Do Issuance Discounts Hurt in Brazilian Real Estate Funds?

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Abstract

This paper examines whether seasoned offerings priced below net asset value (NAV) harm incumbent investors in the Brazilian real estate fund (FII) market. Using an issuance-level sample of 249 seasoned offerings completed between June 21, 2019 and August 7, 2023 by FIIs that were constituents of the IFIX index in 2025Q2, we measure outcomes as the fund's two-year post-issuance total return in excess of IFIX. We find no evidence of a systematic discount penalty: offerings priced below NAV are not followed by reliably weaker excess returns. The continuous issue price-to-NAV ratio is generally negative in sign, but it is imprecisely estimated and loses explanatory power once offering characteristics, liquidity, maturity, and segment controls are included. By contrast, issuer maturity and issuance sequence are more stable predictors of subsequent performance. Issuance pricing relative to NAV is therefore not a sufficient statistic for investor harm.

JEL classification: G12, G14, G34, R33.

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

1. Introduction

Seasoned equity offerings (SEOs) are a natural setting in which financing decisions and governance frictions intersect. New equity can relax capital constraints, expand the scale of the vehicle, and fund acquisitions or portfolio repositioning. It can also dilute incumbent investors, reallocate claims across old and new shareholders, and reveal managerial beliefs about valuation. These tensions are especially salient in real-estate vehicles, where assets are tangible and disclosure is relatively rich, yet payout constraints, recurring capital needs, and managerial discretion leave substantial room for agency problems (Jensen and Meckling, 1976; Bianco, Ghosh, and Sirmans, 2007; Bauer, Eichholtz, and Kok, 2010).

This paper studies these issues in Brazilian real estate investment funds (Fundos de Investimento Imobiliário, FIIs). FIIs resemble REITs in their reliance on external equity, but they operate in a distinct institutional environment: net asset value (NAV) is appraisal-based, the investor base is heavily retail-oriented, and secondary-market liquidity varies widely across issuers. Over time, the sector has evolved from predominantly simple, single-asset structures into a market with repeated equity issuance, more complex portfolios, and greater managerial discretion over capital allocation. In such an environment, issuance terms are potentially informative not only about valuation, but also about issuer state, financing constraints, and the credibility of future capital deployment.

A particularly influential interpretation in this market is that issuing below NAV is inherently harmful to incumbent investors. The intuition is straightforward: if new claims are sold below reported NAV, value appears to be transferred from existing unitholders to new subscribers. But that interpretation is not analytically complete. In markets where NAV is accounting-based and updated through appraisal practices, market prices can move faster than book-based valuation anchors. Discounted issuance may therefore reflect poor governance, but it may also reflect equilibrium financing conditions in stressed markets. Conversely, issuance at richer price-to-NAV ratios may coincide with valuation states in which future returns are lower. The central question is thus broader than whether discounts are "good" or "bad." It is whether issuance price relative to NAV contains standalone predictive content for subsequent investor outcomes once issuer characteristics and structural heterogeneity are taken into account.

That is the empirical question of the paper. We assemble an issuance-level dataset of 249 follow-on offerings completed between June 21, 2019 and August 7, 2023 by FIIs that were constituents of the IFIX index in 2025Q2. The unit of observation is the offering event. For each issuance, we compute the fund's two-year total return, including distributions, in excess of the IFIX total return over the same horizon. The key explanatory variable is the issuance price scaled by NAV per unit (Value/NAV), complemented by a discount indicator for offerings priced below NAV.

This study contributes in three ways. First, it provides a hand-constructed event-level dataset for a major emerging real-estate securities market, linking issuance terms directly to post-issuance investor outcomes. Second, it extends the REIT and SEO literatures to a setting in which appraisal-based NAV, retail participation, and repeated fund issuance make the informational content of price-to-NAV ratios particularly difficult to interpret. Third, it contributes to a broader research question: whether issuance pricing relative to accounting-based NAV remains informative once issuer-state variables such as maturity, issuance history, liquidity, and segment composition are incorporated into the analysis.

The identification challenge is immediate. Issuance pricing is not randomly assigned. Managers choose when to issue, how much to raise, and at what terms in response to investment opportunities, investor demand, market conditions, and fund-specific constraints. The empirical design is therefore predictive rather than causal. The strategy is to benchmark post-issuance outcomes to IFIX, use only variables observed at or before the issuance date, control for offering scale, growth intensity, costs, liquidity, fund age, issuance sequence, and segment composition, and complement the cross-sectional analysis with within-fund specifications. This design does not eliminate endogeneity, but it provides a disciplined test of whether price relative to NAV carries incremental predictive content once economically relevant issuer characteristics are accounted for.

The results are more nuanced than the conventional market narrative suggests. Offerings priced below NAV are not followed by reliably weaker subsequent excess returns. The continuous Value/NAV measure is generally negative in sign, but it is estimated imprecisely and loses explanatory power once controls are introduced. By contrast, issuer-state variables are more stable predictors of post-issuance outcomes: older funds tend to perform better, while later offerings by the same issuer tend to be followed by weaker relative performance. In other words, in this setting, issuance price relative to appraisal-based NAV has limited standalone predictive content once maturity, issuance history, liquidity, and structural heterogeneity are taken seriously.

The remainder of the paper proceeds as follows. Section 2 describes the institutional setting of FIIs and develops the hypotheses. Section 3 presents the data and variable construction. Section 4 outlines the empirical strategy. Section 5 reports the main results. Section 6 discusses robustness and additional analyses. 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. They operate with comparatively high transparency in asset-level disclosure and cash-flow reporting, and they follow strong distribution norms that limit the accumulation of internal capital. In such environments, growth typically requires external financing. For FIIs, the most direct and scalable channel is the follow-on offering: issuing new units to fund acquisitions, development, credit allocations, or portfolio rebalancing. This institutional design mirrors arguments in the REIT literature that payout and related constraints—while seemingly restrictive—shape a financing equilibrium that can support sector development (Oh and Verstein, 2024).

2.2. Manager incentives and the agency wedge in follow-on decisions

Agency theory frames the manager-investor relationship as a classic principal-agent problem (Jensen and Meckling, 1976). In FIIs, the wedge can be particularly sharp because management compensation is commonly tied to fund size, often as a fee on net assets and, in some cases, linked to market value when index inclusion is relevant. As a result, asset growth mechanically increases the manager's revenue, whereas unitholders care about per-unit value and risk-adjusted total return. Seasoned offerings are therefore a natural locus for agency concerns: a manager may have private incentives to issue even when the offering is not expected to enhance per-unit value.

Formal governance mechanisms exist—offerings typically require disclosure and investor approval—but they operate under substantial information asymmetry. The manager controls the narrative about pipeline opportunities, expected yields, and acquisition pricing, while participation in unitholder votes is often limited. These features make the issuance decision an empirically meaningful testbed for whether observable issuance choices map into investor outcomes, in line with REIT evidence that governance structures do not preclude opportunistic behavior (Bianco, Ghosh, and Sirmans, 2007; Bauer, Eichholtz, and Kok, 2010).

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

The market's intuitive objection to discounted issuance is straightforward: issuing claims below NAV appears to transfer value from incumbents to new subscribers. However, three features complicate that inference in real-estate funds.

First, NAV is appraisal-based and updates with lags; it is informative but not a frictionless liquidation value. During regime shifts in interest rates or risk premia, secondary prices can move faster than appraised NAV, mechanically producing discounts without necessarily implying value giveaway.

Second, a discount may be the equilibrium cost of capital in downturns. If investment opportunities are attractive precisely when prices are depressed (e.g., acquiring properties or credit exposures at stressed valuations), raising equity at a discount could still improve long-run per-unit outcomes relative to delaying investment or resorting to costly debt.

Third, issuance at a premium can be a symptom of optimistic valuation and market timing. A long literature documents that issuers tend to raise equity when prices are high, and that post-issuance returns can be weak as valuations mean revert (Loughran and Ritter, 1995; Baker and Wurgler, 2002). In REITs, related work shows that managerial behavior around offerings can distort reported performance, consistent with agency-motivated timing (Zhu, Ong, and Yeo, 2010; Anglin, Edelstein, and Gao, 2013).

These considerations imply that the relation between Value/NAV and subsequent performance is fundamentally empirical: discounts need not be mechanically harmful, and premiums need not be benign.

2.4. Hypotheses

Let P^{issue} denote the issuance price per unit and NAV the NAV per unit at issuance, and define:

$$\frac{Value}{NAV} = \frac{P^{issue}}{NAV}$$

We derive two competing, testable predictions.

H1 (Discount Penalty). If discounted issuance reflects value transfer from incumbents to new investors (or weak governance that enables such transfer), then offerings with Value/NAV < 1 should be followed by lower subsequent excess total returns.

H2 (Premium Underperformance / Timing). If issuance pricing captures managerial market timing or periods of relative overvaluation, then higher Value/NAV should predict lower subsequent excess total returns, consistent with post-issuance reversal.

A key empirical distinction is that H1 is inherently discontinuous (discount vs. no discount), while H2 is continuous (a gradient in pricing). The two need not move together in the data: it is possible for extreme premiums to drive predictability even when the average difference between discounted and non-discounted issuances is small. This distinction is particularly relevant in Brazil, where discounts are common in secondary markets and may therefore convey different information than in environments where funds more persistently trade above NAV.

3. Data and Variable Construction

3.1. Sample definition and unit of observation

The empirical setting is the market for seasoned equity offerings (follow-on unit issuances) by Brazilian real estate funds (Fundos de Investimento Imobiliário, FIIs). The unit of observation in this study is an issuance event, not a 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.

We construct a panel of seasoned offerings completed between June 21, 2019 and August 7, 2023 by FIIs that were constituents of the IFIX index in 2025Q2. The focus on IFIX constituents serves two purposes. First, it anchors the sample on funds with meaningful secondary-market trading and investor attention. Second, it allows performance to be benchmarked to a widely followed market index over identical post-issuance horizons. We exclude IPOs and restrict attention to seasoned offerings that increase the outstanding number of units. Offerings are included only if the post-issuance return window can be measured and mapped to the corresponding IFIX return over the same horizon.

The resulting dataset contains 249 offerings with non-missing post-issuance excess returns. Because a given fund can appear multiple times through repeated offerings, the dataset is a cross-section of issuance events with repeated issuers over time. This structure naturally motivates inference procedures that account for within-fund dependence in the regression analysis.

3.2. Data sources and event dating

The dataset combines primary offering documents and market disclosures with secondary-market price and fund accounting data. For each follow-on, we collect offering-level information from prospectuses, offering announcements, and market communications released around the issuance process. These documents identify the offering structure, the issuance price (or final subscription price), the gross proceeds, the number of units issued, and the cost components borne by subscribers and/or the fund (when disclosed in a comparable format).

Market and accounting inputs—prices, trading volume, and NAV per unit—are obtained from B3 and specialized data providers that consolidate daily fund information. These series are used to compute pre-issuance liquidity measures, fund age, and post-issuance total returns.

A central implementation choice is the definition of the “issuance date” t0 for alignment of pricing, NAV, and subsequent returns. In the baseline construction, t0 is anchored to the offering’s pricing (or final subscription price determination) date when available and consistently recorded across events; when the pricing date is not uniquely identifiable, we use the closest operational equivalent that maps the issuance price to a well-defined NAV per unit and to the start of the return window. This approach reflects how market participants evaluate issuance terms—by comparing the subscription price to the prevailing NAV—and ensures comparability across offerings.

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 participating in an offering. For each issuance i, we compute the fund’s two-year buy-and-hold total return from t_0 to t_0+2 years, including cash distributions. We then subtract the IFIX total return over the same calendar window:

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

This construction aligns performance horizons across offerings that occur at different points in the macro-financial cycle, and it directly addresses the economic content of the market claim studied here: not whether FIIs deliver positive returns in absolute terms, but whether the offering is followed by relative under- or outperformance.

The choice of a two-year horizon is motivated by the investment and allocation cycle of real-estate portfolios: capital raised in an offering is typically deployed through acquisitions and repositioning decisions whose effects on cash flows and valuations may not be fully realized in the short run. A two-year window balances economic relevance with the practical requirement of retaining sufficient sample size for inference.

3.4. Key explanatory variable: issuance pricing relative to NAV

The central regressor is the issuance price scaled by NAV per unit at t_0. For each offering i,

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

Values below one indicate issuance at a discount to NAV; values above one indicate issuance at a premium. This variable operationalizes the market's primary point of contention and provides a direct test of whether discounted issuance is associated with weaker subsequent performance.

To separate continuous pricing effects from a simple "discount versus non-discount" dichotomy, we also define a discount indicator:

$$DiscountDummy_i = 1(\frac{Value}{NAV_i} < 1)$$

These two measures capture distinct empirical statements. A negative coefficient on Value/NAV is consistent with premium issuance being followed by weaker relative performance (a timing/valuation channel). A negative coefficient on *DiscountDummy* would support the strong market claim that discounted issuance is systematically harmful.

3.5. Control variables

To reduce omitted-variable concerns and isolate issuance pricing from confounding fund and deal characteristics, we construct a set of controls that reflect issuance scale, dilution intensity, offering frictions, liquidity, and fund maturity:

• Issuance scale. log $(Proceeds_i)$, the natural logarithm of gross proceeds raised in the offering. Large offerings can plausibly improve liquidity and scale benefits but may also exacerbate allocation challenges.

• Growth intensity. log $(GrowthUnits_i)$, the log of the percentage increase in outstanding units associated with the offering, capturing the magnitude of equity expansion.

• Issuance sequence (maturity in the growth cycle). log $(IssueNumber_i)$, the log of the ordinal number of the follow-on for that fund (e.g., 2nd, 3rd, 5th). This variable proxies for experience with capital raising and potential fatigue effects from repeated dilution episodes.

• Offering costs. $CostRate_i$, defined as total issuance cost per unit expressed as a percentage of the subscription value per unit. Higher frictions reduce deployable capital and may mechanically depress subsequent returns if capital is scarce.

• Pre-issuance liquidity. log $(AvgDailyVolume_{i,3m})$, the log of average daily trading volume over the three months prior to t0. Liquidity may correlate with price efficiency and with the ease of placing an offering.

• Fund age. log (Age_i), the log of the number of years since the fund's IPO. Older funds may have stronger track records, more stable governance, and more predictable operations.

• Property segment. Segment indicators based on the fund's primary investment category (e.g., logistics/industrial, offices, shopping, urban retail, hotels, receivables). Segment controls absorb structural differences in risk, cash-flow drivers, and macro sensitivity.

All logarithms are computed after verifying strictly positive support in the underlying variables. The baseline specifications use these variables as constructed; Section 6 examines the robustness of the main findings to data-integrity screens, alternative inference, segment controls, and within-fund estimation, while also discussing the limited tail support of the pricing variable.

3.6. Missing data and effective estimation samples

The main dependent variable is available for 249 offerings. Because the central pricing variable, Value/NAV, is constructed from offering documents that can differ in format and disclosure granularity, we apply a data-integrity screen before estimation. Mechanically inconsistent entries—most notably ratios recorded as zero or implausibly large values that do not admit an economically meaningful interpretation—are treated as missing rather than retained as valid observations. As a result, Value/NAV and the corresponding DiscountDummy are available for 243 offerings.

Some control variables are also missing for a subset of events due to incomplete disclosure or gaps in historical series, particularly for offering-cost components and certain liquidity fields. Multivariate regressions that include the full control set are therefore estimated on a reduced sample of 220 offerings. We report sample sizes for each model and interpret changes in coefficient estimates with this variation in effective sample size in mind. This approach prioritizes measurement reliability in the key pricing variable while preserving comparability across the main specifications.

3.7. Descriptive evidence and summary tables

Table 1 summarizes the empirical distribution of all variables used in the event-level analysis. Panel A reports continuous (numeric) variables at the offering-event level. Column N is the number of non-missing observations for each variable in the estimation sample; Mean and Std. Dev. report central tendency and dispersion; Min and Max capture extrema; and P25, Median, and P75 report the 25th, 50th, and 75th percentiles, respectively. Panel B reports the segment composition of the estimation sample; the N column counts offerings by segment, and the Share (%) column reports each segment’s share of the total sample. Variable construction follows Section 3.5, with all log transformations defined on strictly positive support.

Table 1. Summary statistics.

Panel A: Numeric variables

Variable	N	Mean	Std. Dev.	Min	P25	Median	P75	Max
Excess return (2y, vs. IFIX)	249	0.368	21.129	-91.234	-7.301	1.575	11.195	136.697
Value/NAV (issue price / NAV per unit)	243	0.992	0.055	0.649	0.983	1.000	1.012	1.213
Discount dummy (Value/NAV < 1)	243	0.502	0.501	0.000	0.000	1.000	1.000	1.000
Log proceeds	223	18.141	1.896	9.730	17.225	18.424	19.489	21.178
Log growth (% units)	226	-1.609	1.578	-9.446	-2.292	-1.396	-0.682	1.717
Cost rate (% of issue value per unit)	245	0.019	0.015	0.000	0.001	0.022	0.035	0.055
Log avg. daily volume (3m)	248	14.359	1.385	5.060	13.669	14.641	15.262	16.254
Log fund age	249	7.881	0.414	6.922	7.612	7.846	8.082	8.981
Log issue number	249	1.571	0.534	0.693	1.099	1.609	1.946	2.708

Panel B: Segment distribution (estimation sample)

Segment	Count	Share
Recebíveis	143	57.4%
Galpões	30	12.0%
Híbrido	24	9.6%
FOF	18	7.2%
Lajes	14	5.6%
Shopping	11	4.4%
Renda Urbana	4	1.6%
Incorporação residencial	3	1.2%
Hotéis	1	0.4%
Agro	1	0.4%

Notes: The estimation sample includes offerings with non-missing post-issuance excess returns (N = 249). Excess return is the fund's total return over the two years after the offering minus the IFIX total return over the same period. Value/NAV is the issuance price divided by NAV per unit at issuance. Mechanically inconsistent Value/NAV entries were treated as missing; therefore, Value/NAV and DiscountDummy are available for 243 offerings. Log variables are natural logarithms.

Several features of Table 1 are important for interpretation. First, after applying the data-integrity screen, Value/NAV is available for 243 offerings and is tightly concentrated around parity: the mean is 0.992, the median is 1.000, the interquartile range runs from 0.983 to 1.012, and the observed support extends from 0.649 to 1.213. This compression of the distribution materially changes the way the pricing variable should be interpreted. In the sample, most offerings occur very close to NAV, so economically typical pricing variation is modest and the empirical design is less exposed to leverage from a small number of extreme observations. Second, discounted offerings remain common—the discount indicator equals one in 50.2% of the observations with non-missing pricing data—but these discounts are usually small in magnitude rather than extreme departures from parity. Third, post-issuance excess returns remain widely dispersed, which is typical of cross-sectional return outcomes and reinforces the need for robust inference. Finally, Panel B shows that the estimation sample remains distributed across segments, supporting the inclusion of segment controls and, in later specifications, fund fixed effects to separate issuance pricing from structural differences in risk and cash-flow drivers.

Table 2 reports Pearson pairwise correlations among the core variables used in the baseline-controlled specification. Rows and columns correspond to the numbered variables listed in the "Variable definitions" line below the table. Each off-diagonal entry is the correlation between the two variables, computed on the listwise-complete sample used in the controlled regressions, and the asterisks indicate conventional significance levels for the null hypothesis of zero correlation. The table is intended to document basic co-movements between issuance pricing and offering/fund characteristics and to provide a first diagnostic for potential collinearity among controls.

Table 2. Correlation matrix (Pearson).

	1	2	3	4	5	6	7	8
1	1.00							
2	-0.20***	1.00						
3	-0.14**	0.11	1.00					
4	-0.00	0.00	0.69***	1.00				
5	-0.24***	0.16**	0.36***	-0.15**	1.00			
6	0.18***	-0.20***	0.14**	-0.06	0.26***	1.00		
7	-0.05	0.01	0.16**	0.25***	0.08	0.19***	1.00	
8	-0.12*	-0.10	0.09	-0.32***	0.51***	0.54***	-0.08	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 Table 4 (N = 220). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The correlation matrix offers two useful diagnostics. On the one hand, the bivariate correlation between excess return and Value/NAV is negative, suggesting that richer pricing is associated with weaker subsequent performance in simple comparisons. On the other hand, Value/NAV also co-moves with issuer characteristics that plausibly affect post-issuance outcomes, including pre-issuance liquidity and fund maturity. In the listwise-complete sample used in the controlled regressions, excess return is negatively correlated with Value/NAV and with pre-issuance liquidity, while it is positively correlated with fund age. At the same time, Value/NAV is positively correlated with liquidity and negatively correlated with fund age. This pattern indicates that simple pricing comparisons mix issuance terms with broader issuer characteristics and helps motivate the multivariate strategy adopted below. The correlations among controls are economically intuitive and do not, by themselves, indicate a degree of near-linear dependence that would preclude regression analysis, although they do counsel caution in interpreting raw bivariate associations.

Appendix A provides additional details on data collection, document parsing conventions, and reconciliation rules used when multiple sources report slightly different figures for the same issuance attribute.

4. Empirical Strategy

This section describes how we test whether the pricing of seasoned offerings relative to NAV predicts investors' subsequent outcomes. The empirical design follows a simple principle: all explanatory variables are measured at, or prior to, the issuance event, while performance is measured ex post over a fixed two-year horizon. The goal is not to claim that issuance pricing is randomly assigned, but to evaluate whether the signal widely discussed in the Brazilian market—"issuing below NAV destroys value"—is supported by systematic evidence once we benchmark performance and account for deal and fund characteristics.

4.1. Baseline predictive regressions

We begin with a parsimonious specification relating post-issuance excess performance to the issuance price-to-NAV ratio:

$$ExcessRet_i(0,2y) = \alpha + \beta \frac{Value}{NAV_i} + \varepsilon_i \qquad (1)$$

where $ExcessRet_i(0,2y)$ is the fund's two-year total return in excess of IFIX over the same horizon, and $\frac{Value}{NAV_i}$ is the issuance price scaled by NAV per unit at the issuance date t_0.

This model is designed to speak directly to the "pricing gradient" implied by market timing and valuation correction: if managers (or markets) are more willing to issue when valuations are favorable, then offerings priced at relatively higher multiples of NAV should be followed by weaker subsequent excess returns, implying $\beta < 0$.

To align with the practitioner narrative that focuses on discounted issuance as a categorical "red flag," we also estimate a discontinuous version:

$$ExcessRet_i(0,2y) = \alpha + \delta\ DiscountDummy_i + \varepsilon_i \qquad (2)$$

where $DiscountDummy_i = 1(\frac{Value}{NAV_i} < 1)$. Under the strong discount-penalty claim, discounted offerings should underperform, implying $\delta < 0$.

Equations (1) and (2) are intentionally simple. They establish whether the widely cited heuristic has any unconditional support before introducing controls and fixed effects.

4.2. Controlled specifications

Issuance pricing is not determined in isolation. It may covary with the scale of the deal, the intensity of equity expansion, pre-issuance liquidity, fund maturity, and offering frictions. To address these confounds, we estimate:

$$ExcessRet_i(0,2y) = \alpha + \beta \frac{Value}{NAV_i} + \gamma \boldsymbol{X}_i + \varepsilon_i \qquad (3)$$

where $\boldsymbol{X}_i$ includes the control set defined in Section 3: issuance scale (log $(Proceeds_i)$), growth intensity (log $(GrowthUnits_i)$), issuance sequence (log $(IssueNumber_i)$), offering cost rate $(CostRate_i)$, pre-issuance liquidity (log $(AvgDailyVolume_{i,3m})$), and fund age (log (Age_i)).

When data availability permits, we also include segment indicators to absorb structural differences across property types and business models:

$$ExcessRet_i(0,2y) = \alpha + \beta \frac{Value}{NAV_i} + \gamma \boldsymbol{X}_i + \Sigma_s \, \theta_s \, 1\left(Segment_i = s\right) + \varepsilon_i \qquad (4)$$

Segment controls are useful because FIIs differ systematically in valuation anchors, duration exposure, liquidity conditions, and investor clienteles. These structural differences may affect both issuance pricing and subsequent performance, so including segment fixed effects helps isolate whether the pricing signal survives beyond cross-segment composition.

Finally, because funds can issue multiple times, a natural concern is that unobserved, persistent fund characteristics—such as manager quality, governance practices, or disclosure culture—may correlate with both issuance pricing and post-issuance performance. As an internal robustness check, we estimate models with fund fixed effects:

$$ExcessRet_i(0,2y) = \alpha_f + \beta \frac{Value}{NAV_i} + \gamma \boldsymbol{X}_i + \varepsilon_i \qquad (5)$$

where α_f denotes a fund-specific intercept. This specification identifies β from within-fund variation across issuance events. It is demanding—because it discards cross-fund information and requires repeat issuers—but it directly tests whether the pricing signal operates even when comparing a fund to itself over time.

4.3. Inference and error structure

The dataset is a cross-section of issuance events with repeated issuers. Standard OLS standard errors may therefore understate uncertainty if residuals are correlated within funds across offerings. To align inference with this dependence structure, all main regressions in the paper report standard errors clustered at the fund (FII) level, consistent with the panel-style error structure induced by repeated issuances (Petersen, 2009). This convention is applied uniformly to the baseline regressions, the controlled cross-sectional specifications, and the fund fixed-effects models.

Appendix Table A2 reports the baseline specifications with heteroskedasticity-robust (HC1) standard errors as a benchmark. The substantive interpretation in the paper, however, is based on the fund-clustered estimates reported in the main tables. This approach standardizes inference across specifications and ensures that reported uncertainty reflects the repeated-issuer nature of the data.

4.4. Interpretation: what the coefficients mean

The coefficients in Equations (1) – (5) have a straightforward economic interpretation.

• In the continuous specification, β captures how post-issuance excess performance changes with issuance pricing relative to NAV. A negative β implies that "more expensive" issuance (higher Value/NAV) is followed by weaker subsequent outcomes. For interpretability, we scale effects in economically plausible increments (e.g., a 0.10 change in Value/NAV, corresponding to a 10% difference in issuance price relative to NAV).

• In the dummy specification, δ compares the average two-year excess performance of discounted offerings to non-discounted offerings, holding nothing else fixed in the baseline and holding controls fixed in the multivariate versions. A significantly negative δ would support the practitioner claim that discounted issuance is systematically harmful.

Importantly, the empirical goal is to evaluate whether issuance pricing carries information about subsequent performance. A robust negative relationship between Value/NAV and future excess returns is consistent with valuation and timing dynamics, while a robust negative effect for discounted issuance would support the "discount penalty" narrative. The two are not equivalent, and the distinction matters in settings where discounts to NAV are common in secondary markets.

4.5. Identification concerns and design choices

The main threat to a causal interpretation is that issuance pricing may be chosen in response to information about future prospects. For example, managers may issue at a discount when investment opportunities are unusually attractive, but market conditions are weak, or issue at a premium when valuations are strong but expected returns are lower. Either behavior can produce a negative relationship between Value/NAV and future performance without implying that premium issuance "causes" underperformance. Rather than treating this as a flaw, we view it as central to the research question: the market narrative implicitly claims that discount status is a reliable indicator of harm. Our design evaluates that claim using:

1. Benchmarking: excess returns net of IFIX reduce macro-driven performance variation shared across funds.

2. Pre-determined covariates: liquidity is measured pre-issuance; age, segment, and issuance sequence are predetermined.

3. Within-fund tests: fund fixed effects probe whether the pricing signal persists when comparing a fund to itself.

Together, these choices sharpen interpretation: if discounted issuance were truly and systematically value-destructive, the discount indicator should retain explanatory power even after benchmarking and basic controls. Conversely, if the core pattern reflects valuation timing, the continuous pricing measure should be more informative than the DiscountDummy.

4.6. Extensions and robustness roadmap

Beyond the main regressions, the paper evaluates a set of complementary exercises designed to clarify interpretation, assess measurement reliability, and distinguish cross-sectional from within-fund patterns.

First, Section 6.1 examines data integrity and effective sample support. Because the key pricing variable is constructed from heterogeneous offering documents, mechanically inconsistent Value/NAV entries are treated as missing. This step is important because the empirical question turns on relatively small deviations around parity, and a small number of miscoded observations could otherwise exert disproportionate influence on the estimated relation between issuance pricing and subsequent performance.

Second, Section 6.2 reports an alternative inference benchmark. All main regressions use standard errors clustered at the fund level, consistent with the repeated-issuer structure of the data, while Appendix Table A2 reports the baseline specifications with heteroskedasticity-robust (HC1) standard errors. This comparison is intended as a transparency check rather than as a competing inferential framework.

Third, Section 6.3 discusses what can and cannot be learned about tail behavior in the pricing variable. Because the estimation sample contains only limited support in the upper tail of Value/NAV, the paper treats strong claims about nonlinear premium effects with caution and interprets the evidence in light of the observed support of the data.

Fourth, Sections 6.4 and 6.5 examine structural heterogeneity using the specifications already embedded in the main design. Segment fixed effects assess whether the pricing signal survives after controlling for broad differences across business models, while fund fixed effects test whether the same relation appears when comparing repeated offerings by the same issuer over time.

Overall, these exercises are not meant to transform the design into a causal identification strategy. Their purpose is narrower and more practical: to determine whether the main empirical message is robust to reasonable concerns about measurement, inference, structural composition, and repeated issuance by the same fund.

5. Empirical Results

This section presents the main empirical findings on the relation between issuance pricing relative to NAV and investors' subsequent performance. Two conclusions stand out. First, we do not find evidence of a systematic discount penalty. Second, once the dataset removes mechanically inconsistent pricing observations, the evidence for premium underperformance becomes weak and statistically non-robust. The most stable correlates of post-issuance excess returns are not the pricing variables themselves, but rather issuer characteristics associated with maturity and repeated access to equity markets.

5.1. Baseline evidence: no statistically reliable pricing gradient

Table 3 presents the baseline predictive regressions linking issuance pricing to subsequent investor outcomes. In both columns, the dependent variable is the fund's two-year post-issuance excess total return relative to IFIX, measured ex post over a fixed horizon. Column (1) uses the continuous issuance price-to-NAV ratio, while column (2) uses the discount indicator.

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

Variable	**(1) Value/NAV**	**(2) DiscountDummy**
Value/NAV	-64.37	
	(51.00)	
DiscountDummy		2.85
		(2.89)
Constant	64.13	-1.17
	(51.12)	(1.71)
Observations	243	243
R-squared	0.028	0.005

Notes: Dependent variable is the fund's excess total return relative to IFIX over the two years after the offering. The sample is restricted to offerings with non-missing issuance pricing variables (N = 243). Standard errors are clustered at the fund (FII) level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The baseline evidence does not yield a statistically reliable pricing gradient. In column (1), the coefficient on Value/NAV is negative, as predicted by the market-timing interpretation, but it is imprecisely estimated and statistically indistinguishable from zero. Using fund-clustered standard errors, the estimated slope is approximately -64.37 ($p \approx 0.207$) on a sample of 243 offerings. Economically, the point estimate implies that a 0.10 increase in Value/NAV is associated with roughly a 6.4-percentage-point lower two-year excess return, but the confidence interval is wide enough that the data do not support a precise inference.

The low R-squared is not surprising. Two-year excess returns are influenced by many forces beyond issuance pricing, and modest explanatory power is common in cross-sectional return regressions. The key point is therefore not whether pricing explains a large share of the variation in performance, but whether the sign and magnitude of the estimated relation are sufficiently stable to support a clear empirical claim. In the revised baseline specification, they are not.

5.2. The discount indicator does not support the "discount penalty" narrative

Column (2) of Table 3 provides the most direct test of the practitioner claim that issuing below NAV is inherently harmful. If that claim were correct, discounted offerings should be followed by lower subsequent excess returns on average, and the coefficient on DiscountDummy should be negative.

That pattern is not observed. The coefficient on DiscountDummy is positive rather than negative, and it is not statistically distinguishable from zero. In the baseline regression, discounted offerings exhibit mean excess performance that is about 2.9 percentage points higher than non-discounted offerings, but this difference is imprecisely estimated ($p \approx 0.323$). This does not imply that discounts improve outcomes. It does imply, however, that the data do not support the idea that discount status is a reliable unconditional signal of harm.

This result is substantively important because discounted offerings are not rare in the sample. Roughly half of the offerings with valid pricing data are priced below NAV, yet the average post-issuance performance of those events is not worse in a statistically reliable sense. At a minimum, the evidence rejects the strong version of the market heuristic that "issuing below NAV destroys value" as a general rule.

5.3. Multivariate results: the continuous pricing effect is not robust to controls

Table 4 extends the baseline regression by progressively incorporating offering- and fund-level controls. The specifications add issue size, growth intensity, issuance costs, pre-issuance liquidity, fund age, issuance sequence, and, in the most demanding column, segment fixed effects. Standard errors are clustered at the fund level to account for repeated issuers.

The continuous pricing effect is not robust in the controlled cross-section. The coefficient on Value/NAV remains negative in all three columns, but it is statistically indistinguishable from zero throughout. Once controls are added, the point estimates still suggest a direction consistent with market timing, yet the evidence is too imprecise to support a strong claim that richer issuance pricing systematically predicts weaker two-year excess performance. The estimated coefficients are approximately -36.48 in column (1), -43.75 in column (2), and -10.48 in column (3), with none of the estimates conventionally significant. This is true even before the inclusion of segment fixed effects and remains true after they are added.

Table 4. Controlled regressions (clustered by fund).

Variable	(1)	(2)	(3)
Value/NAV	-36.48	-43.75	-10.48
	(45.57)	(46.27)	(20.88)
Log proceeds	-1.31	-0.82	-1.28
	(1.70)	(1.41)	(1.39)
Log growth	1.10	-0.01	-0.72
	(1.96)	(1.59)	(1.55)
Log avg. daily volume (3m)	-3.30**	-2.14	-1.49
	(1.56)	(1.36)	(1.04)
Log fund age	12.54**	17.90***	20.74***
	(5.12)	(6.83)	(6.63)
Cost rate	-113.43	-158.57	-112.18
	(104.36)	(117.83)	(107.56)
Log issue number		-9.48	-13.27**
		(5.85)	(5.36)
Constant	13.28	-33.52	-78.33*
	(44.07)	(59.91)	(42.09)
Segment FE	No	No	Yes
Fund FE	No	No	No
Observations	220	220	220
R-squared	0.143	0.174	0.438

Notes: Dependent variable is the fund's excess total return relative to IFIX over the two years after the offering. All columns are estimated on the listwise-complete sample for the included controls (N = 220). Standard errors are clustered at the fund (FII) level. Segment fixed effects are included in column (3) but not reported. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Fund FE are examined separately in Table 5.

The controlled regressions are nevertheless informative because some covariates display more stable patterns than the pricing variable itself. Fund age enters positively and significantly in all specifications, indicating that more mature issuers tend to deliver better post-issuance excess performance. This pattern is economically intuitive: older funds may have more established governance routines, stronger disclosure practices, more stable investor clienteles, and greater operational experience in deploying capital raised through seasoned offerings. By contrast, log issue number becomes negative and statistically significant once issuance sequence and segment composition are more fully controlled for, suggesting that later follow-ons in a fund’s issuance history may be associated with weaker subsequent relative performance. Pre-issuance liquidity is negative and statistically significant only in the most parsimonious controlled specification, while proceeds, growth intensity, and cost rate do not display robust significance.

Taken together, Table 4 suggests that once the data are cleaned and basic issuer characteristics are controlled for, the pricing variable is no longer the dominant empirical signal.

The more consistent pattern runs through maturity and repeated issuance dynamics rather than through a strong continuous pricing gradient.

5.4. What the results suggest about mechanisms

The combined evidence is difficult to reconcile with a simple mechanical-dilution story in which issuing below NAV is inherently value-destructive for incumbent investors. If that were the dominant mechanism, discounted offerings should underperform on average, and the discount indicator should remain negative in the baseline evidence. Neither prediction is supported.

At the same time, the results do not justify replacing one simple rule with another. Although the coefficient on Value/NAV is often negative in sign, the relation is not estimated precisely enough to support a robust "premium underperformance" result once the sample is cleaned and the regressions absorb offering and issuer characteristics. In that sense, the paper does not endorse a strong opposite heuristic that premium-priced issuance systematically signals future underperformance.

A more plausible interpretation is that issuance pricing partly reflects broader issuer states rather than a universal pricing mechanism. Pricing may co-vary with investor demand, liquidity, segment-specific valuation anchors, and the maturity of the issuer. The evidence therefore shifts attention away from a narrow focus on discount status and toward a broader governance question: whether managers raise capital under conditions that can be credibly linked to value creation, disciplined deployment, and repeat behavior consistent with investor protection.

5.5. Summary relative to hypotheses

The results speak directly to the hypotheses developed in Section 2.

- H1 (Discount Penalty) is not supported. Discounted offerings do not exhibit systematically lower two-year excess returns in the baseline regression, and the main specifications do not deliver evidence consistent with a reliable discount penalty.
- H2 (Premium Underperformance / Timing) receives, at most, weak directional support. The coefficient on Value/NAV is generally negative in sign, but it is not statistically robust in the data. Once offering controls, liquidity, maturity, issuance sequence, and segment effects are taken into account, the continuous pricing measure does not retain precise explanatory power.

The broader empirical implication is therefore more limited and more credible. The data argue against the claim that discounted issuance is inherently harmful, but they do not sustain a strong opposite claim that premium issuance is a robust predictor of future underperformance. What emerges more consistently is the role of issuer maturity and repeated issuance dynamics in shaping post-issuance outcomes.

6. Robustness and Additional Analyses

This section evaluates how the main conclusions should be interpreted in light of data integrity, inference choices, tail behavior, segment composition, and within-fund comparisons. Two messages emerge. First, the absence of a discount penalty is stable. Second, once the pricing variable is measured on economically plausible support, the evidence for a continuous pricing effect becomes weak and sensitive to specification.

6.1. Data integrity screens: miscoding, extreme values, and sample definitions

A practical concern in issuance datasets is that the price-to-NAV ratio can be distorted by heterogeneous disclosure formats, timing conventions, or transcription errors. Because the central empirical debate in this paper turns on relatively small deviations around parity, retaining mechanically inconsistent entries would create a disproportionate leverage problem. For that reason, the dataset treats ratios recorded as zero or at implausibly large levels as missing rather than as valid signals.

This screen materially changes the support of the pricing variable. In the estimation sample with valid pricing data, Value/NAV ranges from 0.649 to 1.213 and has a standard deviation of only 0.055. Most observations lie very close to one. This matters for interpretation. It means that the paper's central pricing variable is no longer driven by a broad set of extreme premium episodes or by a handful of mechanically implausible values. Instead, identification comes primarily from modest deviations around parity. That is a more credible empirical environment, but it also implies that any strong claim about pricing effects must be supported by relatively fine variation in issuance terms.

6.2. Alternative inference: HC1 as a benchmark

All main regressions in the paper are reported with standard errors clustered at the fund level. This is the natural primary convention because the unit of observation is an issuance event and many funds appear multiple times in the sample, making within-fund residual correlation a first-order concern. Appendix Table A2 reports the baseline specifications with heteroskedasticity-robust (HC1) standard errors as a benchmark.

The comparison is reassuring. Relative to the fund-clustered baseline, the HC1 results leave the signs, economic magnitudes, and substantive conclusions unchanged. The Value/NAV coefficient remains negative but imprecisely estimated, and the DiscountDummy remains non-negative and statistically indistinguishable from zero. Put differently, the paper's main message is not an artifact of a particular standard-error convention.

The central result is the absence of a reliable discount penalty, together with only weak and non-robust support for a continuous pricing effect in the sample with economically plausible pricing support. The alternative HC1 benchmark therefore serves as a transparency check rather than as a competing basis for inference.

6.3. Nonlinearities and limited support for tail-based claims

A natural question is whether the relation between issuance pricing and subsequent performance is concentrated in the tails rather than spread smoothly across the support of Value/NAV. In the data, however, the upper tail is thin. The maximum observed Value/NAV is 1.213, and most offerings remain tightly clustered around parity.

This feature of the data limits how far the paper can go in making claims about premium-tail behavior. The sample does not contain a broad mass of extreme premium offerings from which a stable nonlinear pattern could be estimated with confidence. Consequently, the most defensible reading is not that underperformance is concentrated in a large, well-populated right tail, but rather that the data offer only limited scope for identifying such a pattern. Small deviations from NAV are common; large departures are not.

That interpretation is empirically disciplined. It avoids treating sparse tail observations as if they identified a general law of issuance timing, and it reinforces the paper's broader point that the pricing variable should be interpreted cautiously once the support is restricted to economically plausible values.

6.4. Segment controls and the role of fund maturity

A fair concern in FII data is that issuance conditions differ systematically across segments. Receivables-oriented funds, property-owning funds, and hybrid structures may face different valuation anchors, liquidity conditions, and investor clienteles. Table 4 therefore includes a specification with segment fixed effects.

Once segment controls are introduced, the Value/NAV coefficient remains negative but becomes economically smaller and statistically weak, while model fit rises substantially. This pattern suggests that part of the raw pricing signal is intertwined with cross-segment composition and correlated issuer characteristics rather than reflecting a uniform pricing effect that operates similarly across the entire FII universe.

In contrast, fund maturity remains strongly predictive in the segment-controlled specification. The coefficient on log(Fund age) is positive and statistically significant throughout, and log(Issue number) becomes negative and significant once the richer control structure is included. These results indicate that post-issuance outcomes are more systematically associated with issuer maturity and repeated-market interactions than with a robust pricing gradient. In practical terms, the evidence points toward the importance of issuer history, track record, and issuance discipline.

6.5. Within-fund evidence: fund fixed effects

To probe whether the main patterns survive comparisons within the same issuer, Table 5 reports fund fixed-effects regressions. This design absorbs time-invariant differences across FIIs and identifies coefficients from variation across repeated offerings by the same fund.

The within-fund evidence sharpens the interpretation of the main results. The continuous Value/NAV coefficient is negative in sign in both the simple and controlled fixed-effects specifications, but it is not estimated precisely enough to support a reliable within-fund pricing effect. At the same time, the DiscountDummy is positive in the within-fund regressions and remains statistically significant in the fully controlled specification. This does not imply that issuing at a discount causes better outcomes. It does imply that, after comparing a fund to itself over time, discounted offerings are not followed by systematically weaker excess performance.

Table 5. Fund fixed effects regressions (clustered by fund).

Variable	**(1)**	**(2)**	**(3)**	**(4)**
Value/NAV	-22.46		-9.64	
	(23.25)		(44.65)	
DiscountDummy		5.00*		4.41**
		(2.89)		(1.98)
Log proceeds			-2.97	-2.63
			(9.76)	(9.18)
Log growth			1.71	1.32
			(9.59)	(8.98)
Log avg. daily volume (3m)			-1.10	-0.89
			(2.43)	(2.49)
Log fund age			19.33	17.13
			(12.53)	(13.20)
Cost rate			-192.26	-191.04
			(170.67)	(164.32)
Log issue number			-23.86*	-24.97*
			(14.12)	(13.81)
Segment FE	No	No	No	No
Fund FE	Yes	Yes	Yes	Yes
Observations	243	243	220	220
R-squared	0.561	0.568	0.718	0.724

Notes: All specifications include fund (FII) fixed effects. Columns (1) and (2) are estimated on the sample with non-missing issuance pricing variables (N = 243). Columns (3) and (4) use the listwise-complete sample that includes all controls (N = 220). Standard errors are clustered at the fund level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The fixed-effects evidence should therefore be interpreted as a directional robustness check. It further weakens H1, because the discount indicator remains non-negative even under a demanding within-issuer design. At the same time, it does not rescue H2, because the continuous pricing slope still lacks precision once the specification relies only on within-fund variation. Table 5 also reinforces the role of issuance dynamics: log(Issue number) is negative and statistically significant in the controlled within-fund specifications, consistent with the broader cross-sectional evidence that later offerings tend to be followed by weaker relative performance.

6.6. Interpretation and remaining limitations

The robustness exercises reinforce a disciplined reading of the evidence. The data do not support the strong practitioner claim that discounted issuance is inherently harmful to incumbent investors. But they also do not justify a strong opposite claim that premium-priced issuance systematically predicts future underperformance across the cross-section.

Two limitations remain important. First, NAV per unit is accounting-based and, especially for property-heavy funds, can adjust more slowly than market prices. This means that even a carefully constructed Value/NAV ratio may still embed timing differences between market valuation and appraisal updates. Second, issuance decisions are endogenous. Managers choose when to issue, how much to raise, and under what terms in response to investment opportunities, investor demand, and broader market conditions. The empirical design therefore supports predictive interpretation rather than a sharp causal claim.

These limitations do not undermine the paper's main contribution. They clarify it. The relevant empirical question is not whether discounts or premiums mechanically determine future performance, but whether issuance pricing carries stable information once benchmarked outcomes and observable issuer characteristics are taken into account. In the data, the answer is clear for H1 and cautious for H2: there is no reliable discount penalty, and there is no robust continuous pricing effect.

7. Conclusion

This paper examines whether issuance pricing relative to net asset value predicts subsequent investor outcomes in Brazilian real estate investment funds. Using 249 follow-on offerings completed between June 21, 2019 and August 7, 2023, we test whether offerings priced below appraisal-based NAV are followed by systematically weaker performance and whether richer issuance pricing predicts later underperformance once offering characteristics and issuer-state variables are taken into account.

The evidence points to a restrained conclusion. Discounted offerings are not followed by reliably worse subsequent excess returns in the baseline regressions, in the controlled cross-section, or in the within-fund exercises. The continuous Value/NAV measure is generally negative in sign, but that relationship is not estimated precisely enough to support a strong premium-underperformance result once offering characteristics, liquidity, maturity, issuance sequence, and segment composition are incorporated. In this sample, issuance price relative to NAV does not appear to be a sufficient statistic for investor harm.

What carries more stable predictive content is the state of the issuer rather than the pricing ratio alone. Fund maturity is positively associated with post-issuance performance, while repeated issuance by the same fund is associated with weaker subsequent relative returns. These findings suggest that post-issuance outcomes are shaped less by a mechanical discount-versus-premium distinction and more by persistent issuer characteristics related to experience, financing history, and the broader context in which equity is raised.

This has two implications for the literature. First, in markets where NAV is appraisal-based rather than continuously marked to market, the informational content of issuance price relative to NAV should not be assumed ex ante. The ratio may capture valuation, but it may also reflect slower-moving accounting anchors, financing conditions, and issuer heterogeneity. Second, in markets with strong retail participation and recurring access to equity issuance, issuer-state variables can subsume much of the predictive role often attributed to issuance pricing itself. The Brazilian FII market is therefore useful not only as a local institutional case, but also as a setting in which the limits of price-to-NAV as a standalone empirical signal become visible.

The practical implication is correspondingly narrower than the common market heuristic. A discount to NAV is not, by itself, reliable evidence that a follow-on offering is harmful to incumbent investors. But the paper also does not support the reverse simplification that premium issuance is a robust predictor of later underperformance. A more informative evaluation of follow-on offerings should consider the issuer's maturity, issuance history, liquidity, and likely use of proceeds rather than relying exclusively on the sign of the gap between issue price and reported NAV.

The paper also has clear boundary conditions. The sample is restricted to funds that are sufficiently liquid to appear in the IFIX universe at a later point in time, and the empirical design is predictive rather than causal. The results therefore do not identify the causal effect of issuance pricing, nor do they characterize the entire universe of FIIs. They show, more narrowly, that within the more liquid segment of the market, price relative to appraisal-based NAV has limited standalone predictive content once issuer-state variables are accounted for.

These boundary conditions suggest a natural research agenda. A broader sample based on contemporaneous liquidity criteria rather than ex post index membership would help address selection concerns more directly. Richer data on the use of proceeds, acquisition quality, manager incentives, and post-offering capital deployment would help distinguish financing necessity from opportunistic timing. More generally, future work can use real-estate vehicles to study when accounting-based valuation anchors remain informative for external financing decisions and when their predictive content is largely subsumed by issuer characteristics and market structure.

Appendix A. Data Collection and Variable Construction

This appendix documents the construction of the issuance-level dataset used in the empirical analyses. The objective is to provide transparency on the event definition, data sources, and variable construction rules, with particular emphasis on how offering terms and accounting anchors (NAV per unit) 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 sample comprises seasoned offerings completed between June 21, 2019 and August 7, 2023 by funds that were constituents of the IFIX index in 2025Q2. Each offering is treated as an event at date t0, anchored to the offering's pricing date (or final subscription price determination date) when available and consistently identifiable across events; when that date is not uniquely identifiable, we use the closest operational equivalent that aligns the issuance price with a well-defined NAV per unit and with the start of the return window. Each fund can contribute multiple events over time.

A.2. Primary sources and cross-checks

Offering characteristics are collected from primary disclosure documents, including prospectuses and final offering notices, material facts (fatos relevantes), and market communications released by the fund/administrator/manager. Fund identifiers and segment classifications follow the IFIX constituent list and the segment taxonomy used by market participants for Brazilian FIIs. Market-based inputs (prices and traded volume) are obtained from B3 market data and complemented by specialized data providers when necessary. NAV per unit is obtained from the fund's official reports filed with the regulator (CVM) and/or administrator disclosures.

A.3. Reconciliation rules for offering terms

When multiple documents report slightly different figures for the same offering attribute, we apply a simple hierarchy designed to prioritize final, legally binding information. The reconciliation rules are as follows: (i) final closing communication (or final offer notice) prevails over preliminary prospectus figures; (ii) if both final notice and prospectus are unavailable, the most recent official market communication confirming the final price and quantity is used; (iii) where proceeds and quantities are both available, we apply internal consistency checks (e.g., proceeds ≈ issue price × units issued, net of explicitly reported fees) to identify and correct transcription errors.

A.4. Timing alignment: issue price and NAV per unit

The key explanatory variable is the issuance price-to-NAV ratio (Value/NAV). To align valuation and accounting anchors, NAV per unit is measured using the most recent NAV report available at, or immediately prior to, the offering date t0. This timing convention mirrors the information set available to investors at the time of the offering and avoids mechanically using post-offering NAV updates. After this timing alignment, mechanically inconsistent Value/NAV entries are treated as missing and are not retained in the main estimation samples.

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 event i, we compute the fund's total return from t_0 to $t_0 + 2$ years, incorporating both price changes and cash distributions. The benchmark return is the IFIX total return over the identical calendar window. Excess return is defined as:

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

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

A.6. Variable definitions

Table A1 summarizes the variables used in the main regressions. Unless otherwise stated, logarithms are natural logs. The discount indicator equals one when Value/NAV is strictly below one.

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(Growth)	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 (time since IPO).	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.	Categorical
Fund identifier	FII	Fund ticker used for clustering and fixed effects.	Categorical

Table A2. Baseline regressions with HC1 standard errors.

Variable	(1) Value/NAV	(2) DiscountDummy
Value/NAV	-64.37	
	(50.13)	
DiscountDummy		2.85
		(2.71)
Constant	64.13	-1.17
	(50.25)	(1.57)
Observations	243	243
R-squared	0.028	0.005

Notes: Dependent variable is the fund's excess total return relative to IFIX over the two years after the offering. The sample is restricted to offerings with non-missing issuance pricing variables (N = 243). Heteroskedasticity-robust (HC1) standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Sample sizes vary across tables due to missing values in the pricing variables and in a subset of controls. The full sample with non-missing post-issuance excess returns contains 249 offerings. After the data-integrity screen applied to the issuance pricing variable, Value/NAV and DiscountDummy are available for 243 offerings. Multivariate specifications that include the full control set are estimated on the corresponding listwise-complete sample (N = 220 in the main controlled regressions). Mechanically inconsistent Value/NAV entries, including zero values and implausibly large ratios, are treated as missing in the dataset rather than retained for robustness-only exclusions.

References

Amato, F. B., M. V. Takaoka, J. Rocha Lima Jr., and J. R. Securato (2005). Estratégias de aplicação em fundos imobiliários como diversificação de investimentos: uma análise do desempenho recente e seus fatores de influência. Seminário em Administração (SEMEAD), FEA-USP, São Paulo.

Ambrose, B. W., and X. Bian (2010). Stock market information and REIT earnings management. Journal of Real Estate Research 32(1), 101–137.

ANBIMA (2023). Ranking de gestores de fundos de investimento – Setembro/2023. Available at: https://www.anbima.com.br/pt_br/informar/ranking/fundos-de-investimento/gestores.htm.

Anglin, P., R. Edelstein, Y. Gao, and D. Tsang (2013). What is the relationship between REIT governance and earnings management? Journal of Real Estate Finance and Economics 47(3), 538–563.

Associação de Analistas e Profissionais de Investimentos no Mercado de Capitais (2017). Análise de investimentos. Rio de Janeiro: Comissão de Valores Mobiliários (CVM).

B3 (2023). Boletim mensal – fundos imobiliários (FIIs). Available at: https://www.b3.com.br.

Baker, M., and J. Wurgler (2002). Market timing and capital structure. Journal of Finance 57(1), 1–32.

Banco Central do Brasil (2018). Resolução nº 4.661, de 25 de maio de 2018. Brasília, DF.

Barreto, J. V. (2016). Fundos de investimento imobiliário no Brasil: as características que explicam o desempenho. Master's thesis, Fundação Getulio Vargas (EESP), São Paulo.

Bauer, R., P. Eichholtz, and N. Kok (2010). Corporate governance and performance: The REIT effect. Real Estate Economics 38(1), 1–29.

Benefield, J. D., R. I. Anderson, and L. V. Zumpano (2009). Performance differences in property-type diversified versus specialized real estate investment trusts (REITs). Review of Financial Economics 18(2), 70–79.

Bianco, C. A., C. Ghosh, and C. F. Sirmans (2007). The impact of corporate governance on the performance of REITs. Journal of Portfolio Management 33, 175–191.

Block, R. L. (2012). A history of REITs and REIT performance. In R. L. Block, Investing in REITs: Real Estate Investment Trusts, pp. 109–140. Hoboken, NJ: Bloomberg Press.

Borges, E. C., and R. Martelanc (2015). Sorte ou habilidade: uma avaliação dos fundos de investimento no Brasil. Revista de Administração 50(2), 196–207.

Borges, L. d. (2021). Análise do desempenho dos fundos de investimento imobiliários no Brasil com foco na volatilidade. Undergraduate monograph, Universidade Federal de São Paulo, Osasco.

Carvalho, W. (2022). Consolidação de FIIs abrange fusões e incorporações de gestoras. InfoMoney, June 15. Available at: https://www.infomoney.com.br.

Carvalho, W. (2023a). Valora adquire a Mogno Capital, gestora dos FIIs MGHT11, MGCR11, MGRI11 e MGFF11. InfoMoney, May 19. Available at: https://www.infomoney.com.br.

Carvalho, W. (2023b). FIIs que investem em ações rendem até 30% no ano; conheça outros ativos dos fundos multiestratégia. InfoMoney, June 28. Available at: https://www.infomoney.com.br.

Case, B. (2013). Real estate investment trusts. In H. K. Baker and G. Filbeck (eds.), Alternative Investments: Instruments, Performance, Benchmarks, and Strategies. Hoboken, NJ: John Wiley & Sons.

Castro, F. (2018). CMN proíbe compra direta de imóveis por fundos de pensão. UOL Economia, May 25. Available at: https://economia.uol.com.br.

Clube FII (n.d.). Website. Available at: https://www.clubefii.com.br.

Comissão de Valores Mobiliários (CVM) (2015). Guia CVM do investidor: fundos de investimento imobiliário. Rio de Janeiro: CVM.

Cosenza Araujo, F. (2024). Localização, localização, gestão: uma contribuição para o aperfeiçoamento da avaliação dos fundos de investimento imobiliários no Brasil. Monografia, Fundação Instituto de Administração (FIA), São Paulo.

Credit Suisse Hedging-Griffo (2023). Fato relevante – alienação das atividades de administração e gestão dos FIIs. São Paulo, SP, December 6.

Cremers, M., and A. Petajisto (2009). How active is your fund manager? A new measure that predicts performance. Review of Financial Studies 22(9), 3329–3365.

Cuthbertson, K., D. Nitzsche, and N. O'Sullivan (2008). UK mutual fund performance: Skill or luck? Journal of Empirical Finance 15(4), 613–634.

Dias, E. I., and A. C. Silva (2021). Análise do desempenho dos fundos imobiliários no Brasil entre 2017 e a pandemia Covid-19. Revista das Faculdades Integradas Vianna Júnior (Jul–Dec).

Fama, E. F., and K. R. French (2010). Luck versus skill in the cross-section of mutual fund returns. Journal of Finance 65(5), 1915–1947.

Faria, G. H., K. G. Souza, and R. F. Malaquias (2016). Análise do desempenho dos fundos de investimentos brasileiros de gestão ativa e gestão passiva. Revista da Faculdade de Administração e Economia 8(1), 138–161.

Fiorini, R. M. (2012). Determinantes da rentabilidade dos fundos de investimento imobiliários no Brasil. Master's thesis, Fundação Getulio Vargas (EESP), São Paulo.

Ghosh, C., and C. F. Sirmans (2006). Do managerial motives impact dividend decisions in REITs? Journal of Real Estate Finance and Economics 32(3), 327–355.

Gogineni, S., P. Jain, and A. Upadhyay (2024). Global REIT regulations and valuation. International Review of Economics & Finance 93, 152–166.

Goulart Serra, R., A. Vieira de Moraes, and L. Lopes Fávero (2017). Fundo de investimento imobiliário: uma alternativa para diversificação. Revista de Administração da UNIMEP 15(4), 229–252.

Greenhalgh, L. H., and C. H. Campani (2023). Variação do dividend-yield como critério de seleção de ativos em estratégias de momento de fundos de investimentos imobiliários brasileiros. Revista Contabilidade & Finanças 34(91), e1667.

Hirano, F. (2018). Determinantes do desempenho de fundos de investimento imobiliário. Master's thesis, Insper, São Paulo.

InfoMoney (2022). Fim dos FIIs com gestão passiva? YouTube video, March 29. Available at: https://youtu.be/EY9grpqLCQc.

Jacintho, J. V. (2023). Os "donos do IFIX": veja as 5 maiores gestoras do índice de fundos imobiliários. FIIs.com.br, October 26. Available at: https://fiis.com.br.

Jensen, M. C., and W. H. Meckling (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics 3(4), 305–360.

Junior, W. E., and R. Rochman (2008). Fundos de investimento ativos e passivos no Brasil: comparando e determinando os seus desempenhos. Revista Brasileira de Finanças.
Krewson-Kelly, S., and R. B. Thomas (2016). The Intelligent REIT Investor: How to build wealth with real estate investment trusts. Hoboken, NJ: John Wiley & Sons.
Litt, J. J. (1999). A risk adjustment model for REIT evaluation. Real Estate Finance 16(1), 9–19.
London Stock Exchange Group (2016). Understanding the benefit of REITs in the US market. Report, November. Available at: https://content.ftserussell.com/sites/default/files/reits_whitepaper.pdf.
Loughran, T., and J. R. Ritter (1995). The new issues puzzle. Journal of Finance 50(1), 23–51.
Maestri, C. O., and R. F. Malaquias (2018). Aspects of manager, portfolio allocation, and fund performance in Brazil. Revista Contabilidade & Finanças 29(76), 82–96.
Maia, P. M., and R. F. Souza (2015). Análise do mercado de fundos de investimento imobiliário negociados em bolsa. Revista de Contabilidade do Mestrado em Ciências Contábeis da UERJ 20(2), 18–37.
Matos, P., C. Penna, and A. Silva (2015). Mutual investment funds in shares in Brazil: Incentives, management and convergence. Brazilian Business Review 12(2), 110–141.
Moreira, P. O., V. B. Tavares, and R. F. Malaquias (2017). Performance e foco do gestor em fundos multimercados. RACE: Revista de Administração, Contabilidade e Economia 16(2), 633–654.
Oh, J. S., and A. Verstein (2024). A theory of the REIT. Yale Law Journal 133, 755–838.
Oliveira, J. M., and B. Milani (2020). Variáveis que explicam o retorno dos fundos imobiliários brasileiros. Revista Visão, 17–33.
Paganini, K. (2020). Determinantes de retornos dos fundos de investimento imobiliário no Brasil. Master's thesis, Insper, São Paulo.
Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. Review of Financial Studies 22(1), 435–480.
Presidência da República (Brazil) (2023). Medida Provisória nº 1.184, de 28 de agosto de 2023. Brasília, DF.
Roychowdhury, S. (2006). Earnings management through real activities manipulation. Journal of Accounting and Economics 42(3), 335–370.
Scolese, D. (2014). Fatores determinantes da rentabilidade dos fundos de investimento imobiliários no Brasil de 2011 a 2013. Master's thesis, Fundação Escola de Comércio Álvares Penteado (FECAP), São Paulo.
Souza, V. S. (2012). Análise da rentabilidade dos fundos de investimento imobiliário. Master's thesis, IBMEC, Rio de Janeiro.
Storck, B. A., and F. Y. Motoki (2021). Fundos de investimento multimercado: a liberdade de ação do gestor importa? Revista de Contabilidade e Organizações 15.
Tavares, Y. (2023). Fundos imobiliários alcançam o dobro de investidores desde a pandemia. Valor Investe, July 18. Available at: https://valorinveste.globo.com.
Yokoyama, K. Y. (2014). Os fundos de investimento imobiliário listados em bolsa e as variáveis que influenciam seus retornos. Master's thesis, Universidade Federal do Espírito Santo.
Zanandrea, V. (2018). Avaliação de fundos de investimento imobiliário no Brasil. Master's thesis, Universidade Federal de Santa Maria.
Zhu, Y. W., S. E. Ong, and W. Y. Yeo (2010). Do REITs manipulate their financial results around seasoned equity offerings? Evidence from US equity REITs. Journal of Real Estate Finance and Economics 40(4), 412–445.