have gained popularity among institutional and retail investors. As of December 31, 2024, there are 58 C-REITs listed on the SSE and SZSE, with a combined total market value of 156.399 billion RMB (22.31 billion USD), of which 29 were newly issued in 2024, and the cumulative issuance size reached 166.033 billion RMB (23.69 billion USD).

REITs serve as important investment vehicles, mainly because they own substantial income-generating properties that provide stable rental and dividend income streams. This characteristic allows individual investors to easily access property investments without significant barriers (Brounen and Koning, 2012). In addition, REITs are known for their high yields, liquidity and transparency, thus making them an attractive option for investors (Newell et al., 2007). They are also considered to be defensive stocks that provide diversification benefits to investor portfolios (Glascock et al., 2004). By investing in REITs, individuals can avoid the challenges associated with direct property investment, such as illiquidity, high capital requirements and prohibitive transaction costs. These favorable characteristics have contributed to the growing popularity of REITs.

In April 2020, the China Securities Regulatory Commission (CSRC) and the National Development and Reform Commission (NDRC) jointly announced the inception of a new C-REIT pilot program, a nationwide capital market reform aimed at shifting the reliance of the local economy from residential real estate to a more balanced model with a focus on industrial and infrastructure projects. Infrastructure projects, such as transportation hubs, utility facilities, or green energy assets, are chosen over real estate sectors to align with national strategic priorities (e.g., new infrastructure development). Besides, infrastructure assets are selected due to their perceived stability of cash flows, which shows regulatory caution in testing a new financial instrument with lower-risk, state-backed assets. The approval process is also heavily regulated, as each project needs to go through the NDRC, CSRC and stock exchanges to meet the respective requirements and collect the different levels of endorsement and approval.

In terms of their structure, C-REITs have adopted a multi-tiered product structure of public fund + asset-backed securities (ABS) + project company to circumvent the restrictions on REIT issuance under existing Chinese laws and

regulations. This allows the transfer of ownership of key assets from local government to a listed and regulated platform and professionally managed by external fund managers. By taking advantage of the current legal framework, which allows public offering funds to invest in ABS, the introduction of C-REITs is the least costly and most in line with current market developments. Appendix i shows a typical C-REIT structure. The C-REIT system stipulates that sponsors need to transfer 100% of the assets into a special purpose vehicle held by the asset-backed security, which the mutual fund then holds. This effectively frees the assets from the control of the original equity holder.

In June 2021, the first batch of nine public REITs was listed, which marked the new era of C-REITs. In February 2024, a new regulation was issued to clarify the accounting treatment of C-REITs, which can be recognized as equity products by both the original owner and investor. The favorable regulation is attracting more long-term allocation funds to the market. According to the WIND database, the China Securities Index (CSI)[1] REIT total return index reached 973 points in 2024, which outperformed the broader asset class. As of the end of March 2025, there were 63 listed public REITs in the Chinese market. In terms of quantity, the REIT market in China has surpassed that of Hong Kong (11), Singapore (35), and Japan (59), and ranks second globally and first in Asia, just behind the US (169).

An initial public offering (IPO) marks the debut of a company on a stock exchange by issuing new shares to the public. Theoretically, the initial offer price should be set to reflect the underlying value of the company and, ideally, should be no less than the market estimate of the company value. However, international evidence on the initial returns of industrial companies reveals a financial anomaly (Loughran et al., 1994). Underpricing of IPOs is a common phenomenon in most equity markets. In the realm of REITs, Buttimer et al. (2005) who examine US REITs show that REIT IPOs perform differently from other stocks due to the high degree of transparency. This unique feature means that REIT IPOs are a good means of testing the pricing theories.

C-REITs differ from other REITs in several key respects, including ownership rules, asset and investment restrictions, gearing limits, and tax treatment (Appendix ii). Due to the different fund characteristics, there are two main investors: sponsor related investors and public investors who include institutional and retail investors. It should also be noted that while REITs listed in Mainland China have onshore properties as their underlying assets, REITs listed in international markets like the US and Europe cover global properties. Therefore, the Chinese REIT market can be a laboratory for testing the validity of research findings from the more mature REIT markets.

[1] A key index brand launched by China Securities Index Co., Ltd., a leading financial market index provider jointly funded by the Shanghai Stock Exchange and Shenzhen Stock Exchange and founded in August 2005.

However, previous studies on C-REITs have mostly focused on the institutional framework and international comparisons. The initial return of C-REIT IPOs has received limited attention in the existing literature. To address this gap, this paper extends current studies on C-REITs and examines the initial price performance of C-REIT IPOs. The findings provide valuable insights for companies that are considering going public as REITs by revealing the general price trends of C-REIT IPOs. In addition, the study provides a better understanding of initial returns for retail investors who are interested in diversifying their portfolios through REIT investments. Overall, prospective investors will gain a better perspective of REIT IPO pricing.

There are two objectives of this paper. First, the study examines the initial-day return pattern of C-REITs in comparison to that of REITs in other jurisdictions. Second, this paper aims to identify and examine the factors that contribute to the observed initial price performance by using ordinary least squares (OLS). Fifty-eight C-REITs issued at the end of 2024 are included in this paper to examine their initial return performance. In this paper, we examine the first-day return analysis and the market-adjusted first-day return. We use OLS regression to identify the key variables that influence the initial day return of C-REIT IPOs.

This paper is structured as follows. Section 2 reviews the existing literature on the initial price performance of IPOs, with a focus on the REIT IPO market. Section 3 outlines the data and methodology used in this study. Section 4 presents the empirical findings and provides interpretations of the results. Section 5 summarizes the main findings and provides recommendations for future research.

2. Literature Review

2.1 Initial Return Performance of REITs

Previous research on the initial return performance of REITs has mainly focused on those listed in the US. Wang et al. (1992) find that the 87 US REIT IPOs issued between 1970 and 1988 were significantly overpriced, with an average initial return of -2.82%. However, Ling and Ryngaert (1997) find that the 85 US REIT IPOs issued between 1991 and 1994 were significantly underpriced, with an average initial return of 3.6%. Similarly, Hartzell et al. (2005) examine 189 REIT IPOs issued between 1980 and 1998 and find an insignificant first-day return of 0.27%. In contrast, Buttimer et al. (2005) find a significant first-day return of 2.47% for the 163 REIT IPOs issued between 1980 and 2001. It appears that the results of these studies differ depending on the time periods and the criteria used to select the samples. Empirical research suggests that the US REIT market has experienced a shift in the first-day return of REIT IPOs, from overpricing in the 1980s to underpricing in the 1990s, and overpricing again in the late 2000s (Ling and Ryngaert, 1997; Chen and Lu, 2006; Bairagi and Dimovski, 2011; Ritter, 2012).

Similar to the US REITs after the 1990s, Dimovski and Brooks (2006) examine 37 REIT IPOs listed in Australia from 1994 to 1999 and witness a positive return of 1.2% for subscribers. In a subsequent study, Dimovski (2010) examines 45 REIT IPOs from 2002 to 2008 and finds that underpricing is increased to 3.37% after Australian REITs (A-REITS) adjust their internal management structure. In Canada, Kryzanowski and Tcherednitchenko (2007) examine 24 equity REIT IPOs and conclude that Canadian equity REIT IPOs are priced correctly.

Given the different findings globally, Chan et al. (2013) systematically examine the international REIT market by analyzing 370 IPOs issued in 14 jurisdictions (seven in Asia, four in Europe and two in North America) over the period of 1996-2010 and confirm that the pattern of low first-day returns applies universally to both US and non-US REIT IPOs. This may stem from the fund-like structure of REITs and the real estate that they hold. From this, we can conclude that the study of international REIT markets leads to different results in the stock markets with low first-day returns. Indeed, REITs are structurally different from other stocks, which make them an ideal sample for testing.

2.2 Performance of Initial Returns on Chinese Equity Securities

The underpricing of IPOs has distinct characteristics in the Chinese stock market. Chen et al. (2004) investigate 701 A-share IPOS and 117 B-share IPOs that were listed between 1992 and 1997. They find that the median first-day return on A-share IPOs is 145%, while that of B-share IPOs is just 10%. Yu and Tse (2006) review studies on the underpricing of Chinese IPOs and find that the mean initial returns range from 127% to 949%, which is significantly higher than the average 60% in other emerging markets (Jenkinson and Ljungqvist, 2001).

In the context of C-REITs, Piao and Mei (2023) examine the financial performance of the first batch of nine C-REITs that went public in Mainland China on June 21, 2021. They find that C-REITs outperform quasi-REITs and infrastructure ABSs, as well as market proxies. These REITs, which are small-cap companies, exhibited the highest Sharpe ratios and greater diversification potential compared to ABS. However, there are still cases of overpricing in C-REIT IPO performance. For example, HJSC REIT (508019.SH), issued on October 13, 2022, declined by -1.98% on the first day. Another example is CIMB Consumer REIT (508027.SH), issued on March 23, 2023, which declined by -1.54% on the first day. In this way, the diverse market performance of C-REIT IPOs offers us a chance to gain better insights into the determinants for either underpricing or overpricing.

2.3 Theoretical Explanation for IPO Underpricing

Ibbotson (1975) is the first to observe that IPOs tend to have significantly positive initial returns, which he calls the IPO mystery. In general, the reasons

for the IPO puzzle worldwide can be summarized as information asymmetry among various parties, including informed and uninformed investors, issuers and underwriters, etc.

Baron and Holmstrom (1980) identify information asymmetry between underwriters and issuers, where underwriters have superior information compared to issuers. To address this moral hazard, they argue that underpricing is essential. Ling and Ryngaert (1997) further explain that underwriters have better knowledge and information about market demand than issuers. Therefore, some underwriters persistently underprice IPOs more than others due to their ability to control the market, which exacerbates information asymmetry (Hoberg, 2003).

Rock (1986) highlights another form of information asymmetry between informed and uninformed investors. Based on this theory, IPOs are deliberately underpriced to attract uninformed investors, for example, retail investors. The winner's curse explanation is supported by Beatty and Ritter (1986), who argue that underwriters underprice IPOs to compensate for potential losses due to ex-ante uncertainty. Thus, underpricing can be seen as a manifestation of inefficiency (Saunders, 1990).

Moreover, Welch (1989) points out that there is information asymmetry between issuers and investors, with issuers holding more information. Issuers are better informed about the present value and risk of its future cash flows than investors or underwriters. High-quality issuers often signal their superior quality by underpricing their IPOs and retaining a portion of the shares, which can later be rewarded through seasoned equity offerings. Underpricing may thus become a means of convincing potential buyers of the true value of the firm as a signal.

From the Chinese perspective, researchers have generated a vast body of theoretical literature on IPO performance in the context of the Chinese stock market, which can be categorized into three factors that influence performance: asymmetric information, institutional explanation, and control structure.

Asymmetric information is a key factor that influences IPO performance. Mok and Hui (1998) highlight that emerging markets, such as China, exhibit more information asymmetry compared to the developed markets, thus leading to inaccurate IPO pricing. This issue is further exacerbated in China due to non-market factors that affect IPO procedures, such as differences in information transparency and governance structures between state-owned and private companies.

Institutional factors also play a significant role. Government policies and regulations, such as approval procedures and quota systems, can directly or indirectly impact IPO pricing. For example, the NDRC reviews infrastructure

assets for C-REITs and issues recommendations to the China Securities Regulatory Commission (CSRC), thus influencing IPO outcomes.

Ownership and control structures add another layer of complexity. Chan et al. (2001) find no significant difference in first-day returns between real estate and non-real estate companies in Hong Kong, thus suggesting that property ownership alone does not explain low REIT IPO returns. Chan et al. (2013) further show that externally managed REITs, which are common in Asia-Pacific countries, typically have lower first-day returns than internally managed ones due to increased valuation uncertainty.

In summary, the factors that influence the IPO performance in the Chinese market can be broadly categorized under the umbrella of information asymmetry. While most studies have predominantly focused on explaining the significantly positive returns witnessed on the first day of trading for IPOs, asymmetric information theories often fall short of accounting for negative first-day returns. To address this gap, Chan et al. (2009) propose a game-theoretic model to analyze the pricing strategies of REIT IPOs. They argue that if the underlying assets of a REIT can be sold at low cost in the asset market even if the IPO fails, there is no need for issuers to underprice the offering to entice investors. This highlights the importance of screening the type of underlying asset.

The existing IPO literature often attributes underpricing to information asymmetry. Therefore, we hypothesize that structural differences, especially in terms of asset selection, could indeed drive post-IPO underpricing or overpricing. For example, emphasis on low-volatility infrastructure assets might lead to initial underpricing as investors price with uncertainty towards novel asset classes, while strict regulatory oversight could mitigate excessive overpricing.

3. Data and Methodology

3.1 Sample

To analyze the initial return performance of C-REIT IPOs, we adopt a sample of 58 REIT IPOs listed on the SSE and SZSE from June 21, 2021 to December 31, 2024. While the sample size is relatively small compared to traditional IPO studies, it is comparable to similar research on REITs, such as that by Dimovski and Brooks (2006a), Dimovski (2010), and Kryzanowski and Tcherednitchenko (2007). Table 1 summarizes the sample C-REITs according to listing date in ascending order. The classification of sectors is based on the major property type of the assets under management according to the regulations provided by the CSRC.

The data originate from several sources. The names, listing dates and details of C-REITs are compiled from the SSE and SZSE websites. The closing price of the first trading day of C-REITs, 10-year Treasury Bond yield, Shanghai Stock Exchange A-share composite Index (SHSEA) and details from the underwriters are collected from the WIND database. All IPO prospectuses and annual reports are obtained from individual C-REIT websites.

Table 1 C-REITs Listed on SSE and SZSE: 2021 to 2024

REIT	Listing date	Asset class	Asset attribute
180101.SZ	2021-06-21	Industrial park	Property rights
180201.SZ	2021-06-21	Toll road	Management rights
180301.SZ	2021-06-21	Port warehousing and logistics	Property rights
180801.SZ	2021-06-21	Waste treatment and biomass power generation	Management rights
508000.SH	2021-06-21	Industrial park	Property rights
508001.SH	2021-06-21	Toll road	Management rights
508006.SH	2021-06-21	Sewage treatment	Management rights
508027.SH	2021-06-21	Industrial park	Property rights
508056.SH	2021-06-21	Port warehousing and logistics	Property rights
180202.SZ	2021-12-14	Toll road	Management rights
508099.SH	2021-12-17	Industrial park	Property rights
508018.SH	2022-04-28	Toll road	Management rights
508008.SH	2022-07-08	Toll road	Management rights
180401.SZ	2022-07-26	Natural gas power generation	Property rights
180501.SZ	2022-08-31	Affordable rental housing	Property rights
508058.SH	2022-08-31	Affordable rental housing	Property rights
508068.SH	2022-08-31	Affordable rental housing	Property rights
180102.SZ	2022-10-10	Industrial park	Property rights
508021.SH	2022-10-13	Industrial park	Property rights
508088.SH	2022-10-14	Industrial park	Property rights
508066.SH	2022-11-15	Toll road	Management rights
508009.SH	2022-11-22	Toll road	Management rights
508077.SH	2022-12-09	Affordable rental housing	Property rights
180103.SZ	2022-12-27	Industrial park	Property rights
508098.SH	2023-02-08	Port warehousing and logistics	Property rights
508028.SH	2023-03-29	Green energy	Management rights
508096.SH	2023-03-29	Green energy	Property rights

(*Continued…*)

(Table 1 Continued)

REIT	Listing date	Asset class	Asset attribute
508019.SH	2023-06-30	Industrial park	Property rights
508007.SH	2023-10-27	Toll road	Management rights
508031.SH	2024-01-12	Affordable rental housing	Property rights
508011.SH	2024-03-12	Retail facilities	Property rights
508017.SH	2024-03-12	Retail facilities	Property rights
180601.SZ	2024-03-14	Retail facilities	Management rights
508026.SH	2024-03-28	Green energy	Management rights
508033.SH	2024-03-29	Toll road	Management rights
180602.SZ	2024-04-30	Retail facilities	Property rights
508086.SH	2024-06-28	Toll road	Management rights
508089.SH	2024-07-02	Green energy	Management rights
180302.SZ	2024-07-09	Logistics	Property rights
508015.SH	2024-07-23	Power station	Management rights
508002.SH	2024-08-16	Retail facilities	Management rights
508005.SH	2024-08-28	Retail facilities	Management rights
508022.SH	2024-09-19	Industrial park	Property rights
180603.SZ	2024-09-20	Retail facilities	Management rights
180105.SZ	2024-09-23	Industrial park	Property rights
180502.SZ	2024-10-23	Affordable rental housing	Property rights
180303.SZ	2024-10-29	Logistics	Management rights
508069.SH	2024-11-01	Toll road	Management rights
508003.SH	2024-11-05	Industrial park	Property rights
180701.SZ	2024-11-08	Water conservancy facilities	Management rights
180203.SZ	2024-11-21	Toll road	Management rights
508097.SH	2024-12-03	Industrial park	Property rights
180402.SZ	2024-12-10	Wind power generation	Management rights
508010.SH	2024-12-11	Industrial park	Property rights
180106.SZ	2024-12-19	Industrial park	Property rights
508048.SH	2024-12-25	Port warehousing and logistics	Property rights
508036.SH	2024-12-26	Toll road	Management rights
508012.SH	2024-12-31	Industrial park	Management rights

3.2 Methodology

Three methods are employed to examine the initial return performance of C-REITs. First, we categorize the investors into two types including strategic and public investors. Secondly, we employ the first-day, first five-day, first ten-day and first thirty-day returns to examine the existence of mispricing of C-REIT IPOs among public investors. Thirdly, we adopt the capital asset pricing model (CAPM) to examine the significance of mispricing in the short-run. Finally, we

use an OLS regression model to investigate the factors that influence the initial performance of C-REITs.

The first-day return has been widely used to examine the initial performance of C- REITs (Ling and Ryngaert, 1997; Shelor and Anderson, 1998; Bairagi and Dimovski, 2011). For each REIT, the IPO offer price is defined as the subscription price and retrieved from the WIND database. The closing price of the first trading day is also sourced from the WIND database. The first-day return is calculated as follows:

$$\text{First day return} = \frac{\text{First day closing price} - \text{IPO offer price}}{\text{IPO offer price}} \quad (1)$$

In Equation (1), a positive first-day return denotes that the REIT IPO is underpriced whereas a negative first-day return denotes that the REIT IPO is overpriced. We also examine the first-five day, first-ten day and first thirty-day returns with Equation (1) as well.

According to regulations, public subscription includes both offline subscriptions for institutional investors and online subscriptions for retail investors. For institutional investors, trading of shares in the first three trading days after listing is limited to 20% of the allocated shares, with full circulation starting from the fourth day. Considering that funds raised usually require about one month from subscription to listing, we have compiled public subscription multiples for REITs since the first batch in 2021 and calculated the annualized return from public subscription, assuming that all shares are sold at the closing price on the fifth trading day, excluding subscription-related fees and assuming a 30-day capital tie-up.

Moreover, a sectorial comparison is carried out as Ling and Ryngart (1997) argue that REIT IPO performance is linked to property type. C-REITs are categorized as retail, industrial, rental housing, logistics and infrastructure-related to compare the first-day return across sectors. We also examine the difference in the first-day performance of different asset attributes. The average initial returns of all sectors and attributes are calculated respectively to examine whether the property type and attribute affect the first-day return of C-REITs. We also examine the first-day performance relative to the different market stages of C-REITs.

As noted by Cheng and Roulac (2007), the CAPM has been extensively used to study asset pricing and return predictability. Therefore, we adopt the CAPM to examine the mispricing of C-REIT IPOs. The CAPM can quantify a fair expected return for an IPO firm based on its systematic risk. This fair return can be compared to the implied return from the IPO offer price to assess pricing efficiency. This is expressed mathematically by using:

$$E(R_{REIT}) = R_f + \beta[E(R_m) - R_f] + \alpha \quad (2)$$

where $E(R_{REIT})$ denotes the expected rate of return of the C-REIT. R_f denotes the risk-free rate of return and the 10-year treasury bond yield is employed. R_m denotes the rate of return of market portfolio. Therefore, daily change of the SHSEA-share composite index is used as a proxy of R_m. Based on Kryzanowski and Tcherednitchenko (2007), we choose the period from IPO date to 60 days after IPO to demonstrate the subsequent short-term returns of REITs after their IPO. The null hypothesis is $H_{0:}$ the returns of C-REIT IPOs for periods of up to 60 days post- issuance are not significantly different from zero (there is no mispricing). The beta coefficient measures the systematic risk of investing in C-REITs. The alpha coefficient measures the extent to which the return exceeds or falls below the return predicted by the CAPM. A positive α denotes overpricing and negative α denotes underpricing. By quantifying α, our study provides a more accurate measure of C-REIT pricing inefficiencies, thus enhancing the rigor of our analysis on C-REIT IPO mispricing.

OLS is a popular method used in previous studies to explain variations in IPO first day returns (Ling and Ryngaert, 1997; Loughran and Ritter, 2004; Dimovski, 2010; Bairagi and Dimovski, 2011). The regression model with the first-day return (RETURN) as the dependent variable is as follows:`

$$\begin{aligned} RETURN = {} & \beta_0 + \beta_1 scale + \beta_2 SOE + \beta_3 strategy \\ & + \beta_4 publicsubscriptionmultiple + \beta_5 DIVIDEND \\ & + \beta_6 timetolist \\ & + \beta_7 GuaranteedPerformanceClause + \beta_8 type \\ & + \varepsilon \end{aligned} \tag{3}$$

The independent variables in Equation (3) are defined in Table 2. β is the slope parameter to be determined and α is the intercept parameter. ε is assumed N (0, σ^2). The issuance size variable (scale) has been frequently used as proxy of the ex-ante uncertainty of investors and is expected to be negatively related to underpricing (Beatty and Ritter, 1986; Ibbotson et al., 1994; Dimovski and Brooks, 2006a).

The state-owned enterprise (SOE) variable represents whether the original equity holder is state-owned, as this is a specific Chinese characteristic. One view holds that state-owned management could be regarded as a safeguard, which is positively correlated to the underpricing of C-REIT IPOs. Another view holds that the quasi-public nature of these assets would increase the information asymmetry between the asset holder and market investor.

The percentage of shares retained by original equity holders and strategic investors (sponsor) is investigated to understand whether a higher percentage of shares retained by related parties creates more underpricing. One view holds that the number of IPO shares retained by the sponsor is quality certification to the investors (Barry et al., 1990). Especially for Asian REITs that have a potential post-IPO moral hazard issue, sponsors have to underprice the IPOs to

signal their quality. In this way, it is expected to have a positive correlation with the underpricing of C-REIT IPOs.

Table 2 Independent Variables Examined in Univariate Analyses and OLS Regression

Variable	Predicted Sign	Description
scale	-	Natural logarithm of issuance scale (in RMB).
SOE	?	Equals 1 if the original equity holder is state-owned, and 0 otherwise.
sponsor	+	The percentage of shares retained by the sponsors.
Publicsubscription multiple	-	The subscription multiple of public investors.
DIVIDEND	+	The next full year forecasted dividend yield stated in IPO prospectus.
timetolist	-	Number of days between registration of IPO prospectus and actual listing.
Guaranteed PerformanceClause	+	Equals 1 if there are mechanisms at issuance set up to compensate for shortfalls in the underlying asset relative to forecasted figures.
type	?	A binary dummy variable (0 or 1) that has a value of 1 if it is issued of specific asset type and 0 otherwise.

The public subscription multiple variable represents the popularity of specific C-REITs among investors and is expected to be positively related to underpricing.

The DIVIDEND variable is the dividend yield forecasted for the coming year in the IPO prospectus and an important signaling device as 90% of the income of a REIT is distributed. Hence, the DIVIDEND variable signals the risk levels of new issues (Dimovski and Brooks, 2006a) and that riskier IPOs are expected to be more underpriced.

The time to list variable records the time lag between the registration of the IPO prospectus and the day of listing. It is included in an empirical study by Lee et al. (1996) on industrial IPOs in Australia which shows that more underpriced IPOs are subscribed more quickly.

The guaranteed performance clause variable examines whether there are mechanisms like performance compensation to offset shortfalls in distributable amounts of underlying assets versus forecasts at issuance, which can be seen as

an indirect form of safeguarding. Therefore, guaranteed performance clause is expected to be positively correlated with the underpricing of C-REIT IPOs.

The type variable measures the different types of assets. Ling and Ryngaert (1997) and Dimovski and Brooks (2006a) argue that more frequent IPO issuance in a particular property type increases the knowledge of investors about that property type, thereby decreasing the valuation uncertainty. A study on Asia REITs by Wong et al. (2013) also finds that underpricing decreases with increasing familiarity. Following this argument, these two dummy variables should be negatively correlated with underpricing.

4. Result

4.1 Initial Return Performance for Strategic Holders

C-REITs vary in investment logic due to different investor fund characteristics, which leads to distinct entry timing and strategies. Mainly, there are two types of investors. First, there are investors determined by the sponsor before issuance, including the original equity holders and other strategic investors. Shares held by the original equity holders have a lock-up period for 3-5 years while shares held by other strategic investors have a lock-up period for 1-2 years. Introducing strategic investors provides the fund with stable long-term capital and aligns the interests of the original equity holders with those of the investors. This ensures continuous operational and management support, so that C-REIT listings do not become a one-off asset sale. Typical strategic investors include insurance companies, state-owned investment firms, proprietary accounts of brokers, public funds, asset management of brokers, and trust plans. Practically, strategic investment demands high standards for institution size, nature, and resource acquisition ability.

From an investment logic perspective, participating as a strategic investor is akin to holding a one- to two-year call option on the underlying asset, which allows for timed exits after the lock-up period. Thus, strategic investment funds focus on the medium- to long-term fundamentals of the underlying asset, with reasonable pre-listing valuations and stable post-listing operations. If the underlying valuation of an asset is reasonable and operations remain stable, the C-REIT will not break its issuance price.

As of the end of February 2025, thirty REIT projects had been listed for over a year, with nine trading below its issuance price, a break-even rate of 30%, as shown in Table 3. Among these nine projects, five are toll road assets, two are industrial parks, one is a logistics facility, and one is affordable rental housing. Among the nine projects, only the 508077.SH REIT would benefit from falling interest rates, thus allowing strategic investors to extend their holding period and realize option value as the price of the REIT rose above the issuance price.

Toll road assets were among the earliest infrastructure classes included in the C-REIT pilot program, partly due to their perceived low-volatility characteristics. They were initially viewed as stable cash flow generators supported by long-term usage demand, in line with the cautious preference of regulators for lower-risk, state-backed assets in testing a new financial instrument. This asset selection logic reflects a structural feature of early C-REITs, which prioritized assets with perceived stability to build market confidence, even if their actual risk profiles are more nuanced. However, this perceived stability clashed with reality, thus exposing a critical flaw in how these assets were initially valued. Toll road cash flows are highly sensitive to macroeconomic cycles and external shocks. Economic downturns reduce commercial and private travel demand, while the mobility restrictions related to the COVID-19 pandemic directly reduced traffic volume. Therefore, toll road assets are underpriced in the initial IPO valuation due to over-optimism about their "low-volatility". This aligns with the hypothesis that uncertainty in valuing novel asset classes leads to mispricing. As investors and issuers may have overestimated stability and underestimated cyclical vulnerability during the initial listing, this would result in inflated issuance prices that later corrected downward as the fundamentals weakened.

In contrast, other asset classes in the underperforming group (e.g., industrial parks, logistics facilities) are less directly tied to short-term mobility fluctuations, and affordable rental housing benefits from more policy support towards demand for stability of rentals.

Table 3 REIT Trading below Issuance Price after One Year of Listing

REIT	Listing Date	Property type
180201.SZ	2021-06-21	Toll road
508018.SH	2022-04-28	Toll road
508008.SH	2022-07-08	Toll road
508066.SH	2022-11-15	Toll road
508009.SH	2022-11-22	Toll road
508077.SH	2022-12-09	Affordable rental housing
180103.SZ	2022-12-27	Industrial park
508098.SH	2023-02-08	Logistics
508019.SH	2023-06-30	Industrial park

4.2 Initial Performance for Public Holders

The second type of investors consists of public investors, which include both offline subscriptions for institutional investors and online subscriptions for retail investors. The underlying logic of new share subscription for public investors is essentially the same as that of other assets like stocks as an arbitrage

strategy. Table 4 reports the summary statistics of the first-day and short-term (5 to 30 days) performance of 58 C-REIT IPOs. The mean first-day return stands at 7.95%, which is statistically significant (t-statistic = 5.80). This indicates that C-REIT IPOs are underpriced, a phenomenon consistent with findings in studies on US REITs (Ling and Ryngaert, 1997), Canadian REITs (Londerville, 2002) and A-REITs (Dimovski and Brooks, 2006a). On average, public investors enjoy a positive return of 7.95% of their subscriptions on the first-day of listing. Notably, the first five-day, ten-day, and thirty-day returns remain positive and statistically significant, with the first-thirty day return slightly exceeding the first-day return. However, this aggregate stability masks significant heterogeneity.

Approximately 56% of C-REITs (33 of 58) exhibit higher returns in the 30-day window than on the first-day (marked by # in Table 4). For example, 508099.SH (listed December 2021) shows a first-day return of 30.00% but a thirty-day return of 46.22%, thus reflecting continued investor confidence. Similarly, 180401.SZ (listed July 2022) increases from 21.52% on Day 1 to 37.94% by Day 30, thus indicating strong post-IPO demand. Conversely, 44% of the C-REITs have thirty-day returns that fall below their first-day gains. For instance, 180101.SZ (June 2021) drops from a first-day return of 14.72% to 1.34% by Day 30, and 508077.SH (December 2022) falls from 16.84% on Day 1 to 6.99% by Day 30, thus signaling a correction of initial overreaction.

Following an influential study by Chan et al. (2013) on REIT IPOs, this paper also examines whether the initial-day return would be offset by performance subsequent to the IPO. From Table 4, it is clear that the return from REIT subscription is mainly realized on the first-day, and a longer holding period does not improve subscription returns but increases capital tie-up costs. Considering that funds raised from the public usually take about one month from subscription to listing, we assume that the capital tie-up period is 30 days. Based on the subscription multiples, we calculate the annual return from selling all shares at the closing price on the fifth trading day for public investors. From Table 4, we can see that the average annual return is -0.74%, which shows a clear reversal of short-term gains and the median annual return is 1%. From the perspective of returns, this is not particularly attractive. This long-term erosion aligns with our earlier hypothesis that short-term underpricing often does not persist as fundamentals dominate. In this case, the high first-day returns (often linked to oversubscription) are weakly correlated to long-term performance. C-REITs with first-day returns ≥30% (e.g., 508058.SH and 508099.SH) show strong first thirty-day returns (27.58% and 46.22%, respectively) but mixed annual returns (3% and 10%, respectively), thus indicating that sentiment-driven initial gains fade without fundamental support. Conversely, C-REITs with modest first-day returns (<5%) and strong operational performance (e.g., 508026.SH) sustain positive annual returns, which underscores the primacy of cash flow stability over short-term demand.

Table 4 C-REIT IPO Performance: First Day, First Five-Day, First Ten-Day, First Thirty-Day and First Year Returns

REIT	Listing Date	First-day Return	First Five-day Return	First Ten-day Return	First Thirty-day Return	Annual Return
180101.SZ	2021-06-21	14.72%	4.20%	3.68%	1.34%	1%
180201.SZ	2021-06-21	0.68%	0.19%	-0.49%+	-3.73%+	0%
180301.SZ	2021-06-21	2.91%	1.04%	0.43%	-0.43%+	1%
180801.SZ	2021-06-21	9.95%	5.22%	4.91%	4.94%	1%
508000.SH	2021-06-21	5.89%	2.04%	2.21%	0.50%	1%
508001.SH	2021-06-21	4.97%	1.08%	2.26%	1.93%	0%
508006.SH	2021-06-21	4.95%	4.95%	5.14%#	4.92%	1%
508027.SH	2021-06-21	0.70%	0.18%	0.18%	-1.19%+	0%
508056.SH	2021-06-21	2.11%	0.49%	0.15%	-0.03%+	1%
180202.SZ	2021-12-14	22.76%	28.87%#	29.55%#	28.96%#	8%
508099.SH	2021-12-17	30.00%	40.31%#	37.69%#	46.22%#	10%
508018.SH	2022-04-28	2.20%	1.63%	1.89%	1.23%	0%
508008.SH	2022-07-08	0.28%	0.15%	0.29%#	2.04%#	0%
180401.SZ	2022-07-26	21.52%	26.42%#	31.21%#	37.94%#	4%
180501.SZ	2022-08-31	29.99%	37.04%#	37.60%#	31.56%#	2%
508058.SH	2022-08-31	30.00%	30.31%#	32.85%#	27.58%	3%
508068.SH	2022-08-31	30.00%	34.34%#	35.14%#	31.12%#	3%
180102.SZ	2022-10-10	30.00%	22.05%	20.46%	19.00%	1%
508021.SH	2022-10-13	30.00%	36.17%#	34.61%#	34.93%#	1%
508088.SH	2022-10-14	27.15%	34.14%#	33.57%#	32.78%#	1%
508066.SH	2022-11-15	0.05%	-1.07%+	-0.08%+	0.80%#	0%
508009.SH	2022-11-22	-4.50%+	-5.89%+	-4.37%+#	-3.62%+#	-4%+

(*Continued*...)

(Table 4 Continued)

REIT	Listing Date	First-day Return	First Five-day Return	First Ten-day Return	First Thirty-day Return	Annual Return
508077.SH	2022-12-09	16.84%	13.94%	11.58%	6.99%	0%
180103.SZ	2022-12-27	8.94%	9.22%#	9.33%#	12.68%#	1%
508098.SH	2023-02-08	11.64%	16.79%#	18.64%#	15.65%#	1%
508028.SH	2023-03-29	1.94%	1.71%	0.59%	0.77%	0%
508096.SH	2023-03-29	12.37%	11.09%	10.08%	7.53%	1%
508019.SH	2023-06-30	-6.29%+	-7.96%+	-5.03%+#	-0.72%+#	-6%+
508007.SH	2023-10-27	0.36%	-1.50%+	-3.75%+	-14.47%+	-6%+
508031.SH	2024-01-12	-0.07%+	-7.61%+	-8.07%+	-1.41%+	-53%+
508011.SH	2024-03-12	0.67%	0.71%#	-5.67%+	1.17%#	6%
508017.SH	2024-03-12	0.56%	0.11%	-8.80%+	-5.58%+	1%
180601.SZ	2024-03-14	0.04%	-1.04%+	-1.64%+	0.23%#	-8%+
508026.SH	2024-03-28	3.51%	7.29%#	11.96%#	21.46%#	2%
508033.SH	2024-03-29	0.04%	-0.34%+	0.66%#	-1.70%+	-1%+
180602.SZ	2024-04-30	0.00%	-2.30%+	-0.61%+	-1.66%+	-22%+
508086.SH	2024-06-28	0.04%	0.02%	-0.02%+	3.21%#	0%
508089.SH	2024-07-02	22.30%	21.29%	20.65%	23.69%#	1%
180302.SZ	2024-07-09	0.00%	-4.58%+	-7.79%+	-4.94%+	-23%+
508015.SH	2024-07-23	11.50%	10.60%	15.29%#	18.93%#	0%
508002.SH	2024-08-16	3.34%	0.51%	0.09%	-2.36%+	6%
508005.SH	2024-08-28	5.79%	5.23%	9.28%#	10.53%#	3%
508022.SH	2024-09-19	0.46%	0.25%	0.67%#	2.38%#	0%
180603.SZ	2024-09-20	0.21%	0.15%	-0.24%+	2.38%#	1%

(*Continued…*)

(Table 4 Continued)

REIT	Listing Date	First-day Return	First Five-day Return	First Ten-day Return	First Thirty-day Return	Annual Return
180105.SZ	2024-09-23	0.04%	-5.52%+	-6.57%+	-10.07%+	-40%+
180502.SZ	2024-10-23	7.15%	5.68%	6.27%	13.13%#	2%
180303.SZ	2024-10-29	0.30%	-6.28%+	-7.98%+	-8.00%+	-20%+
508069.SH	2024-11-01	0.02%	2.16%#	4.46%#	6.20%#	5%
508003.SH	2024-11-05	0.46%	0.00%+	-0.06%+	0.93%#	-5%+
180701.SZ	2024-11-08	18.03%	21.75%#	20.65%#	34.16%#	0%
180203.SZ	2024-11-21	-0.17%+	-1.49%	-4.08%+	-8.61%+	1%
508097.SH	2024-12-03	1.53%	8.33%#	12.79%#	19.13%#	1%
180402.SZ	2024-12-10	19.07%	27.04%#	24.49%#	27.21%#	17%
508010.SH	2024-12-11	0.04%	2.78%#	2.75%#	16.47%#	11%
180106.SZ	2024-12-19	8.77%	8.45%	10.98%#	28.67%#	21%
508048.SH	2024-12-25	8.17%	12.15%#	17.63%#	29.46%#	12%
508036.SH	2024-12-26	6.39%	9.06%#	13.88%#	19.60%#	17%
508012.SH	2024-12-31	0.72%	-0.47%+	-0.84%+	4.25%#	-4%+
Full sample	N=58					
Mean		7.95%	7.95%	8.11%	9.76%	-0.74%
t-statistics		5.80***	4.76***	4.70***	5.18***	-0.49
Median		3.13%	2.10%	2.50%	3.73%	1.00%
Maximum		30.00%	40.31%	37.69%	46.22%	21.00%
Minimum		-6.29%	-7.96%	-8.8%	-14.47%	-53.00%

***Notes*:** † Denotes overpricing. # Denotes first-five, first-ten and first-thirty day returns higher than first-day return.
** Denotes statistical significance at 0.05 level.

4.2.1 Sectorial Analysis of First-Day Return

As hypothesized, asset-specific risks drive long-term returns, with distinct performance patterns across sectors evident in the sectorial analysis (Table 5). Toll road assets, which are overrepresented in underperforming C-REITs, show muted and unstable long-term returns. With 13 REITs in the sector, their mean initial day return stands at 2.55% and mean first five-day return at 2.53%, but performance remains lackluster over time. Their mean first thirty-day return dips slightly to 2.45%, and mean annual return further drops to 1.54% (with low variance indicating limited volatility, 0.0578). For example, the 2023-listed toll road C-REIT (508019.SH) posted a first-day return of -6.29%, a first thirty-day return of -0.72%, and an annual return of -6%, which are consistent with lingering pandemic-induced traffic declines and structural pressure on toll-based revenue models.

In contrast, sectors like industrial parks and green energy exhibit more stable long-term performance, supported by resilient underlying demand. Industrial Park C-REITs (16 in total) show steady improvement over time. Their mean first five-day return of 9.64% rises to 12.96% by the thirtieth day, thus reflecting continued investor confidence in industrial space demand. Green energy C-REITs (4 in total) mirror this stability, with a mean first thirty-day return of 13.36% and a mean annual return of 1%, underpinned by policy support and growing demand for clean energy infrastructures.

Specific sub-sectors within the energy sector further highlight asset-specific strength, while wind power generation (first-day return of 19.07%), water conservancy facilities (first-day return of 18.03%) and affordable rental housing (first-day return of 18.99%) exhibit the highest mean first-day return. These three assets are quasi-public goods governed by state-owned companies, thus creating more information asymmetry between asset holders and market investors. Hence, more underpricing occurs. Moreover, retail REITs experience less underpricing, with a mean initial day return of 1.52%, which is consistent with the research findings of Ling and Ryngaert (1997) on US REITs. They argue that shopping center REITs are less risky and therefore less underpriced.

Notably, other sectors reveal sharp short-term versus long-term divergences driven by asset-specific risks. Affordable rental housing C-REITs (6 in total) show a good initial performance, with a mean first-day return of 18.99% and mean first five-day return of 18.95%. However, this momentum reverses dramatically over time, with the mean annual return plummeting to -7.17% (with a high variance of 0.2248 thus indicating significant volatility). This reflects challenges in sustaining rental income growth and operational scalability. Conversely, logistics C-REITs (2 in total) struggle across all time horizons, with mean first five-day return at -5.43% and mean annual return at -21.50%, which highlight sector-specific headwinds distinct from the stability seen in industrial park assets.

Table 5 Sectorial Analysis of Initial Return Performance of C-REIT IPOs: Asset Type

Sector	No. of REITs	Mean Initial day Return	Mean First five-day Return	Mean First ten-day Return	Mean First Thirty-day Return	Mean Annual Return
Toll road	13	2.55% (0.0661）	2.53% (0.0857)	3.09% (0.0922)	2.45% (0.1124)	1.54% (0.0578)
Affordable rental housing	6	18.99% (0.1320)	18.95% (0.1789)	19.23% (0.1869)	18.26 (0.1392)	-7.17% (0.2248)
Industrial park	16	9.57% (0.1271)	9.64% (0.1516)	9.78% (0.1438)	12.96% (0.1603)	-0.38% (0.1250)
Green energy	4	10.03% (0.0938)	10.35% (0.0825)	10.82% (0.0823)	13.36% (0.1103)	1% (0.0082)
Logistics	2	0.15% (0.0021)	-5.43% (0.0120)	-7.88% (0.0013)	-6.47% (0.0216)	-21.50% (0.0212)
Natural gas power generation	1	21.52% (-)	26.42% (-)	31.21% (-)	37.94% (-)	4% (-)
Port warehousing and logistics	4	6.21% (0.0451)	7.62% (0.0814)	9.22% (0.1031)	11.16% (0.1431)	3.75% (0.0550)
Power station	1	11.50% (-)	10.60% (-)	15.29% (-)	18.93% (-)	0% (-)
Retail facilities	7	1.52% (0.0222)	0.48% (0.0234)	-1.08% (0.0564)	0.67% (0.0507)	-1.86% (0.1006)
Sewage treatment	1	4.95% (-)			-	
Waste treatment and biomass power generation	1	9.95% (-)	5.22% (-)	4.91% (-)	4.94% (-)	1% (-)
Water conservancy facilities	1	18.03% (-)	21.75% (-)	20.65% (-)	34.16% (-)	0%
WIND power generation	1	19.07% (-)	27.04% (-)	24.49% (-)	27.21% (-)	17% (-)

Notes: Number in brackets is variance. The asset classification standards are in accordance with the classification standards of the CSRC.

Overall, the sectorial data reinforce that asset type is a critical driver of long-term returns. Toll roads and certain logistics assets face structural pressure that leads to weak long-term performance, while industrial parks, green energy, and

select energy sub-sectors (e.g., natural gas, wind power) benefit from stable demand fundamentals, thus translating into more consistent returns across both the short and long horizons.

Unlike assets in other jurisdictions, C-REITs cover both property rights and management rights assets.

Table **6** reveals distinct performance patterns between property and management rights C-REITs, thus reflecting how asset attribute-specific characteristics shape risk and return dynamics across time horizons.

Property rights C-REITs (31 in total) exhibit a significantly higher mean initial-day return of 10.52% compared to management rights C-REITs (27 in total), which post a mean initial-day return of 4.99%. This disparity aligns with the earlier observation that asset-specific information asymmetry fuels underpricing: property rights assets focus on long-term appreciation alongside operational income, thus introducing more uncertainty in valuing their long-term growth potential. This complexity creates larger information gaps between asset holders and investors, which lead to more pronounced initial underpricing (reflected in higher first-day returns).In contrast, management rights assets operate within finite operational periods and distribute dividends structured to include both principal repayment and returns. Their clearer, more transparent cash flow mechanisms reduce information asymmetry, which results in less initial underpricing (4.99% mean initial-day return) and less variance in initial returns (0.0744 vs. 0.1200 for property rights), thus indicating more stable pricing at IPO.

Over short-to-medium horizons, property rights C-REITs maintain a stronger performance, with a mean first thirty-day return of 12.62%, which is nearly double that of management rights C-REITs (6.48%). This momentum reflects investor optimism about their long-term appreciation potential in the early post-listing period. However, property rights assets also exhibit more volatility in medium-term returns, as evidenced by a larger variance (0.1550 vs. 0.1241 for management rights). This aligns with the hypothesis that asset-specific risks (e.g., uncertainty in long-term asset valuation, sensitivity to market cycles) introduce more fluctuations in performance.

Critical to the hypothesis, long-term performance diverges sharply, driven by attribute-specific risk profiles. Property rights C-REITs experience a mean annual return of -2.03%, with significantly higher variance (0.1443), thus indicating unstable and negative long-term outcomes. This reflects the inherent risks of their focus on long-term appreciation: external shocks (e.g., market downturns, regulatory changes) or unmet growth expectations can erode initial gains, thus leading to lower sustained returns. Management rights C-REITs, by

contrast, deliver a modest positive mean annual return of 0.74% with less variance (0.0690), thus signaling higher stability. Their finite operational periods and structured dividend models (which incorporate principal repayments) reduce exposure to long-term valuation risks, thus creating more predictable cash flows and insulating them from extreme volatility.

Table **6** supports the hypothesis that asset-specific risks determine long-term returns. Property rights assets, while attracting higher initial underpricing due to information asymmetry and growth expectations, face greater long-term volatility and lower returns due to uncertainties in valuation and market sensitivity. In contrast, management rights assets, supported by transparent, structured cash flows and finite operational frameworks, exhibit lower initial underpricing and more stable long-term performance. This divergence shows that asset attributes are a critical dimension of asset-specific risk, which directly shape C-REIT performance across time horizons.

Table 6 Sectorial Analysis of Initial Return Performance of C-REIT IPOs: Attributes

Attribute	No. of REITs	Mean Initial day Return	Mean First five-day Return	Mean First ten-day Return	Mean First Thirty-day Return	Mean Annual Return
Property Rights	31	10.52% (0.1200）	10.65% (0.1466)	10.58% (0.1531)	12.62% (0.1550)	-2.03% (0.1443)
Management Rights	27	4.99% (0.0744)	4.84% (0.0936)	5.28% (0.0966)	6.48 (0.1241)	0.74% (0.0690)

***Notes*:** Number in brackets is variance. The asset classification standards are in accordance with those of the CSRC.

Table 7 reveals the nuanced differences in post-IPO performance between C-REITs listed on the SSE and SZSE. The SZSE-listed C-REITs (20 in total) exhibit a higher mean initial-day return of 9.75% compared to the SSE-listed ones (38 in total) at 7.00%. This gap in initial underpricing may seem to suggest exchange influence. Over short-to-medium horizons, SZSE-listed REITs maintain a slight edge in mean returns. Their mean first thirty-day return is 10.24%, which is marginally higher than SSE-listed REITs at 9.51%. However, this advantage is accompanied by significantly higher volatility. Critical to evaluating long-term impact, the divergence in annual returns is notable. SSE-listed REITs deliver a modest positive mean annual return of 0.24%, while

SZSE-listed ones post a negative mean annual return of -2.60%. This long-term gap is reinforced by variance data: SZSE-listed REITs have a higher annual return variance (0.1408 vs. 0.1004 for SSE), thus indicating less stable long-term performance.

Table 7 Sectorial Analysis of Initial Return Performance of C-REIT IPOs: Stock Exchange

Stock Exchange	No. of REITs	Mean Initial day Return	Mean First five-day Return	Mean First ten-day Return	Mean First Thirty-day Return	Mean Annual Return
SZSE	20	9.75% (0.1052）	8.81% (0.1333)	8.51% (0.1401)	10.24% (0.1608)	-2.60% (0.1408)
SSE	38	7.00% (0.0744)	7.50% (0.0936)	7.90% (0.0966)	9.51 (0.1241)	0.24% (0.1004)

***Notes*:** The number in the brackets is variance. The asset classification standards are in accordance with those of the CSRC.

4.2.2 Longitudinal Analysis of First-Day Return

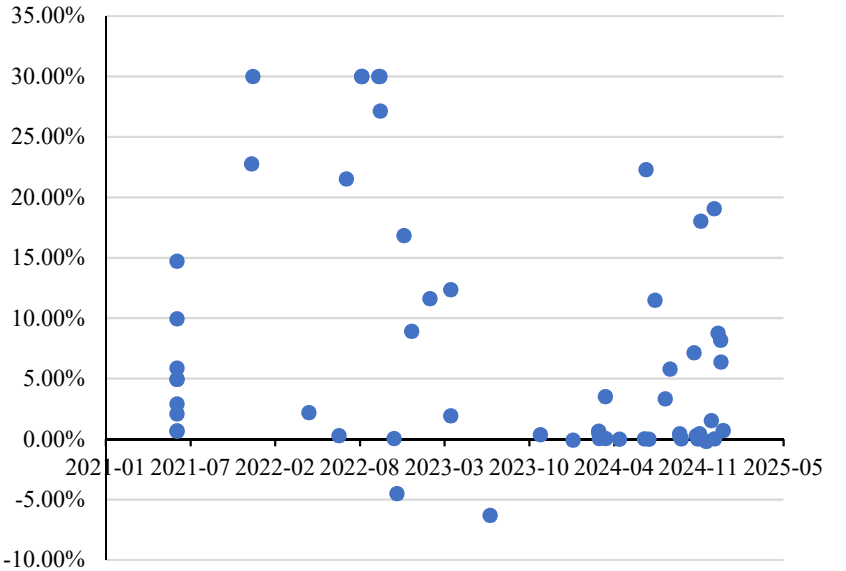
Figure 1 is a scatter diagram of the first-day returns for the C-REIT sample. The figure illustrates that the fluctuation of initial returns for C-REIT IPOs over time. From June 2021, when the first batch of C-REITs was listed, to the third quarter of 2022, the C-REIT market exhibited a scarcity premium. C-REITs issued during this period exhibit higher short-term momentum but poor long-term performance. For example, the 9 C-REITs listed in June 2021 have an average first-day return of 4.76% and an average first-thirty day return of 1.45%, while their average annualized return stands at only 0.56%. In contrast, C-REITs listed in 2024 show greater divergence. Some (e.g., 508026.SH, March 2024) sustain a 21.46% return in the first 30 days and a 2% annualized return, while others (e.g., 180302.SZ, July 2024) drop from a 0% first-day return to -23% annualized return, thus reflecting heightened sensitivity to the macroeconomic fluctuations in 2024.

The secondary-market performance of C-REITs indicates that when the secondary market performs well, the primary market tends to also follow. However, this reaction lags behind secondary-market performance. Since the fourth quarter of 2022, the C-REIT secondary market has gone through an adjustment period. Given a lag of several months during the issuance process, the primary market did well until the end of 2022. From late 2022 to early 2024, the C-REIT secondary market experienced a downturn for over a year. The cooling of the secondary market made REIT issuance more difficult, which slowed down the listing rate. Pro-cyclical assets such as toll roads and industrial

parks fell out of favor, which fell below the issuance price after listing. Investors generally adopted a "wait-and- see" attitude towards participating in primary-market investments.

At the start of 2024, the equity market underperformed while dividend-paying assets gained attention. Coupled with a clear trend of broad-based rate cuts, this highlighted the investment value of C-REITs, thus causing the secondary market to bottom out and rebound. Consequently, the largest number of new C-REIT IPOs were found in 2024. As defined by Helwege and Liang (2004), a "hot market" refers to a period with a high volume of new IPOs. Thus, 2024 qualifies as a "hot market period" for C-REITs. The scatter diagram suggests that issuances during "hot market period" translate into more underpricing, consistent with Buttimer et al. (2005), who examine the US REIT market and conclude that issuances during "hot wave" periods leave more money-on-table.

Figure 1 Scatter Diagram of Initial Day Return of C-REIT IPOs: 2021 to 2024

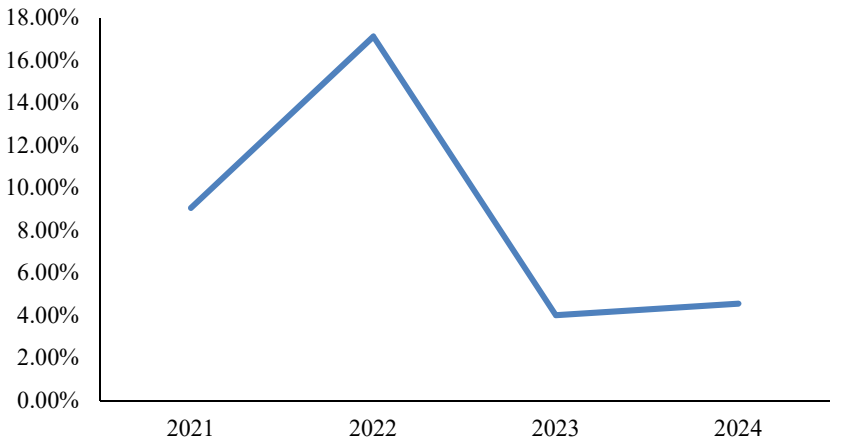


932047.CSI (Closing Price: RMB)

The average first-day return for each year is calculated for better yearly comparison. Figure 2 depicts the trend of average first-day returns of C-REIT listed annually from 2021 to 2024. The development of the C-REIT market began in June 2021. An upward trend can be observed during the early development stage (from 2021 to the end of 2022). The peak of underpricing occurred in 2022, which coincided with the "cold" IPO market in 2023. In 2023,

only five REITs were issued and negative underpricing can be observed. As shown in Figure 1**,** the majority of new issuances during the recovery phase are marginally underpriced or correctly priced. In 2024, the C-REIT issuance market gradually recovered.

Figure 2 Longitudinal Analysis of Initial Return Performance of C-REIT IPOs



4.3 Capital Asset Pricing Model

Table 8 reports the result for the CAPM regression conducted on C-REITs. The results of the CAPM regression for the 60-day period post-IPO show that all 58 samples have negative alphas, which indicates the underperformance relative to the expected return implied by the CAPM. Specifically, six of these negative alphas are statistically significant at the 0.05 level, and fifty-two are statistically significant at the 0.01 level. These findings indicate that more than 80% of C-REITs are traded underpriced from the IPO date to 60 days after IPO. Based on the results, the null hypothesis (H0: the returns of C-REIT IPOs for the period of 60 days post-issuance are not significantly different from zero) is firmly rejected, thus confirming that C-REITs exhibit short-term underpricing.

This observation can be explained through a combination of the signaling model introduced by Welch (1989) and the structural characteristics of C-REITs. On the one hand, the emphasis on low-volatility infrastructure assets in C-REITs introduces uncertainty in investor valuation of these novel asset classes, which aligns with the information asymmetry framework, as investors may demand a "discount" to compensate for their limited understanding of such assets, thus leading to initial underpricing. On the other hand, C-REITs face

unique institutional constraints. they must distribute at least 90% of their income to unit-holders to qualify for tax concessions and operate under strict leverage restrictions. These constraints mean that C-REITs often rely on further public equity offerings to fund future growth opportunities. Following the logic of the signaling model, REITs may intentionally underprice their IPOs to allow investors to enjoy positive short-term returns, thereby building investor confidence and ensuring that subsequent equity offerings are well received by the market. Meanwhile, strict regulatory oversight, while potentially mitigating excessive overpricing, does not offset the underpricing pressures driven by asset valuation uncertainty and strategic signaling, thus resulting in the widespread short-term underpricing observed in the data.

Table 8 CAPM Regression Results

REIT	60 Days Post-IPO α	Market adjusted R
180101.SZ	-0.0174***	1.90%
180102.SZ	-0.0134**	2.10%
180103.SZ	-0.0164***	2.38%
180105.SZ	-0.0176***	1.67%
180106.SZ	-0.0152***	1.89%
180201.SZ	-0.0185***	1.88%
180202.SZ	-0.0178***	2.34%
180203.SZ	-0.0118***	2.08%
180301.SZ	-0.0200***	1.10%
180302.SZ	-0.0106**	2.02%
180303.SZ	-0.0161***	1.56%
180401.SZ	-0.0168***	1.20%
180402.SZ	-0.0197***	1.18%
180501.SZ	-0.0209***	0.73%
180502.SZ	-0.0188***	1.38%
180601.SZ	-0.0172***	1.16%
180602.SZ	-0.0140**	1.72%
180603.SZ	-0.0137**	1.03%
180701.SZ	-0.0187***	1.02%
180801.SZ	-0.0189***	0.84%
508000.SH	-0.0159***	1.30%
508001.SH	-0.0193***	1.23%
508002.SH	-0.0101**	2.22%
508003.SH	-0.0160***	1.31%
508005.SH	-0.0146***	1.32%
508006.SH	-0.0220***	0.88%
508007.SH	-0.0150***	0.99%
508008.SH	-0.0174***	0.91%
508009.SH	-0.0170***	0.93%
508010.SH	-0.0150***	0.83%
508011.SH	-0.0149***	0.99%
508012.SH	-0.0152***	0.59%
508015.SH	-0.0154***	0.97%

508017.SH	-0.0133***	0.97%
508018.SH	-0.0152***	0.61%
508019.SH	-0.0161***	0.65%

(*Continued…*)

(Table 8 Continued)

REIT	60 Days Post-IPO α	Market adjusted R
508021.SH	-0.0165***	0.60%
508022.SH	-0.0104***	2.28%
508026.SH	-0.0161***	0.41%
508027.SH	-0.0158***	0.75%
508028.SH	-0.0172***	0.04%
508031.SH	-0.0150***	0.85%
508033.SH	-0.0147***	0.44%
508036.SH	-0.0166***	0.32%
508048.SH	-0.0207***	0.15%
508056.SH	-0.0153***	1.02%
508058.SH	-0.0188***	0.48%
508066.SH	-0.0161***	1.04%
508068.SH	-0.0190***	0.18%
508069.SH	-0.0180***	0.72%
508077.SH	-0.0189***	-0.14%
508086.SH	-0.0165***	0.08%
508088.SH	-0.0166***	0.54%
508089.SH	-0.0243***	-0.52%
508096.SH	-0.0123***	0.61%
508097.SH	-0.0117**	1.13%
508098.SH	-0.0141***	0.47%
508099.SH	-0.0176***	-0.38%

***Notes*:** ** and *** denote statistical significance at 0.05 and 0.01 levels.

4.4 OLS Regression

OLS multivariate regression is performed with the initial return as the dependent variable and the above factors as explanatory variables. Table 9 reports the results. The coefficient on the issuance size (scale) is significantly negative at the 0.10 level, which is consistent with previous studies on US REITs (Beatty and Ritter, 1986; Ibbotson et al., 1994). The coefficient on the public subscription multiple (publicsubscriptionmultiple) is significantly positive at the 0.01 level. This may stem from the fact that high-quality assets often trigger extremely high subscription multiples during "hot market" periods. There is evidence that C-REIT IPOs were greatly underpriced during "hot" IPO markets, consistent with previous studies on US REITs (Helwege and Liang, 2004). The coefficient on the time to list variable (timetolist) is significantly negative at the 0.10 level, thus indicating that more underpriced

IPOs are subscribed more quickly, which is consistent with Lee et al. (1996). The coefficient on the guaranteed performance clause (GuaranteedPerformanceClause) is significantly positive at the 0.05 level, thus suggesting that REITs with back-up provisions tend to have higher premium after listing.

Table 9 OLS Regression Results of Factors that Influence Underpricing of C-REIT IPOs

Variable	Coef.	P value
_cons	1.4280	0.009***
scale	-0.0467	0.058*
SOE	-0.0473	0.104
sponsor	-0.2718	0.624
publicsubscriptionmultiple	0.0003	0.001***
DIVIDEND	-0.8775	0.129
timetolist	-0.0020	0.063*
GuaranteedPerformanceClause	0.0709	0.049**
type		
Logistics	-0.0420	0.497
Affordable rental housing	0.0623	0.078*
power generation	0.0075	0.942
Waste&biomass power	-0.0003	0.996
Naturalgas power generation	0.2303	0.015**
Toll road	0.0451	0.323
Green energy	0.0252	0.631
Water conservancy facilities	0.1304	0.087*
Sewage treatment	0.0240	0.757
Retail facilities	0.0286	0.503
Port warehousing and logistics	-0.0273	0.524
WIND power generation	0.2103	0.023**
R-squared	0.6995	
Adj R-squared	0.5492	
Sample	58	

***Notes*:** The dependent variable in both panels is first-day return measures as follows: First-day return=$\frac{\text{First-day closing price} - \text{IPO offer price}}{\text{IPO offer price}}$. The independent variables are as defined in Table 4. *, ** and *** denotes statistical significance at the 0.10, 0.05 and .001 levels.

The coefficient on the type variable, which includes natural gas power generation, wind power generation and affordable rental housing, are all significantly positive. This may be because these three types of assets are generally managed by the government, which leads to evident information asymmetry between the asset holders and the investors. This result corroborates

the argument made by Ling and Ryngaert (1997) that unfamiliar property types tend to be more underpriced.

Unexpectedly, the coefficient on sponsor holdings is not significant. This contrasts with Wong et al. (2013), who find a positive relationship between sponsor holdings and IPO underpricing in Asian REITs. A possible explanation is that among the listed public REITs, original equity holders typically maintain strategic stakes of over 35%, with some even reaching 51% to ensure control and financial consolidation. Moreover, the coefficient on the DIVIDEND variable is not significant. This may stem from investors in the Chinese equity market placing greater emphasis on the post-listing price appreciation of the underlying assets rather than the dividends.

5. Conclusion

This paper analyses 58 C-REIT IPOs from June 2021 to December 2024. The mean first-day return for the C-REIT sample is 7.95%, which indicates significant underpricing similar to REITs in other jurisdictions. Annualized returns from holding beyond listing are modest or negative, thus suggesting limited benefit from extending holding periods. Overall, while C-REIT IPOs offer attractive initial returns, longer holding periods may not enhance returns and could increase capital tie-up costs.

The sectorial analysis indicates that the selection of underlying assets significantly impacts the post-listing price increases of C-REITs. Property rights assets outperform management rights assets, thus reflecting market asymmetry and differing focuses on appreciation versus finite operations and dividend distributions. The longitudinal analysis suggests that the C-REIT market experienced significant fluctuations from 2021 to 2024. Initially, from 2021 to mid-2022, IPOs were heavily underpriced due to scarcity premium. From late 2022 to early 2024, the market cooled, which slowed down the IPO issuance rate and caused REIT IPOs to trade below issuance price. In 2024, the market recovered, driven by the demand for dividend-paying assets and rate cuts, so that this is considered a hot market period with more IPOs. Consistent with global trends, IPOs during such periods of time tend to be more underpriced.

The OLS multivariate regression analysis reveals that the issuance size and the time to list period are negatively correlated with C-REIT underpricing, while public subscription multiples and guaranteed performance clauses are positively correlated. These findings align with previous studies on REITs in other jurisdictions. The type variable, which covers natural gas power generation, wind power generation, and affordable rental housing, shows significantly positive coefficients. The conclusion is consistent with the information asymmetry explanation provided in the theoretical review.

However, the coefficients for sponsor holdings and dividends are not significant, possibly due to the high strategic stakes of the original equity holders and investor focus on post-listing price appreciation over dividends.

The empirical analysis of 58 C-REIT IPOs from 2021 to 2024 offers valuable lessons for sponsors, investors, and regulators to enhance the efficiency and sustainability of future offerings. First, sponsors play a pivotal role in shaping C-REIT performance through asset selection, pricing strategies, and post-IPO governance. The 30% post-listing underperformance rate among strategic holdings, particularly for toll roads and cyclical assets, underscores the criticality of selecting underlying assets with resilient cash flows. In this case, sponsors are recommended to focus on infrastructure with long-term demand visibility (e.g., green energy, essential utilities) rather than overly cyclical assets. The widespread negative alphas in the 60-day post-IPO period confirms that intentional underpricing can build investor trust for future fundraising. However, sponsors should balance this with realistic valuations to avoid eroding long-term value. Information asymmetry, particularly for novel asset classes like green energy or affordable rental housing, drives underpricing. Therefore, sponsors should provide granular data on asset cash flow forecasts, regulatory risks, and operational track records in prospectuses to reduce valuation uncertainty and align pricing with intrinsic value.

Secondly, investors, both strategic and public, should navigate the tension between short-term underpricing and long-term value. While the average first-day return of 7.95% signals attractive initial gains, the erosion of returns beyond the first month (with annualized returns averaging -0.74%) highlights the risks of speculative trading. In this case, investors should prioritize assets with strong operational fundamentals rather than chasing market hype. The sectoral analysis shows property rights assets outperform management rights assets in the short term but face higher long-term volatility, while retail assets (which are familiar to investors) exhibit less underpricing. Diversification across sectors and asset types can mitigate risks associated with cyclical downturns in specific industries like toll roads. Moreover, the hot market in 2024, characterized by more underpricing and increased issuance, demonstrates that market sentiment amplifies short-term returns but may precede corrections. Investors should avoid overexposure during peak cycles and evaluate entry points based on asset valuations.

Thirdly, regulators play a critical role in reducing information asymmetry, by curbing excessive speculation, and fostering market maturity. Assets managed by state-owned entities (e.g., affordable rental housing, water conservancy) exhibit higher underpricing due to opacity in operations. Therefore, regulators should mandate standardized reporting of cash flow projections, maintenance costs, and regulatory compliance to reduce valuation gaps between sponsors and investors. The divergence between short-term underpricing and long-term returns reflects speculative behavior. Regulators should promote investor education programs to emphasize long-term asset fundamentals over short-term

price swings, particularly for retail investors new to REIT structures. Additionally, the 2021-2022 scarcity premium and 2024 hot market overheating suggest the need for carefully assessed rate of issuance. Regulators could coordinate with the NDRC and stock exchanges to align supply with market absorption capacity, thus preventing extreme underpricing or oversupply-driven corrections.

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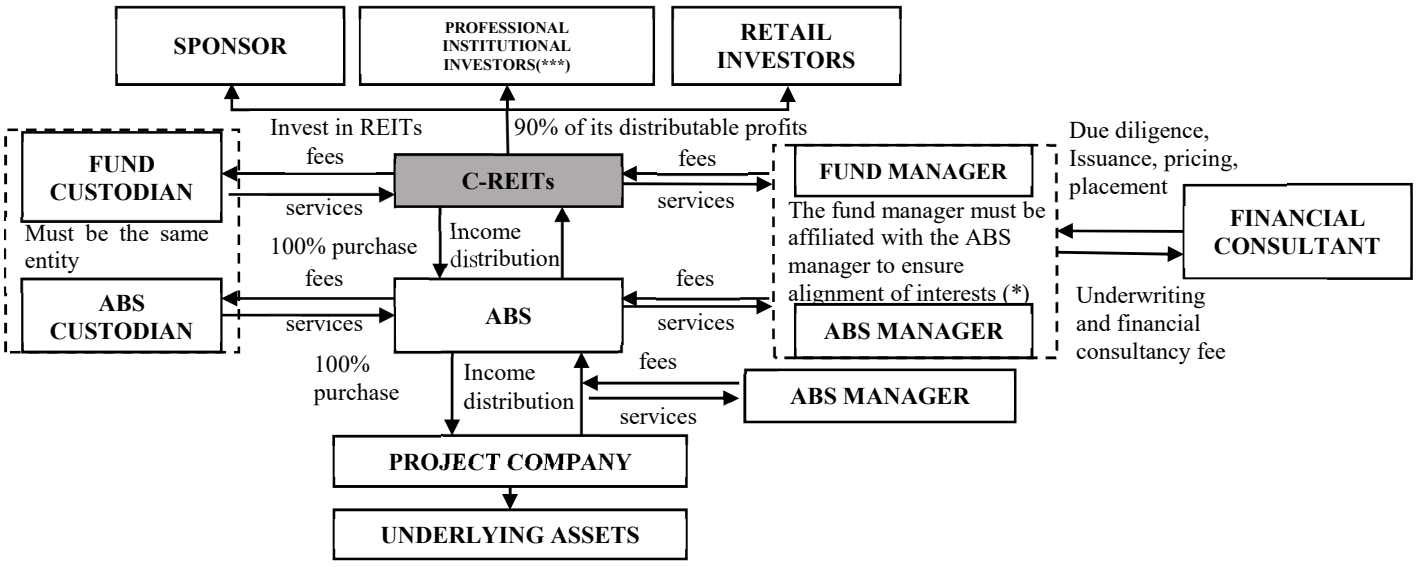
Appendix i: Typical C-REIT Structure with Sponsor Stakeholder

The original equity holder should retain at least 20% of total amount issued and there is a lock-up period (**).



***Notes*:** Source from the official website of CSRC, http://www.csrc.gov.cn/. (*) The fund manager must be affiliated with the ABS manager to ensure alignment of interests and maximize efficiency of the structure. (**) The sponsor including the original equity holder and the selected institutional investors. The original equity holder should hold at least 20% of the total amount of units issued and there is a lock-up period for the sponsor. (***) Professional investors include security, fund management, trust, finance and insurance companies, qualified foreign institutional investors, qualified private equity funds, wealth companies, social welfare funds, infrastructure investment institutions, specialist government and industry investment funds, and other professional investors.

Appendix ii: Comparison of REIT Regulations

Rules	US	Australia	China	Singapore
Ownership	Minimum of 100 shareholders. Less than 50% of the outstanding shares in hands of five or fewer shareholders. **"Look through" provision:** ownership by institutional investors such as pension funds does not violate 5/50 rule.	400 holders with holdings of at least A$2,000 (1300 USD) and assets of A$15m (10m USD)	The original equity holder should hold at least 20% of the total amount of units issued and there is a lock-up period.	25% units held by at least 500 holders and assets of S$20m (15m USD).
Assets	At least 75% of assets must be real estate (including mortgages), government securities or cash.	Must invest in land primarily to derive rent or can invest in certain financial instruments. Property development is allowed if properties to be held by the trust.	Under the pilot program, C-REITs are limited to investment in traditional infrastructure assets and later included affordable rental properties, industry parks, and logistics assets. In May 2022, the CSRC and NDRC have added affordable housing rental REITs to the pilot scheme. In March 2023, the NDRC extended the eligible asset classes for REITs to consumption-related commercial properties (e.g. shopping malls).	At least 70% invested in real estate or real estate related assets (of which 35% should be in real estate) Property development capped at 10% of total asset.

(*Continued…*)

(Appendix ii Continued)

Rules	US	Australia	China	Singapore
Gearing	Not limited by legislation. Tax authority may impose limit on leverage.	Not limited by legislation.	Total assets cannot exceed 140% of REIT net assets, usage of debt limited to operations, maintenance and overhaul, and project acquisitions ((equivalent to about 28.6% for gearing ratio, i.e. total liabilities to total assets). Acquisition borrowing cannot exceed 20% of REIT's net assets.	Gearing limit: 35% (maximum 60% if a credit rating of the property fund from Fitch Inc., Moody's or Standard and Poor's is obtained ad disclosed to the public)
Distribution	To maintain a tax-free status, a REIT must distribute at least 90% of its taxable income	Mandatory distributions under REIT Code or tax law, but typically 100% of taxable income is distributed.	C-REIT must distribute at least 90 percent of the annual distributable profits to its investors. Dividends are not taxable.	To maintain a tax-free status, a REIT must distribute at least 90% of its taxable income.

***Sources*:** KMPG International; MAS; S&P Global