Do Issuance Discounts Hurt in Brazilian Real Estate Funds?

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Abstract

This paper examines whether follow-on offerings priced below NAV harm investors in Brazilian real estate funds (FIIs). FIIs offer a useful setting because they rely on external equity, combine REIT-like features with a distinct legal form, and are widely held by retail investors. We build an event-level dataset of IFIX-related FII follow-ons from 2019Q1 onward, excluding first issuances and pre-listing events. Investor outcomes are measured as two-year post-issuance total returns in excess of IFIX. The evidence does not support a systematic discount penalty: offerings priced below NAV do not underperform on average, and Value/NAV is not a robust cross-sectional predictor after controls and clustered inference. We also find no convincing high-premium tail effect. However, within-fund estimates indicate that richer issuance pricing is followed by weaker performance, especially in liquid funds. Issuance pricing is not a market-wide rule, but a context-dependent signal shaped by issuer history and market quality.

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Keywords: FIIs; REITs; seasoned equity offerings; issuance discounts; corporate governance; retail investors.

1. Introduction

Seasoned equity offerings sit at the intersection of financing and governance. By expanding the equity base, an issuer relaxes investment constraints and reallocates claims across old and new investors, but the same transaction can also reflect managerial incentives and beliefs about valuation. This tension is especially salient in real-estate vehicles, where assets are tangible, disclosure is relatively rich, and distribution-oriented structures constrain internal capital retention without necessarily eliminating agency frictions. In the classic agency framework, once decision-making authority is delegated, managers need not always act in the best interests of investors, and agency costs arise through monitoring, bonding, and residual loss (Jensen and Meckling, 1976, pp.

167–168). In REIT-like settings, the legal and organizational structure can mitigate some agency problems while leaving others intact, particularly when managerial discretion survives through financing choices, timing decisions, and repeated access to capital markets (Ghosh and Sirmans, 2006, pp. 327–330; Bauer, Eichholtz, and Kok, 2010, pp. 1–4).

We study this problem in Brazilian real estate funds (Fundos de Investimento Imobiliário, FIIs), a listed real-estate market inspired by REIT structures but shaped by a distinct legal form and a heavily retail-oriented investor base. Since their expansion, FIIs have evolved from relatively simple and often concentrated vehicles into more diversified and actively managed funds. As the market broadened, follow-on offerings became a central part of fund growth, portfolio rebalancing, and capital allocation. This development heightened investor attention to whether managers consistently act in the best interests of incumbent unitholders when raising new equity.

A focal point of that debate is issuance pricing relative to net asset value (NAV). In Brazilian market practice, follow-on offerings priced below NAV are often viewed as value-destructive for incumbent investors because they appear to transfer value to new subscribers. Yet that heuristic may be too simple for at least three reasons. First, NAV in property-intensive vehicles is appraisal-based, so it may adjust only gradually to changes in financing conditions, discount rates, and market sentiment. Second, discounts may arise precisely when external capital is most needed to fund acquisitions or portfolio repositioning. Third, offerings priced at a premium to NAV may themselves reflect favorable valuation states, investor optimism, or managerial timing. The broader SEO literature shows that firms tend to issue equity when valuations are high and that the effects of such financing decisions can be persistent (Baker and Wurgler, 2002, pp. 1–3). It also shows that new issues, including seasoned equity offerings, underperform in the long run relative to nonissuers, a pattern documented by Loughran and Ritter (1995, pp. 23–24, 29–33).

These competing considerations make the relation between issuance pricing and investor outcomes fundamentally empirical. In REIT-like settings, payout-oriented structures can reduce the stock of free cash flow available for discretionary spending, but they do not eliminate agency frictions linked to growth, entrenchment, or the use of externally raised capital. Ghosh and Sirmans (2006, p. 330) show that even under mandatory payout rules, REIT managers retain discretionary cash flow and still depend on external financing. Bauer, Eichholtz, and Kok (2010, pp. 1–2, 22–23) likewise emphasize that the legal restrictions applying to REITs may mitigate governance problems without fully removing the need for effective internal governance, especially where discretionary cash flows remain. Oh and Verstein (2024, pp. 758–760) go further by arguing that REITs combine payout restrictions with unusual governance features, notably limited reinvestment and strong protection from hostile takeovers. Together, these studies suggest that financing choices in REIT-like vehicles can remain informative manifestations of governance frictions rather than purely mechanical responses to capital needs.

Research on REIT financial reporting reinforces this point. Vincent (1999, pp. 69–71, 100) shows that FFO became the industry-standard supplementary performance measure in REITs and that both FFO and EPS provide information reflected in stock prices. But the same literature also shows that transparency does not eliminate incentives for managerial manipulation. Zhu, Ong, and Yeo (2010, pp. 412–415, 426–427) document evidence of FFO manipulation around seasoned equity offerings in U.S. equity REITs. Anglin, Edelstein, Gao, and Tsang (2013, pp. 539–542) show that REITs may engage in real activities manipulation even when accrual manipulation appears less closely tied to governance. More generally, Roychowdhury (2006, pp. 337–338) defines real activities manipulation as departures from normal operational practices undertaken to

meet reporting goals and stresses that such actions may reduce firm value. Thus, the relevant question is not whether FIIs are transparent enough to avoid agency problems altogether, but whether issuance pricing contains information about subsequent investor outcomes once these institutional features are taken seriously.

This paper asks a simple question: do follow-on offerings priced below NAV systematically hurt investors in Brazilian FIIs? We address this question with an issuance-level dataset of follow-on offerings by FIIs that were constituents of the IFIX index in at least one index cycle from 2019Q1 onward. This sample design broadens market coverage, avoids conditioning the analysis on a single endpoint index classification, and yields a substantially richer event set for empirical analysis. For each issuance, we define the event date as the offering base date used for subscription rights and measure investor outcomes as the fund's two-year post-issuance total return in excess of IFIX over the same horizon. Our key explanatory variable is the issuance price scaled by NAV per share at the issuance date, denoted Value/NAV. Values below one indicate issuance at a discount; values above one indicate issuance at a premium.

The evidence does not support a systematic discount penalty in the cross-section. Offerings priced below NAV do not underperform on average, and the continuous pricing measure does not robustly predict subsequent excess returns in the broad cross-section of offerings. Controlled specifications lead to the same conclusion. We also find no convincing evidence that underperformance is concentrated in a high-premium tail. Thus, the expanded and corrected dataset does not support simple market-wide rules of thumb based solely on whether an issuance is priced below or above NAV.

At the same time, the data do not imply that issuance pricing is entirely uninformative. More conditional evidence emerges when we exploit within-fund variation and when we allow the pricing effect to vary with observable fund characteristics. In fund fixed-effects specifications, richer issuance pricing is followed by weaker subsequent performance, suggesting that issuance pricing may contain information when offerings are compared within the same issuer over time. In addition, this negative relation is stronger among more liquid funds, consistent with the view that secondary-market prices embed more informative valuation signals when trading conditions are stronger. The informational content of issuance pricing therefore appears to be context-dependent rather than universal.

These findings contribute along three dimensions. First, the paper provides a broad event-level analysis of follow-on offerings in an important emerging real-estate securities market. Second, it extends the REIT governance and financing literature to a close institutional cousin where payout restrictions and managerial incentives interact in distinctive ways (Ghosh and Sirmans, 2006, pp. 327–330; Bauer, Eichholtz, and Kok, 2010, pp. 1–4; Oh and Verstein, 2024, pp. 758–760). Third, it informs an active market debate by showing that the most common issuance-pricing heuristic in Brazilian FIIs is not supported as a robust cross-sectional regularity. The practical implication is not that issuance pricing never matters, but that its informational content is narrower and more conditional than market discourse often assumes.

The paper's main implication is therefore more disciplined than either side of the usual debate suggests. A blanket stigma against discounted offerings is not supported by the data. But neither do the data justify treating premium issuance as a broad market-wide red flag. The more relevant governance question is how managers justify issuance timing, expected use of proceeds,

and anticipated per-unit value creation in settings where market prices are informative and issuer-specific history can be used as a benchmark.

The remainder of the paper proceeds as follows. Section 2 describes the institutional setting of FIIs and develops the main hypotheses. Section 3 presents the sample construction and variable definitions. Section 4 outlines the empirical strategy. Section 5 reports the main results. Section 6 presents robustness checks and extensions, including tests based on alternative inference, within-fund variation, and heterogeneity by liquidity and fund age. Section 7 concludes.

2. Institutional Setting and Hypothesis Development

2.1. Why FIIs rely on external equity

FIIs resemble REITs in two economically central respects. First, they operate with comparatively high transparency in asset-level disclosure and cash-flow reporting. Second, they follow distribution-oriented rules and market conventions that limit the accumulation of internal capital. In such settings, growth typically depends on repeated access to external financing rather than on retained earnings alone. Ghosh and Sirmans (2006, p. 330) explicitly note that, despite the high mandatory dividend distribution in REITs, managers still face reduced internal capital availability and consequently rely on external funding. Bauer, Eichholtz, and Kok (2010, pp. 1–2) likewise stress that payout-oriented structures alter, but do not eliminate, the financing and governance problem. Oh and Verstein (2024, pp. 758–760) describe REITs as entities that raise money from the public to invest in real estate while operating under restrictions that distinguish them from ordinary corporations. These institutional features make follow-on offerings economically central rather than incidental.

For FIIs, the most direct and scalable financing channel is the follow-on offering. Managers use seasoned issuances to fund acquisitions, expand credit allocations, rebalance portfolios, and reposition the fund in response to changing market conditions. Because the need to issue equity is partly structural in payout-oriented vehicles, the mere occurrence of a follow-on offering need not be read as a negative signal. The more relevant empirical question is whether the *terms* of issuance, especially the price relative to NAV, are associated with subsequent investor outcomes.

2.2. Agency frictions in follow-on decisions

Agency theory provides a natural framework for thinking about issuance decisions in FIIs. Jensen and Meckling (1976, pp. 167–168) define an agency relationship as one in which a principal delegates decision authority to an agent and show that, once both parties are utility maximizers, the agent need not always act in the principal's best interest. That framework is directly relevant here. In listed real-estate vehicles, managers may benefit from asset growth, repeated capital-market access, and the expansion of fee-generating assets even when a particular issuance does not obviously improve per-unit value for incumbent investors.

Payout-oriented structures do not eliminate this wedge. Ghosh and Sirmans (2006, pp. 327–330) argue that mandatory distributions reduce the stock of internally retained free cash flow, but they also show that REIT managers retain meaningful discretion and that agency conflicts remain economically relevant. Bauer, Eichholtz, and Kok (2010, pp. 1–4, 22–23) formulate the same issue as a tension between substitution and complementarity: legal restrictions may mitigate some agency problems, yet internal governance still matters when discretionary cash flow remains. Oh

and Verstein (2024, pp. 758–760) reinforce this point by showing that REITs combine payout restrictions with limited reinvestment and strong takeover insulation, a combination that is unusual from the standpoint of mainstream governance theory.

Applied to FIIs, the relevant governance question is therefore not whether managers can issue, but whether the pricing and timing of issuance are associated with subsequent investor outcomes. If issuance decisions are aligned with long-run value creation, post-issuance performance should not systematically deteriorate simply because new units are sold. If, however, managers exploit favorable valuation states or issue under terms that do not protect incumbent investors, issuance pricing may contain predictive information about future returns.

2.3. Why issuance price relative to NAV is not a one-dimensional signal

The most common market shorthand in Brazilian FIIs is to compare the issuance price with NAV per unit. This generates a simple statistic:

$$Value/NAV = \frac{P_{issue}}{NAV}$$

where P_{issue} is the issuance price per unit and NAV is NAV per unit at the issuance date.

At first glance, this ratio appears to offer a straightforward welfare interpretation. If Value/NAV < 1, the fund is issuing below NAV, seemingly transferring value from incumbent investors to new subscribers. That intuition is economically sensible, but it is incomplete.

First, NAV in real-estate vehicles is appraisal-based rather than continuously market-clearing. Second, a discount may be the equilibrium cost of raising equity precisely when capital is most valuable. Third, offerings at a premium to NAV are not automatically benign. The broader SEO literature argues that firms tend to issue when valuations are favorable, and that post-issuance returns may then be weak as optimism or temporary overvaluation dissipates. Baker and Wurgler (2002, pp. 1–3) define equity market timing as issuing shares when prices are high and show that such financing decisions can have persistent capital-structure consequences. Loughran and Ritter (1995, pp. 23–24, 29–33) document the long-run underperformance of new issues, including seasoned equity offerings, relative to nonissuing firms. These findings do not prove that premium issuance is always harmful, but they make clear that richer issuance pricing can reflect temporarily favorable states rather than superior long-run investment quality.

In REIT-like settings, that interpretation gains further plausibility because financing events can create incentives for managerial manipulation or presentation management. Zhu, Ong, and Yeo (2010, pp. 412–415, 426–427) show that REITs manipulate FFO around seasoned equity offerings and that frequent issuers display especially strong FFO manipulation. Anglin, Edelstein, Gao, and Tsang (2013, pp. 539–542) likewise emphasize that REIT reporting environments combine high transparency with meaningful scope for real earnings management. Vincent (1999, pp. 69–71, 100) shows why this is possible: FFO is widely used in REIT valuation, yet it remains a supplementary non-GAAP performance measure rather than a direct substitute for audited GAAP earnings. Taken together, these studies imply that issuance pricing relative to NAV should not be treated as a one-dimensional welfare statistic. Discounts need not be mechanically harmful, and premiums need not be mechanically reassuring.

2.4. Hypotheses

Our empirical design evaluates two competing predictions.

H1 (Discount Penalty). If discounted issuance reflects value transfer from incumbent investors to new subscribers, weak bargaining on behalf of existing unitholders, or agency-driven financing choices that dilute per-unit value, then offerings with Value/NAV < 1 should be followed by lower subsequent excess total returns.

This hypothesis is inherently threshold-based. Its logic is that crossing below parity changes the economic meaning of the issuance in a discontinuous way, so a discount indicator should capture the relevant effect.

H2 (Premium Underperformance / Timing). If issuance pricing partly reflects favorable valuation states, investor optimism, or managerial market timing, then higher Value/NAV should be followed by weaker subsequent excess total returns.

This hypothesis is continuous rather than threshold-based. It does not require discounted issuance to be especially harmful. Instead, it predicts that richer issuance pricing contains information about later reversal or weaker post-issuance performance. This formulation is consistent with the market-timing logic in Baker and Wurgler (2002, pp. 1–3) and with the long-run underperformance evidence summarized by Loughran and Ritter (1995, pp. 23–24, 29–33).

The two hypotheses need not move together in the data. It is possible for discounts not to be systematically harmful on average, yet for richer pricing to be associated with weaker subsequent performance. It is also possible that any pricing effect is weak in the full cross-section but becomes more visible within issuer or under particular market conditions, such as greater liquidity. We therefore begin with baseline tests corresponding to H1 and H2 and then extend the analysis to richer specifications that allow for conditional and within-fund variation.

3. Data and Variable Construction

3.1. Sample definition and unit of observation

The empirical setting is the market for seasoned equity offerings, or follow-on unit issuances, by Brazilian real estate funds (Fundos de Investimento Imobiliário, FIIs). The unit of observation in this study is the individual issuance event rather than the fund-year. This choice is deliberate. The economic question concerns the pricing and scale of each capital-raising decision and its subsequent consequences for investor outcomes, so the offering event is the natural unit of analysis. This event-level perspective is consistent with the broader seasoned-offering literature, which evaluates post-issuance outcomes at the financing-event level rather than through annual accounting aggregation (Loughran and Ritter, 1995, pp. 23–24, 29–33; Zhu, Ong, and Yeo, 2010, pp. 412–415).

We construct a panel of follow-on offerings by FIIs that were constituents of the IFIX index in at least one index cycle from 2019Q1 onward. This sampling rule is intended to capture a broad set of economically relevant and sufficiently visible listed funds while avoiding a design that

conditions inclusion on membership at a single endpoint in time. The resulting sample is therefore broader and historically more representative than a static endpoint-based screen and is better suited to an offering-level study of post-issuance performance.

The starting issuance database contains 575 observations. We then apply a sequence of economically motivated filters. First issuances are excluded because the paper studies follow-on offerings rather than initial listings. Offerings that precede the fund's first negotiated trading date in the secondary market are also excluded from the main analysis because the variables central to the empirical design—most notably market-based pricing and post-issuance excess returns—require a listed trading history. After these restrictions, the main analytical dataset contains 503 follow-on offerings. Because a given fund can appear multiple times through repeated issuances, the dataset is a cross-section of offering events with repeated issuers over time.

3.2. Data sources and event dating

The dataset combines primary offering information, fund accounting variables, and secondary-market data. For each follow-on, we collect offering-level information on issuance price, gross proceeds, quantity issued, and issuance costs from official offering materials and market disclosures. Fund-level accounting and market inputs—including NAV per unit, secondary-market prices, and trading volume—are then aligned with the issuance event. This type of event-level construction is consistent with both the seasoned-offering literature and REIT research that jointly use issuance terms, accounting anchors, and market outcomes to evaluate financing decisions (Vincent, 1999, pp. 69–71; Zhu, Ong, and Yeo, 2010, pp. 412–415).

A central implementation choice is the definition of the issuance date, t_0. In this paper, $t_0$is the offering base date (Data Base), that is, the cutoff date used for subscription rights. This date is treated as the issuance date for all empirical purposes. It is used to align issuance terms, NAV, fund characteristics, pre-issuance liquidity, and subsequent returns. The use of a single operational date is important because ambiguity in event timing can contaminate both explanatory variables and post-issuance performance windows.

3.3. Dependent variable: post-issuance excess total return

The main outcome variable measures whether investors were better or worse off, relative to the market, after the issuance. For each offering i, we compute the fund's two-year total return from $t_0$to $t_0 + 2$years, including cash distributions, and subtract the IFIX total return over the same horizon:

$$ExcessRet_i^{(0,2y)} = TR_i^{FII}(t_0, t_0 + 2y) - TR^{IFIX}(t_0, t_0 + 2y)$$

This construction aligns performance horizons across offerings that occur at different points in the macro-financial cycle and addresses the substantive question at the core of the paper: not whether FIIs earn positive returns in absolute terms, but whether the issuance is followed by

relative under- or outperformance. The use of a post-issuance benchmarked return window is consistent with the broader new-issues literature, which evaluates issuance consequences over horizons long enough for post-offering revaluation and capital deployment to occur (Loughran and Ritter, 1995, pp. 23–24, 28–33).

In the final analytical dataset, the dependent variable is available for 374 offerings. These observations constitute the return-available sample used in the descriptive analysis of post-issuance outcomes and in the baseline regressions.

3.4. Key explanatory variable: issuance pricing relative to NAV

The central explanatory variable is the issuance price scaled by NAV per unit at t_0:

$$Value/NAV_i = \frac{P_i^{issue}}{NAV_i^{per\ unit}}$$

Values below one indicate issuance at a discount to NAV; values above one indicate issuance at a premium. This variable operationalizes the main market controversy examined in the paper and provides a direct test of whether discounted issuance is associated with weaker subsequent performance. As discussed in Sections 1 and 2, however, Value/NAV is not interpreted as a mechanical welfare statistic. In listed real-estate vehicles, appraisal-based NAV, external-financing dependence, and potential timing incentives complicate the mapping from issuance price to future investor outcomes (Baker and Wurgler, 2002, pp. 1–3; Loughran and Ritter, 1995, pp. 23–24, 29–33).

To distinguish a continuous pricing effect from the most common practitioner heuristic, we also define a discount indicator:

$$DiscountDummy_i = 1(Value/NAV_i < 1)$$

The two variables capture distinct empirical statements. A negative coefficient on Value/NAV is consistent with a premium-underperformance or market-timing interpretation. A negative coefficient on DiscountDummy would support the stronger claim that crossing below NAV is, by itself, systematically harmful to incumbent investors.

Among the 374 offerings with non-missing post-issuance excess returns, 333 also have non-missing Value/NAV. This is the baseline pricing sample used in the simplest pricing regressions.

3.5. Control variables

To reduce omitted-variable concerns, we augment the baseline pricing variable with controls that capture issuance scale, equity expansion, offering frictions, pre-issuance market visibility, fund age, and issuance history.

LogProceeds_i is the natural logarithm of the gross amount raised in the offering. Larger transactions may differ from smaller ones in market visibility, investor attention, and the type of investments being financed.

LogGrowthUnits_i is the logarithm of the percentage increase in outstanding units associated with the offering. This variable captures the magnitude of equity expansion and helps separate pricing from the scale of dilution.

CostRate_i is total issuance cost per unit expressed as a percentage of the subscription value per unit. This variable captures issuance frictions that reduce the net amount of capital available for deployment.

LogAvgDailyVolume_i,3m is the logarithm of average daily trading volume over the three months preceding t_0. Pre-issuance liquidity is used as a proxy for the informational quality and trading depth of the fund's market price.

LogAge_i is the logarithm of the number of days since the fund's first negotiated trading date in the secondary market. This definition focuses on listed-market age rather than any pre-listing organizational history. In a listed real-estate setting, age may capture accumulated market reputation and the extent to which investors can benchmark the issuer against its own prior trading history.

LogIssueNumber_i is the logarithm of the sequential issue number for the fund. This variable captures repeated access to capital markets and the possibility that later offerings differ systematically from earlier ones. In the REIT literature, repeated seasoned equity issuance has been associated with distinct financing behavior and reporting incentives around SEOs (Zhu, Ong, and Yeo, 2010, pp. 412–415, 426–427).

Finally, the richest cross-sectional specification includes segment fixed effects based on the fund's primary investment category, such as receivables, logistics/industrial, offices, shopping, funds of funds, hybrid funds, and other smaller segments. These controls absorb structural heterogeneity in business model, cash-flow generation, and macro-financial sensitivity across FII segments.

3.6. Missing data and effective sample structure

The raw issuance database combines offering information, fund characteristics, market variables, and return data. In constructing the analytical dataset, blank cells, invalid entries, spreadsheet errors, and non-informative placeholders were treated as missing. Variables expressed in levels were used to recompute their logarithmic transformations after cleaning. Derived measures—including Value/NAV, DiscountDummy, issuance cost rate, and fund age at issuance—were reconstructed from the cleaned underlying fields rather than inherited mechanically from pre-existing transformed columns.

Because the analysis relies on both market-based and accounting-style inputs, not all observations survive into every regression. The resulting samples are therefore nested. The main

analytical dataset contains 503 follow-on offerings. Of these, 374 have a valid two-year post-issuance excess return relative to IFIX (return-available sample). Among those, 333 also have non-missing Value/NAV and therefore enter the baseline pricing regressions (baseline pricing sample). The full controlled sample, which additionally requires non-missing values for proceeds, growth intensity, issuance costs, pre-issuance liquidity, fund age, issue number, and segment, contains 243 observations.

This sample structure is economically meaningful rather than incidental. The baseline sample is the broadest set of offerings for which post-issuance relative performance can be directly linked to issuance pricing. The controlled sample is narrower because it imposes richer data requirements, but it allows a more disciplined test of whether issuance pricing retains predictive content once key offering- and fund-level characteristics are taken into account.

3.7. Descriptive evidence and summary tables

Table 1 summarizes the empirical distribution of the variables used in the event-level analysis. Panel A reports descriptive statistics for the continuous variables. For each variable, column N reports the number of non-missing observations in the relevant sample; Mean and Std. Dev. summarize central tendency and dispersion; Min and Max report extrema; and P25, Median, and P75 report the 25th, 50th, and 75th percentiles. Panel B reports the segment composition of the return-available sample, with N denoting the number of offerings in each segment and Share (%) reporting each segment's percentage share of the sample.

Table 1. Summary statistics.

Panel A: Numeric variables

Variable	N	Mean	Std. Dev.	Min	P25	Median	P75	Max
Excess return (2y, vs. IFIX)	374	-2.009	21.334	-84.300	-11.290	0.385	9.525	132.560
Value/NAV (issue price / NAV per unit)	333	0.981	0.088	0.356	0.981	0.999	1.011	1.172
Discount dummy (Value/NAV < 1)	333	0.517	0.500	0.000	0.000	1.000	1.000	1.000
Log proceeds	282	18.546	1.478	10.370	17.795	18.876	19.588	21.311
Log growth (% units)	257	-1.620	1.501	-8.644	-2.240	-1.398	-0.747	1.567
Cost rate (% of issue value per unit)	321	0.024	0.014	0.000	0.013	0.026	0.035	0.058
Log avg. daily volume (3m)	365	14.007	1.574	5.068	13.238	14.347	15.085	16.472
Log fund age	368	6.691	1.237	1.099	5.954	6.779	7.608	8.705
Log issue number	374	1.527	0.535	0.693	1.099	1.609	1.946	2.708

Panel B: Segment distribution (return-available sample)

Segment	Count	Share (%)
Recebíveis	178	47.6%
Galpões	46	12.3%
FOF	39	10.4%
Híbrido	32	8.6%
Lajes	29	7.8%
Shopping	28	7.5%
Renda Urbana	7	1.9%
Educacional	5	1.3%
Agro	4	1.1%
Incorporação residencial	3	0.8%
Hotéis	2	0.5%
Hospital	1	0.3%

Notes: The return-available sample includes offerings with non-missing post-issuance excess returns (N = 374). Excess return is the fund's total return over the two years after the offering minus the IFIX total return over the same horizon. Value/NAV is the issuance price per unit divided by NAV per unit at the offering base date. DiscountDummy equals one when Value/NAV is below one. Log proceeds, log growth, log average daily volume (3m), log fund age, cost rate, and log issue number are defined as in Section 3. Panel B reports the segment composition of the return-available sample.

Several features of Table 1 are relevant for the empirical design. First, Value/NAV remains centered close to parity for most offerings, but the right tail is materially thinner than in the earlier version of the dataset. This weakens the empirical relevance of very high-premium tail tests and motivates support-based robustness checks. Second, variables related to issuance scale, equity growth, and trading activity are right-skewed, which motivates logarithmic transformations in the regression analysis. Third, the dispersion in two-year post-issuance excess returns is substantial, which is typical of cross-sectional return outcomes and reinforces the need for careful and consistent inference.

Table 2 reports Pearson pairwise correlations among the core variables used in the controlled specifications. Rows and columns correspond to the numbered variables listed below the table. Each off-diagonal entry is the pairwise correlation between two variables, computed on the listwise-complete controlled-regression sample, and asterisks indicate conventional significance levels for the null of zero correlation. The purpose of the table is to document the basic co-movement between issuance pricing and observable offering/fund characteristics and to provide a first diagnostic for potential collinearity.

Table 2. Correlation matrix (Pearson).

	1	2	3	4	5	6	7	8
1	1.00	-0.03	0.04	0.13**	-0.11*	0.10	-0.06	-0.06
2		1.00	0.27***	0.09	0.35***	-0.27***	0.09	0.09
3			1.00	0.73***	0.39***	0.05	0.17***	0.16**

	1	2	3	4	5	6	7	8
4				1.00	-0.18***	-0.29***	0.20***	-0.35***
5					1.00	0.27***	0.11*	0.52***
6						1.00	-0.08	0.63***
7							1.00	-0.08
8								1.00

Variable definitions: 1 = Excess return (2y, vs. IFIX); 2 = Value/NAV; 3 = Log proceeds; 4 = Log growth; 5 = Log avg. daily volume (3m); 6 = Log fund age; 7 = Cost rate; 8 = Log issue number.

Notes: Correlations are computed on the listwise-complete sample used in the controlled regressions (N = 243). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The correlations in Table 2 are economically intuitive for issuance events. Issuance pricing co-moves with some measures of offering scale and market visibility, consistent with the idea that larger and more seasoned issuers access capital markets under systematically different conditions than smaller or younger funds. At the same time, the correlation structure does not indicate near-linear dependence among the regressors. This supports the multivariate strategy in Section 4, where the paper uses a parsimonious but economically motivated control set and then examines whether the main conclusions survive richer specifications.

4. Empirical Strategy

4.1. Baseline specifications

Our empirical strategy tests whether issuance pricing relative to NAV predicts subsequent investor outcomes. The main dependent variable is the fund's two-year post-issuance total return in excess of IFIX over the same horizon, measured from the offering base date t_0, as defined in Section 3. We begin with two baseline cross-sectional specifications.

First, we estimate a continuous pricing model:

$$ExcessRet_i^{(0,2y)} = \alpha + \beta_1 Value/NAV_i + \varepsilon_i$$

where $ExcessRet_i^{(0,2y)}$ is the two-year post-issuance excess total return of fund i relative to IFIX, and $Value/NAV_i$ is the issuance price per unit divided by NAV per unit at the issuance date.

This specification tests whether richer issuance pricing predicts weaker future relative performance. A negative coefficient on Value/NAV is consistent with the idea that offerings conducted under relatively favorable valuation conditions are followed by weaker subsequent performance, which is in line with the market-timing logic emphasized in the broader SEO

literature and with the long-run underperformance documented for new issues more generally (Baker and Wurgler, 2002, pp. 1–3; Loughran and Ritter, 1995, pp. 23–24, 29–33).

Second, we estimate a threshold specification based on the most common practitioner heuristic in the Brazilian FII market:

$$ExcessRet_i^{(0,2y)} = \alpha + \beta_2 DiscountDummy_i + \varepsilon_i$$

where $DiscountDummy_i = 1(Value/NAV_i < 1)$.

This regression evaluates the "discount penalty" view directly. If issuance below NAV is systematically harmful to incumbent investors, offerings with DiscountDummy = 1 should be followed by lower subsequent excess returns. The continuous and threshold specifications therefore test distinct economic statements. The first captures a pricing gradient; the second captures a discontinuous penalty from crossing below parity.

4.2. Controlled cross-sectional specifications

Issuance pricing may be correlated with other offering- and fund-level characteristics that also influence post-issuance returns. To reduce omitted-variable concerns, we augment the baseline models with the control set described in Section 3:

$$\begin{aligned} ExcessRet_i^{(0,2y)} = \alpha + \beta Value/NAV_i + \gamma_1 LogProceeds_i + \gamma_2 LogGrowthUnits_i + \gamma_3 CostRate_i \\ + \gamma_4 LogAvgDailyVolume_{i,3m} + \gamma_5 LogAge_i + \gamma_6 LogIssueNumber_i + \varepsilon_i \end{aligned}$$

We then estimate a richer specification that additionally includes segment fixed effects:

$$ExcessRet_i^{(0,2y)} = \alpha + \beta Value/NAV_i + \Gamma' Controls_i + \delta_{Segment} + \varepsilon_i$$

where $\delta_{Segment}$denotes a full set of property-segment indicators.

The control set is included for economic rather than mechanical reasons. LogProceeds captures deal scale and market visibility. LogGrowthUnits captures the magnitude of equity expansion and therefore helps distinguish pricing effects from the scale of dilution. CostRate captures issuance frictions that reduce the net economic value of the capital raised. LogAvgDailyVolume proxies for pre-issuance liquidity and, potentially, for the informational quality of secondary-market prices. LogAge captures listed-market maturity and accumulated issuer history. LogIssueNumber accounts for repeated access to capital markets, which may be associated with distinct financing behavior and investor learning. In the REIT literature, repeated SEO activity has also been associated with stronger incentives to manipulate financing-related performance measures, especially FFO, around seasoned offerings (Zhu, Ong, and Yeo, 2010, pp. 412–415, 426–427).

We estimate parallel controlled specifications replacing Value/NAV with DiscountDummy when the object of interest is the threshold-based discount hypothesis rather than the continuous pricing gradient.

4.3. Inference

A key feature of the data is that several FIIs contribute multiple offerings to the sample. As a result, residuals may be correlated within issuer across events. This matters because repeated offerings by the same fund may reflect persistent issuer characteristics, recurring managerial behavior, or omitted variables that are not fully absorbed by the observed controls.

For that reason, the main inferential standard throughout the paper is based on standard errors clustered at the fund level. All main controlled regressions and all core robustness tests use fund-clustered standard errors. This standard is applied consistently across the paper and serves as the default basis for statistical inference.

Heteroskedasticity-robust standard errors of the HC1 type are reported only as supplementary checks. They are useful for documenting whether the conclusions are broadly sensitive to heteroskedasticity correction, but they are not treated as the primary inferential benchmark because they do not address within-fund dependence directly. Standardizing inference at the fund level is especially important in this setting because the paper's conclusions should not depend on switching across inferential conventions from one table to another.

4.4. Within-fund specifications

Cross-sectional regressions compare offerings across different issuers. That comparison is informative, but it may obscure pricing effects if persistent fund-level heterogeneity is correlated with issuance pricing. To examine whether pricing contains information relative to a fund's own issuance history, we estimate fund fixed-effects specifications of the form:

$$ExcessRet_{it}^{(0,2y)} = \alpha_i + \beta Value/NAV_{it} + \Gamma' Controls_{it} + \varepsilon_{it}$$

where $\alpha_i$denotes fund fixed effects.

This specification asks a narrower question than the cross-sectional model. Rather than comparing different funds, it compares multiple offerings by the same issuer over time. In economic terms, it evaluates whether richer or weaker issuance pricing within a given fund's own history is associated with differences in subsequent performance. Because fund fixed effects absorb time-invariant issuer characteristics, any remaining relation between pricing and returns is identified from within-fund variation only.

We estimate analogous fixed-effects specifications using DiscountDummy in place of Value/NAV to assess whether any within-fund effect is fundamentally threshold-based.

4.5. Nonlinearity and support

The interpretation of issuance pricing may be nonlinear. If very high-premium offerings reflect especially favorable valuation states or stronger timing incentives, any predictive content may be concentrated in the right tail of the Value/NAV distribution rather than in the linear slope. Conversely, if discounted issuance is truly harmful in a discontinuous way, the threshold effect may dominate the continuous gradient.

We therefore supplement the baseline and controlled models with support-based and nonlinear checks. These include restricting the sample to economically plausible ranges around parity, estimating premium-tail indicators compatible with the support of the observed data, and comparing continuous and threshold formulations. These exercises are not intended to search mechanically for significance, but to determine whether the data support a stable and economically interpretable pricing relation across the realized range of issuance terms.

The rationale for these exercises is consistent with the broader literature. The market-timing view suggests that issuance activity may be especially informative in unusually favorable valuation states (Baker and Wurgler, 2002, pp. 1–3), while the new-issues literature shows that long-run underperformance need not arise uniformly across all issues or all valuation states (Loughran and Ritter, 1995, pp. 23–24, 29–33).

4.6. Heterogeneity

The pricing signal may depend on observable characteristics of the fund and its trading environment. We therefore examine whether the association between issuance pricing and subsequent excess returns varies with fund age and pre-issuance liquidity. The corresponding interaction specifications take the form:

$$ExcessRet_{it}^{(0,2y)} = \alpha + \beta_1 Value/NAV_{it} + \beta_2 Z_{it} + \beta_3 (Value/NAV_{it} \times Z_{it}) + \Gamma' Controls_{it} + \varepsilon_{it}$$

where Z_{it} denotes either fund age or pre-issuance liquidity.

These heterogeneity tests are economically motivated. If secondary-market prices are more informative in more liquid funds, issuance pricing may carry more content about future relative performance in those settings. If older funds have more established track records and better-defined investor expectations, the same may hold with respect to listed-market maturity. The interaction framework therefore allows the data to distinguish a broad market-wide pricing effect from one that is conditional on the informational environment of the issuer.

4.7. Interpretation strategy

The empirical strategy is designed to distinguish among three possibilities. First, discounted offerings may be systematically harmful, in which case DiscountDummy should be negative and robust. Second, richer pricing may predict subsequent underperformance in a continuous way, in which case the coefficient on Value/NAV should be negative and stable across

specifications. Third, issuance pricing may have no broad cross-sectional content, but still contain conditional information within issuer or under particular market conditions.

Our interpretation therefore proceeds in layers. We start from the simplest cross-sectional relation between issuance pricing and future excess returns. We then ask whether that relation survives once offering and fund characteristics are controlled for. Next, we test whether the results depend on the inferential convention, on support restrictions, or on the treatment of nonlinearity. Finally, we evaluate whether pricing becomes informative in narrower designs based on within-fund comparisons and heterogeneity in liquidity or fund age. This sequence is intended to discipline interpretation and avoid attributing broad economic meaning to patterns that arise only under a specific modeling choice.

5. Main Results

5.1. Baseline results

We begin with the most direct test of the central market heuristic examined in this paper: whether issuance pricing relative to NAV predicts the fund's subsequent two-year total return in excess of IFIX. Table 3 reports the baseline cross-sectional regressions using the offering-event sample with non-missing post-issuance excess returns and issuance pricing.

Table 3. Baseline regressions: issuance pricing and post-issuance excess returns.

Variable	**(1)** **Value/NAV**	**(2)** **Discount dummy**
Value/NAV	4.01	
	(29.54)	
DiscountDummy		-1.54
		(2.76)
Constant	-6.48	-1.75
	(29.40)	(1.42)
Observations	333	333
R-squared	0.000	0.001

Notes: Dependent variable is the fund's excess total return relative to IFIX over the two years after the offering. Standard errors are clustered at the fund (FII) level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The baseline sample requires non-missing Y and the corresponding pricing variable (N = 333).

The baseline evidence does not support a systematic discount penalty. In the continuous specification, the coefficient on Value/NAV is statistically indistinguishable from zero. In the threshold specification, the coefficient on DiscountDummy is likewise not statistically different

from zero. Thus, offerings priced below NAV do not underperform on average, and issuance pricing relative to NAV does not emerge as a robust stand-alone predictor of post-issuance excess returns in the broad cross-section of offerings.

This result is economically important because the dominant practitioner view in the Brazilian FII market treats discounted issuance as prima facie evidence of value destruction for incumbent investors. The baseline regressions do not support that view. More broadly, they also fail to support the stronger timing-based claim that richer issuance pricing relative to NAV is generally followed by weaker subsequent performance. In the corrected and expanded dataset, neither a simple discount-versus-no-discount rule nor a broad linear pricing rule survives the most direct cross-sectional test.

This finding is not inconsistent with the broader SEO literature. In conventional seasoned offerings, richer issuance pricing may reflect favorable valuation states or managerial timing, and long-run post-issue underperformance has been documented for new issues more generally (Baker and Wurgler, 2002, pp. 1–3; Loughran and Ritter, 1995, pp. 23–24, 29–33). At the same time, those literatures do not imply that every pricing signal should survive unchanged in a REIT-like setting where NAV is appraisal-based and external equity plays a structurally central financing role. In vehicles of this kind, issuance pricing may reflect a mix of valuation, financing constraints, and investment opportunity timing rather than a single welfare channel.

5.2. Controlled cross-sectional results

Table 4 augments the baseline models with the issuance- and fund-level controls described in Section 3: issuance size, growth in outstanding units, issuance cost rate, pre-issuance liquidity, fund age, issue sequence, and, in the richest specification, segment fixed effects.

Table 4. Controlled regressions (standard errors clustered at the fund level).

Variable	**(1)**	**(2)**	**(3)**
Value/NAV	21.79	23.99	43.39
	(35.36)	(37.14)	(27.23)
Log proceeds	-3.28	-2.55	-0.47
	(2.70)	(3.47)	(2.78)
Log growth	5.22**	4.40	1.38
	(2.53)	(3.48)	(2.79)
Log avg. daily volume (3m)	-0.74	-0.67	-0.67
	(1.73)	(1.67)	(1.67)
Log fund age	4.66*	5.41*	5.49*
	(2.41)	(2.95)	(3.13)
Cost rate	-131.59	-135.51	-71.18
	(129.07)	(129.41)	(133.90)

Variable	(1)	(2)	(3)
Log issue number		-3.69	-10.40
		(8.08)	(6.43)
Constant	26.11	9.03	-35.75
	(55.51)	(76.37)	(53.71)
Segment FE	No	No	Yes
Fund FE	No	No	No
Observations	243	243	243
R-squared	0.068	0.072	0.298

Notes: Dependent variable is the fund's excess total return relative to IFIX over the two years after the offering. Standard errors are clustered at the fund (FII) level. Segment fixed effects are included in column (3) but not reported. All columns use the listwise-complete main-controls sample (N = 243) for comparability across specifications. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The controlled regressions confirm the baseline message. Once we account for observable differences across offerings and issuers, the coefficient on Value/NAV remains statistically insignificant. Importantly, this conclusion holds under the paper's main inferential standard, which clusters standard errors at the fund level. The estimated slope does not provide stable evidence that richer issuance pricing predicts weaker subsequent excess returns. Likewise, the threshold interpretation based on DiscountDummy does not generate a statistically reliable discount penalty.

Substantively, these results indicate that issuance pricing relative to NAV does not have broad cross-sectional predictive content once economically relevant differences across deals and issuers are taken into account. In other words, the corrected data do not support the idea that investors can classify follow-on offerings in FIIs using a simple pricing rule that is stable across funds, segments, and offering environments.

Some controls are nonetheless informative. Offerings associated with stronger growth in outstanding units tend to exhibit better subsequent relative performance in some controlled specifications. This pattern suggests that larger equity expansions need not be interpreted as negative signals once issuance pricing and other deal characteristics are held constant. Fund age also enters positively in some models, although the strength of this relation is not uniform across specifications. These secondary patterns are informative, but they do not overturn the main conclusion: issuance pricing by itself is not a robust cross-sectional predictor of post-issuance excess returns in the full offering sample.

This more restrained interpretation is consistent with the institutional arguments developed earlier in the paper. In payout-oriented real-estate vehicles, external equity is a recurrent funding mechanism, and issuance terms may reflect a combination of appraisal lags, financing conditions, investment opportunities, and managerial discretion rather than a single, uniform agency channel. Ghosh and Sirmans (2006, pp. 327–330) emphasize that REIT payout rules reduce internal funding capacity while preserving meaningful financing choices; Bauer, Eichholtz, and Kok (2010, pp. 1–4, 22–23) show that legal constraints may mitigate but do not eliminate governance frictions; and

Oh and Verstein (2024, pp. 758–760) stress the unusual combination of payout restrictions and takeover insulation in REITs. In that institutional environment, a weak average cross-sectional relation between issuance pricing and future returns is economically plausible.

5.3. Main implications of the cross-sectional evidence

The baseline and controlled regressions lead to a narrower conclusion than the one often implied by market commentary. The data do not support a blanket stigma against discounted offerings. But neither do they support a general claim that premium issuance is a reliable warning sign of future underperformance. In the broad cross-section of follow-on offerings, issuance pricing relative to NAV does not appear to provide a stable market-wide rule for predicting investor outcomes.

That does not mean that issuance pricing is irrelevant. Rather, it suggests that any informational content is likely to be conditional rather than universal. The main cross-sectional evidence indicates that simple heuristics based solely on whether an offering is priced below or above NAV are insufficient for evaluating investor consequences in Brazilian FIIs. This is an important result in its own right, because it implies that the economic meaning of issuance pricing depends on context rather than on a single threshold or slope that holds uniformly across the market.

This interpretation also helps reconcile the findings with the broader new-issues literature. The SEO and market-timing evidence shows that issuance decisions can be related to valuation conditions and subsequent performance (Baker and Wurgler, 2002, pp. 1–3; Loughran and Ritter, 1995, pp. 23–24, 29–33), but the present results indicate that this logic does not translate into a simple cross-sectional rule based on Value/NAV in Brazilian FIIs. In this setting, the pricing signal appears too noisy to support a general market-wide classification rule.

The next section therefore moves beyond the broad cross-section and examines whether the pricing effect becomes more visible under alternative inferential choices, within-fund comparisons, or observable dimensions such as pre-issuance liquidity and fund age.

6. Robustness Checks and Extensions

6.1. Inference and support

We begin the robustness analysis by asking whether the main cross-sectional findings depend on the treatment of standard errors or on the support of the pricing variable. Table 5 reports these checks.

Table 5. Robustness checks: inference, support, and nonlinearity.

Variable	(1) Full sample HC1	(2) Full sample Cluster fund	(3) Band [0.8,1.2] HC1	(4) Band [0.8,1.1] HC1	(5) High premium >= 1.10 HC1	(6) High premium >= 1.10 Cluster fund
Value/NAV	4.01	4.01	-2.14	-7.30		
	(24.95)	(29.54)	(24.04)	(29.14)		
High premium (>=1.10)					3.37	3.37
					(5.15)	(5.85)
Constant	-6.48	-6.48	-0.49	4.55	-2.62**	-2.62
	(24.95)	(29.40)	(24.19)	(29.17)	(1.19)	(1.81)
Observations	333	333	318	311	333	333
R-squared	0	0	0	0	0.001	0.001

Notes: Dependent variable is the fund's excess total return relative to IFIX over the two years after the offering. Columns (1) and (2) use the full baseline sample. Columns (3) and (4) trim the sample to moderate Value/NAV bands. Columns (5) and (6) replace the continuous pricing measure with a sample-supported indicator for unusually high premiums (Value/NAV >= 1.10). Standard errors are HC1 in columns (1), (3), (4), and (5) for robustness check only, and clustered by fund in columns (2) and (6). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The first result is that the null cross-sectional finding is not an artifact of the inferential convention. Replacing fund-clustered standard errors with heteroskedasticity-robust HC1 standard errors does not overturn the core conclusion: Value/NAV remains statistically weak and economically unstable in the cross-section. This is important because it shows that the paper's main conclusion does not hinge on switching across error structures.

The second result is that support restrictions do not restore a stable pricing effect. Restricting the sample to economically plausible ranges around parity leaves the main message unchanged. The coefficient on Value/NAV remains statistically fragile, and the threshold formulation based on discounted issuance continues to lack explanatory power. In other words, the absence of a broad pricing rule is not driven by a small number of implausible observations far from parity.

These results matter for interpretation. In the broader market-timing literature, issuance decisions can be linked to valuation states and subsequent return reversals, but such relations need not appear as smooth and stable cross-sectional slopes in every institutional setting (Baker and Wurgler, 2002, pp. 1–3; Loughran and Ritter, 1995, pp. 23–24, 29–33). The evidence here indicates that, in FIIs, the cross-sectional relation between issuance pricing and future excess returns is too weak to support a general market-wide rule.

6.2. Nonlinearity and the premium tail

We next assess whether predictive content is concentrated in the upper tail of issuance pricing. This question is economically relevant because the SEO literature does not require underperformance to arise uniformly across all offerings. It may be that relatively rich pricing

matters only when issuance occurs under unusually favorable valuation conditions (Baker and Wurgler, 2002, pp. 1–3).

In the earlier version of the dataset, very high-premium observations appeared more relevant empirically. In the corrected sample, however, the right tail of Value/NAV is much thinner. As a consequence, the old extreme-premium cutoff is no longer empirically informative. We therefore replace it with a premium-tail definition that is compatible with the realized support of the new data.

The results do not provide convincing evidence of a premium-tail effect. Even under a tail definition consistent with the revised sample, the premium indicator is not statistically significant. Thus, the corrected data do not support the idea that post-issuance underperformance is concentrated in a small set of unusually high-premium offerings. This is important because it means that the more nuanced interpretation of the paper cannot rely on a narrow right-tail mechanism inherited from the prior construction of the sample.

6.3. Within-fund evidence

The most informative departure from the broad cross-sectional evidence appears when we exploit within-fund variation. Table 6 reports the fixed-effects specifications.

Table 6. Within-fund evidence: fund fixed effects regressions.

Variable	(1) Value/NAV	(2) Discount dummy	(3) Value/NAV + controls	(4) Discount dummy + controls
Value/NAV	-98.67		-100.11***	
	(81.96)		(30.61)	
Discount dummy		4.51		4.72*
		(3.00)		(2.44)
Log proceeds			-5.84	-7.72
			(5.38)	(5.16)
Log growth			5.84	8.07
			(5.45)	(5.36)
Log avg. daily volume (3m)			0.28	0.59
			(2.32)	(2.36)
Log fund age			-2.29	-2.34
			(2.26)	(2.19)
Cost rate			-177.12	-170.56
			(117.89)	(115.61)
Log issue number			-11.73	-8.43

Variable	(1) Value/NAV	(2) Discount dummy	(3) Value/NAV + controls	(4) Discount dummy + controls
			(7.60)	(7.51)
Constant	108.22	7.94***	254.95***	181.36**
	(82.36)	(0.75)	(74.25)	(72.81)
Fund FE	Yes	Yes	Yes	Yes
Observations	333	333	243	243
R-squared	0.658	0.639	0.912	0.909

Notes: All specifications include fund (FII) fixed effects and standard errors are clustered at the fund (FII) level. Columns (3) and (4) use the listwise-complete sample with the main control set: log proceeds, log growth, log avg. daily volume (3m), log fund age, cost rate, and log issue number. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

In the fund fixed-effects regressions, the coefficient on Value/NAV turns negative, and becomes statistically significant once the main controls are included. This result suggests that issuance pricing may contain information in a narrower sense than the cross-sectional models indicate. Relative to a given fund's own issuance history, richer pricing is followed by weaker subsequent performance.

This is a materially different conclusion from the one that would follow from the baseline cross-section. The cross-sectional evidence says that Value/NAV does not provide a stable market-wide rule. The fixed-effects evidence says that pricing may still matter once persistent issuer heterogeneity is absorbed. That distinction is economically meaningful. If funds differ systematically in mandate, governance, investor clientele, fee structure, or reputation, then comparing offerings across different issuers may mask a signal that becomes visible only in within-fund contrasts.

The corresponding fixed-effects specification using DiscountDummy provides at most marginal evidence and does not support a threshold interpretation of the effect. This reinforces the broader conclusion that the data do not favor a simple discount-versus-no-discount rule. What appears to survive is a more continuous and issuer-specific pricing signal rather than a discrete penalty for crossing below NAV.

This interpretation is consistent with the REIT literature insofar as financing behavior and managerial incentives can remain informative even in relatively transparent and payout-oriented structures. REIT studies have shown that disclosure-rich settings do not eliminate opportunistic behavior around financing events and that real activities manipulation can remain relevant when broad governance-performance relations appear weak in the aggregate (Zhu, Ong, and Yeo, 2010, pp. 412–415, 426–427; Anglin, Edelstein, Gao, and Tsang, 2013, pp. 538–540).

6.4. Heterogeneity by liquidity and fund age

Table 7 reports interaction tests that allow the pricing effect to vary with observable fund characteristics.

Table 7. Heterogeneity and interaction tests.

Variable	(1) Segment FE baseline	(2) Value/NAV × log age	(3) Value/NAV × log volume
Value/NAV	43.39	-103.37	257.46***
	(27.23)	(171.71)	(53.52)
Value/NAV × log age		18.92	
		(23.57)	
Value/NAV × log volume			-18.18***
			(4.20)
Log proceeds	-0.47	-0.37	-0.49
	(2.78)	(2.78)	(2.87)
Log growth	1.38	1.21	1.36
	(2.79)	(2.79)	(2.84)
Log avg. daily volume (3m)	-0.67	-0.90	16.58***
	(1.67)	(1.67)	(4.17)
Log fund age	5.49*	-13.18	5.99*
	(3.13)	(23.42)	(3.14)
Cost rate	-71.18	-62.64	-61.73
	(133.90)	(133.79)	(130.29)
Log issue number	-10.40	-10.69	-9.78
	(6.43)	(6.46)	(6.21)
Constant	-35.75	110.89	-240.03***
	(53.71)	(184.56)	(67.46)
Segment FE	Yes	Yes	Yes
Observations	243	243	243
R-squared	0.298	0.301	0.327

Notes: All specifications use the listwise-complete controlled sample and standard errors are clustered at the fund (FII) level. Segment fixed effects are included in all columns. Column (2) interacts issuance pricing with fund age, and column (3) interacts issuance pricing with pre-issuance liquidity. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The interaction with fund age does not yield a stable or economically informative pattern. By contrast, the interaction between Value/NAV and pre-issuance liquidity is both economically meaningful and statistically stronger. The negative slope of Value/NAV becomes more pronounced as pre-issuance liquidity increases.

This result suggests that issuance pricing is more informative when the secondary-market price is itself more informative. In more liquid funds, market prices may better reflect

contemporaneous valuation conditions, investor sentiment, or temporary demand states. In such cases, richer issuance pricing is more likely to signal a favorable state that later normalizes. In less liquid funds, by contrast, trading frictions and noise may attenuate the informational content of the issuance price.

This heterogeneity result is consistent with the broader logic of market timing, but in a more conditional form than the cross-sectional models alone would suggest. Baker and Wurgler (2002, pp. 1–3) characterize equity market timing as issuing when valuations are relatively favorable. The evidence here does not support a broad market-wide timing rule in FIIs, but it does suggest that valuation-state information is more visible when pricing is formed in a more liquid market environment.

6.5. Interpretation of the robustness evidence

Taken together, the robustness tests materially narrow the scope of the paper's conclusion. The corrected data do not support a general claim that discounted offerings harm incumbent investors, nor do they support a strong cross-sectional claim that higher Value/NAV systematically predicts weaker future excess returns across all issuers and offerings. What survives is more selective.

First, the null cross-sectional result is robust to inferential choices and support restrictions. Second, the premium-tail mechanism is not supported in the corrected sample. Third, issuance pricing becomes informative when identification comes from within-fund comparisons. Fourth, that informational content is stronger in more liquid funds.

The paper's conclusion is therefore neither that issuance pricing is irrelevant nor that the conventional market heuristic is simply reversed. Rather, the evidence indicates that issuance pricing in FIIs is **context-dependent**. It is too noisy to serve as a reliable market-wide rule of thumb, but it may still contain useful information when issuer-specific comparisons are feasible and when the secondary market provides a more informative valuation signal.

This interpretation is also more consistent with the institutional setting developed earlier in the paper. In payout-oriented real-estate vehicles, external equity is a recurring financing tool; governance frictions are altered but not eliminated; and financing decisions may reflect a combination of valuation conditions, managerial discretion, and investment opportunities rather than a single, transparent dilution channel (Ghosh and Sirmans, 2006, pp. 327–330; Bauer, Eichholtz, and Kok, 2010, pp. 1–4, 22–23; Oh and Verstein, 2024, pp. 758–760). The revised empirical results fit that more nuanced institutional interpretation better than a simple discount-stigma narrative.

7. Conclusion

This paper examines whether follow-on offerings priced below net asset value systematically harm investors in Brazilian real estate funds. The setting is economically important because FIIs rely heavily on external equity, operate in a listed real-estate market with substantial retail participation, and are often discussed in practice through simple issuance-pricing heuristics. In particular, discounted offerings are frequently treated as direct evidence of value destruction for incumbent investors.

The evidence does not support that view as a broad empirical regularity. In the cross-section, offerings priced below NAV do not underperform on average, and the continuous pricing measure, Value/NAV, does not robustly predict the fund's subsequent two-year total return in excess of IFIX. This conclusion survives the inclusion of issuance- and fund-level controls and remains unchanged when the paper adopts a single, transparent inferential standard based on standard errors clustered at the fund level. The revised data also provide no convincing evidence that underperformance is concentrated in a high-premium tail.

At the same time, the results do not imply that issuance pricing is entirely uninformative. More conditional evidence emerges when identification comes from within-fund variation and when the informational environment of the issuer is stronger. In fund fixed-effects specifications, richer issuance pricing is followed by weaker subsequent performance, and this relation is stronger among more liquid funds. The informational content of issuance pricing therefore appears to be context-dependent rather than universal.

These findings suggest a narrower and more disciplined interpretation of issuance pricing in FIIs. A blanket stigma against discounted offerings is not supported by the data. But neither do the data support the converse claim that premium issuance is a broadly reliable warning sign of future underperformance. Instead, the evidence indicates that the meaning of issuance pricing depends on offering context, issuer-specific history, and the quality of market price formation around the event date.

This interpretation fits naturally with the institutional background of REIT-like vehicles. Payout-oriented structures reduce the scope for internal capital retention, but they do not eliminate agency frictions or the informational complexity of financing decisions. In REIT settings, legal restrictions and governance arrangements alter managerial incentives without fully resolving the underlying principal-agent problem (Jensen and Meckling, 1976, pp. 167–168; Ghosh and Sirmans, 2006, pp. 327–330; Bauer, Eichholtz, and Kok, 2010, pp. 1–4, 22–23; Oh and Verstein, 2024, pp. 758–760). The present results are consistent with that view. Issuance pricing is not a mechanical dilution statistic, but neither is it irrelevant. Its content appears to depend on institutional and market context rather than on a single rule that applies uniformly across funds and offerings.

The paper contributes to the literature in three ways. First, it provides a broad event-level analysis of follow-on offerings in an important emerging real-estate securities market. Second, it

shows that the common discount-versus-no-discount heuristic is too coarse to organize the cross-section of post-issuance investor outcomes in FIIs. Third, it identifies a narrower channel through which issuance pricing may still matter: within issuer and in more liquid market environments.

The paper also has practical implications. For investors, the results caution against treating discounted issuance as a sufficient statistic for expected harm. For managers and market participants, they suggest that the relevant question is not whether an offering is below or above NAV in isolation, but whether the offering rationale, use of proceeds, and expected per-unit value creation are persuasive given the fund's own history and the prevailing market environment. For researchers, the results point to the importance of studying issuance decisions in listed real-estate vehicles at the event level, with careful attention to event dating, benchmark construction, and within-issuer heterogeneity.

Like any study, this one has limitations. The paper focuses on FIIs that entered the IFIX at least once over the sample window, which is appropriate for identifying economically relevant listed issuers but does not exhaust the full universe of Brazilian real-estate funds. In addition, although the paper documents conditional pricing effects within issuer and by liquidity, it does not directly observe managerial intent or the private information available at the time of issuance. Future research may therefore benefit from linking issuance decisions to more detailed measures of governance, mandate quality, acquisition pipelines, and post-offering capital deployment.

Overall, the results point to a simple conclusion: issuance pricing in Brazilian FIIs matters less as a universal market-wide rule and more as a conditional signal whose content depends on issuer history and market quality. That conclusion is narrower than common market narratives suggest, but it is also more consistent with the economics of payout-oriented real-estate vehicles and with the evidence presented in this paper.

Appendix A. Data Construction, Cleaning, and Variable Definitions

This appendix documents the construction of the issuance-level dataset used in the empirical analyses. Its purpose is to provide transparency on sample definition, event dating, source reconciliation, data cleaning, and variable construction, with particular emphasis on how offering terms, accounting anchors, and market-based outcomes are aligned in time.

A.1. Universe and event definition

The unit of observation is a seasoned equity offering (follow-on) by a Brazilian real estate investment fund (FII). The empirical universe comprises follow-on offerings by FIIs that were constituents of the IFIX index in at least one index cycle from 2019Q1 onward.

An offering is treated as an event at date t_0, defined as the **offering base date** (Data Base). This is the cutoff date for subscription rights and is treated as the issuance date for all empirical purposes in the paper, including the alignment of issuance terms, NAV per unit, pre-issuance liquidity, fund age, and the subsequent return window.

The starting issuance database contains **575 observations**. The main analytical dataset excludes:

1. **first issuances**, because the paper studies follow-on offerings rather than IPO-like events; and
2. **pre-listing events**, defined as offerings whose base date precedes the fund's first negotiated trading date in the secondary market.

After these restrictions, the main analytical dataset contains **503 follow-on offerings**.

A.2. Primary sources and cross-checks

Offering characteristics are collected from official issuance materials and market disclosures, including prospectuses, final offering notices, material facts, and market communications released by the fund, administrator, or manager.

Market-based inputs, including secondary-market prices and trading volume, are obtained from exchange data and specialized databases and are cross-checked against official disclosures when necessary.

NAV per unit is obtained from the fund's official reports and administrator disclosures. The date of first negotiated trading is used to establish listed-market age and to identify pre-listing events that should be excluded from the main analysis.

Because the dataset combines information from different sources and reporting formats, all key issuance fields are reconciled at the event level before the final variables are constructed.

A.3. Reconciliation rules and data cleaning

When multiple documents report slightly different figures for the same offering attribute, the final dataset follows a simple hierarchy designed to prioritize final and legally binding information:

1. final offering communication or final offer notice prevails over preliminary prospectus values;
2. if the final notice is unavailable, the most recent official disclosure confirming final terms is used;
3. when both proceeds and quantities are available, internal consistency checks are applied to verify that reported totals are compatible with issue price and number of units issued, subject to explicitly disclosed fees.

The raw dataset was then cleaned before variable construction. The main cleaning procedures were:

- blank cells, spreadsheet error values, and non-informative placeholders were treated as missing;
- derived variables were recomputed from cleaned underlying fields rather than inherited mechanically from pre-existing transformed columns;
- invalid or economically impossible values were treated conservatively, typically by setting the affected field to missing rather than imputing a correction not supported by primary information;
- sequential issue numbers were reconciled within fund when inconsistencies were detected in temporal ordering;
- cases associated with clear breaks in market series due to changes in quotation basis, splits, reverse splits, or similar corporate events were identified and treated conservatively in the affected market-based variables.

The purpose of these procedures is to ensure internal consistency between the raw issuance terms, accounting variables, and market-based measures used in the empirical analysis.

A.4. Timing alignment

A central feature of the dataset is the consistent use of t_0 as the **offering base date**. This convention governs all timing-sensitive variables in the paper.

- **Issue price** is measured using the final issuance price per unit associated with the offering.
- **NAV per unit** is measured at the offering base date using the aligned accounting information available for the event.
- **Pre-issuance liquidity** is measured over the three months preceding t_0.

- **Fund age** is measured as the number of days between the fund's first negotiated trading date and t_0.
- **Post-issuance performance** is measured from t_0 forward.

This convention ensures that explanatory variables are aligned to the information set relevant at the time of the offering and avoids mixing issuance terms with post-event accounting or market updates.

A.5. Return construction and benchmark adjustment

The dependent variable is the fund's two-year post-issuance total return in excess of the IFIX total return over the same horizon.

For each offering i,

$$ExcessRet_i(0, 2y) = TR_i^{FII}(t_0, t_0 + 2y) - TR^{IFIX}(t_0, t_0 + 2y)$$

where:

- $TR_i^{FII}(t_0, t_0 + 2y)$ is the fund's total return from the offering base date through two years later, including cash distributions; and
- $TR^{IFIX}(t_0, t_0 + 2y)$ is the IFIX total return over the identical calendar window.

This benchmark adjustment removes a large component of common market variation and focuses attention on post-issuance outcomes relative to the listed FII market.

The dependent variable is available for **374 offerings** in the final analytical dataset.

A.6. Variable definitions

Table A1. Variable definitions

Variable (paper notation)	Dataset field	Definition and construction	Units / transformation
ExcessRet (0,2y)	Excesso RET após 2 anos	Two-year post-issuance total return in excess of IFIX over the same window.	Percentage points
Value/NAV	Agio/Deságio (Valor/VPA)	Issuance price per unit divided by NAV per unit measured at (or immediately prior to) the offering date t0.	Ratio
DiscountDummy	DiscountDummy (derived)	Indicator equal to 1 if Value/NAV < 1 and 0 otherwise.	0/1
log(Proceeds)	Log Montante captado	Log of total gross proceeds raised in the offering.	Natural log
log(GrowthUnits)	Log Crescimento (em % cotas)	Log of the percentage increase in units outstanding attributable to the offering.	Natural log
CostRate	Custo por cota (em % valor por cota)	Offering costs as a percentage of the issue value per unit (structuring, distribution, and related fees).	Percent

log(Volume_3m)	Log Vol Médio diário (3m)	Log of average daily traded value over the three months preceding t0 (liquidity proxy).	Natural log
log(Age)	Log Idade do FII	Log of fund age at t0, measured as time since first negotiated secondary-market trading date.	Natural log
log(IssueNumber)	Log Emissão número	Log of the fund's ordinal issuance count (e.g., 2nd, 3rd, 5th follow-on), capturing issuance experience/maturity.	Natural log
Segment	Segmento	Segment classification (e.g., Logistics, Offices, Shopping, Receivables) used for structural controls and subsamples.	Categorical
Fund identifier	FII	Fund ticker used for clustering and fixed effects.	Categorical

Notes: All timing-sensitive variables are aligned to the offering base date, which is treated as the issuance date for empirical purposes. Log transformations are natural logarithms. The main analytical dataset excludes first issuances and pre-listing events.

A.7. Effective analytical samples

Because some variables are unavailable for a subset of offerings, sample sizes differ across tables.

The empirical analysis relies on the following nested samples:

- 503 observations in the main analytical dataset after excluding first issuances and pre-listing events;
- 374 observations with non-missing two-year post-issuance excess returns;
- 333 observations with both non-missing excess returns and non-missing Value/NAV, used in the baseline pricing regressions;
- 243 observations in the listwise-complete sample used in the main controlled cross-sectional regressions.

These sample differences reflect data availability in specific control variables rather than additional conceptual filters beyond those described above.

A.8. Final remarks on data treatment

All empirical results in the paper are based on the final cleaned dataset. Observations with clearly invalid entries or economically implausible values in fields that could not be safely reconciled were treated conservatively. In general, the cleaning principle was to preserve observations whenever the event itself could be confidently identified, while setting individual variables to missing when the underlying value could not be documented with sufficient reliability.

This approach prioritizes transparency and reproducibility over aggressive imputation or undocumented correction.

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