JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS Vol. 57, No. 8, Dec. 2022, pp. 3252–3280

doi:10.1017/S0022109022000242

Private Funds for Ordinary People: Fees, Flows, and Performance

Timothy J. Riddiough
University of Wisconsin–Madison School of Business
timothy.riddiough@wisc.edu

Jonathan A. Wiley
Georgia State University Robinson College of Business
jwiley@gsu.edu (corresponding author)

Abstract

We study private funds available to retail investors of modest wealth. Our sample covers unlisted real estate investment trusts (REITs) for superior cash flow and fee data. Fee structures are skewed toward performance-insensitive components of the compensation contract, particularly front-end loads. The average unlisted REIT underperforms the listed benchmark by 6.5% per year, 5% of which is attributable to fees. Unlisted REITs underperform institutional-grade private equity real estate funds. Fees paid to investment advisors also explain fundraising success, while past performance does not. The underperformance is consistent with the consequences of managerial conflicts of interest, inadequate governance mechanisms, opaque disclosure, and poor investment advice.

I. Introduction

Illiquid investment alternatives such as private equity or venture capital (VC) have been studied extensively in recent years. A number of stylized empirical facts have emerged, including evidence of outperformance relative to public market benchmarks and higher fund flows going to managers who consistently deliver superior returns. While access to private equity investment has generally been limited to institutional investors and high net worth individuals, private fund investment is increasingly targeted toward retail investors of more modest income and wealth levels (i.e., "ordinary people"). For example, in June 2020 the U.S. Department of Labor issued an information letter that creates a path for defined contribution retirement plans (e.g., 401(k) plans) to indirectly invest in private equity funds.[1]

Little is known about this retail segment of the private fund market. In this study, we evaluate the fees, performance, and fundraising of retail-oriented private

We thank Jennifer Conrad (the editor) and Oleg Gredil (the referee) for helpful comments, along with Greg Brown, Andra Ghent, and Jacob Sagi, and participants of 2019 Private Equity Research Symposium and the 2014 Israel Real Estate and Urban Economics Symposium. We thank the Institute for Private Capital (IPC) and the Private Equity Research Consortium (PERC) for generously providing access to the Burgiss data set used in this research.

[1] *Source:* https://www.dol.gov/agencies/ebsa/about-ebsa/our-activities/resource-center/information-letters/06-03-2020, accessed Dec. 29, 2020.

funds by exploiting data advantages in the unlisted real estate investment trust (UL-REIT) sector. A further advantage is that UL-REIT investments are highly comparable to listed REITS (L-REITs) and to private equity real estate (PERE) funds targeting institutional money.

Our sample of UL-REITs includes 113 commercial real estate funds, representing over $134 billion in equity placed by retail investors from 1994 to 2017. A unique feature of our data set is detailed net-of-fees cash flows, as well as a detailed menu of fee types and formulas that are disclosed in a relatively consistent manner by fund sponsors. This allows us to link specific fees to performance and fund flows, something that has been difficult to do using available institutional private equity data (e.g., see the discussion in Phalippou, Rauch, and Umber (2018)).

We provide novel evidence of the fee structures, fund flow relations, and underperformance of UL-REITs in comparison to other investment vehicles that hold highly similar assets. Our specific findings are as follows. First, retail investors encounter fee structures that differ from other forms of private funds, skewed heavily toward front-end loads. Front-end loads in our sample are nearly 14% of contributed capital. Such fees, in form and magnitude, are almost nonexistent in other forms of private equity. Carried interest is typically set at 15% once a hurdle rate of 7% is surpassed. We find, however, that the hurdle rate is unmet in more than two-thirds of our sample. For the remaining one-third of funds, carried interest represents less than 6% of the total fees paid from these funds on a present value basis. Thus, nearly all managerial compensation in our sample derives from performance-insensitive components. This finding contrasts sharply with institutional-grade private equity, where, on a present value basis, at least one-third of all fees are attributable to incentive fees (Metrick and Yasuda (2010), Sorensen, Wang, and Yang (2014)).

Our second finding is underperformance on a net-of-fees basis. Given highly similar balance sheet characteristics, we find that the average (median) UL-REIT underperforms the public market alternative by more than 6.5% (6.1%) per year as measured by the annualized Kaplan–Schoar (2005) public market equivalent (PME). Standard economic reasoning suggests that investors should require a premium for investing in illiquid securities. Instead, we calculate returns that are substantially lower than the exchange-listed alternative.

Our third finding is that UL-REITs underperform the L-REIT benchmark by 1.5% per year when fees are added back to cash flows. This finding contrasts with outperformance by other forms of private equity on a gross-of-fees liquidity-unadjusted basis, estimated to be slightly more than 8% per year by Axelson, Sorensen, and Strömberg (2014). In contrast to the evidence in private equity (e.g., Robinson and Sensoy (2013)), we find no evidence that higher fees correspond with higher gross-of-fees performance for UL-REITs. The differential between direct alphas on a gross-of-fees and net-of-fees basis implies a fee drag of 5% per year. Fees of this magnitude are high in comparison to the private equity fund fees of 3%–4% per year documented by Metrick and Yasuda (2010). Thus, UL-REITs offer their investors no apparent value creation to offset the high fee structure.

Our fourth finding is the underperformance of UL-REITs relative to institutional-grade PERE funds. When using L-REITs as the market benchmark, we calculate Kaplan–Schoar PMEs as well as Korteweg–Nagel (2016) generalized PMEs (GPMEs) for both UL-REITs and PERE funds. We find that a $1 investment

in UL-REITs is worth $0.77 on a PME basis, as compared to $0.93 and $1.01 for PERE funds using Burgiss and Preqin data, respectively. This leads to the conclusion that private funds for retail investors underperform private funds available to institutional investors and that differences in the systematic risks do not explain the result.

Our fifth finding is that incrementally higher selling commissions correspond to higher fund flows. A particular feature of the front-end load involves a modal 7% selling commission that is paid to the investment advisor/broker–dealer. The positive relation between the selling commission and fund flows that we document stands in direct opposition to findings in other sectors where investors are highly sensitive to front-end fees, such as private equity (Phalippou, Rauch, and Umber (2018)) and mutual funds (Sirri and Tufano (1998), Barber, Odean, and Zheng (2005)). In our sample of UL-REITs, we find no evidence of a performance–flow relation, whereas a positive relation between fund flows and past performance has been documented for hedge funds (Lim, Sensoy, and Weisbach (2016)), as well as for VC and buyout funds (Chung, Sensoy, Stern, and Weisbach (2012)). We do, however, find that UL-REIT managers inflate self-reported net asset values (NAVs) and never fully resolve prior fund performance before moving on to the next offering. The inflated interim performance measures are found to relate positively to the likelihood of a follow-on offering. Taken together, these findings imply that capital is raised primarily by misreporting NAVs in advance of the next planned offering and by incentivizing investment advisors with high selling commissions.

Our findings contribute to several strands of the literature. We outline the fundraising process, governance, and contracting mechanisms for private funds available to retail investors, adding to the broader private equity literature that includes Gompers and Lerner (1999), Metrick and Yasuda (2010), and Robinson and Sensoy (2013). We also complement the findings of Evans and Fahlenbrach (2012), who find that institutional classes of mutual funds outperform the retail "twins" by 1.5% per year. Our finding that retail investors in a private capital setting pay higher fees while experiencing inferior performance relative to institutional fund investment is consistent with evidence from the mutual fund literature.

We provide performance measures for PERE funds that complement the findings of Ang, Chen, Goetzmann, and Phalippou (2014), Bollinger and Pagliari (2019), and Pagliari (2020). We further link private fund flows to investment performance. Other studies, such as Harris, Jenkinson, and Kaplan (2014), focus on funds marketed to traditional institutional investors rather than funds marketed to retail investors. We consider the relations between fee structures, performance, and fund flows that relate to other forms of delegated asset management, including hedge funds (Lim, Sensoy, and Weisbach (2016)) and mutual funds (Ippolito (1992), Carhart (1997), Barber, Odean, and Zheng (2005), and Fama and French (2010)), the latter of which are marketed to retail investors.

We document that UL-REIT managers manipulate self-reported NAVs by consistently referencing the offering share price. Inflated interim performance measures are found to positively relate to the likelihood of follow-on fundraising, but not to fund flows conditional on a follow-on offering. These findings contribute to an emerging literature on delayed write-offs (Chakraborty and Ewens (2018)) and NAV manipulation attempts (Brown, Gredil, and Kaplan (2019)).

The remainder of the article proceeds as follows: Section II describes our sample, detailing the offering process, governance, and fee structures involved with raising equity from retail investors. Section III describes the net-of-fees and gross-of-fees return calculations as benchmarked against the public market alternative (L-REITs). Section IV contains PME and GPME calculations that are used to compare the performance of UL-REITs to institutional-grade PERE funds. In Section V, we evaluate fund flows and their determinants. Section VI concludes the article.

II. Sample

We focus on a particular type of private fund known as the UL-REIT. UL-REITs issue shares of common stock to raise equity, but the shares are not exchange-listed. UL-REITs are organized as finite-life, limited liability entities.

UL-REITs are operationally quite similar to their exchange-listed counterparts, since they share many of the same characteristics and invest in comparable assets.[2] They retain tax-exempt status at the entity level as long as they meet certain requirements, such as minimum thresholds for assets and income from real estate, dispersed share ownership rules, and distributing at least 90% of taxable income to shareholders in the form of dividends. However, the mechanisms employed to raise equity, the associated fees, and governance structure create important differences from L-REITs.

Our sample is constructed from several sources. First, we require US-based funds with coverage in SNL Financial to ensure adequate comparability with L-REITs. L-REIT index returns are constructed from the FTSE Nareit All Equity REITs Index. Second, we require the fund to have Form S-11 filed with the U.S. Securities and Exchange Commission (SEC), which is used for securities registration. This allows us to establish whether the firm intends to have shares listed on an organized stock exchange concurrent with an initial public offering or the firm does not intend to apply for an exchange listing and, instead, will utilize a continuous offering process. The latter category allows us to identify firms that originate as UL-REITs.

We restrict the sample to those with S-11 filings in 2015 or earlier, with returns measured through YE2017. As of May 2018 (the moment of data collection), the intersection between SNL data coverage and confirmed firms based on S-11 filings includes 113 UL-REITs with quarterly cash flow data from 1994:Q1 to 2017:Q4. We rely on 10-Q and 10-K financial statements filed with the SEC to obtain the cash flow, NAV, and accounting data for each UL-REIT.

Our comparison to institutional-grade PERE funds draws from access to Preqin and Burgiss data sets. Preqin harvests private equity cash flow data using

[2]In this study, we focus only on equity REITs, which invest directly in real estate. To compare assets held by L-REITs and UL-REITs, we collect over 198,000 commercial real estate transactions from 2003 to 2017 from the SNL Properties database. Among these transactions, 12,355 US commercial real estate properties were acquired by UL-REITs, and 75% of these acquisitions took place in markets where a specific L-REIT acquired at least one comparable asset of the same property type and approximately the same property size (within 30%, based on either square footage, the number of units, or the number of hotel rooms) within a 12-month window of the UL-REIT transaction date.

primarily Freedom of Information Act requests from public pension plans and also relies on voluntary data contributions from general partners (GPs). Detailed cash flow data are available for 518 PERE funds that have either closed fundraising or liquidated, covering the 1994–2015 vintages.[3] Additional filters are set to include only North American–focused funds (eliminating 117 funds), exclude real estate debt-focused funds (53 funds), and exclude observations where fund size is reported as zero or missing the terminal value (nine funds). The resulting sample includes 339 fund observations with available cash flow data.

Burgiss data are sourced exclusively from limited partners (LPs). These data include 687 PERE funds that are North American–focused that have either closed fundraising or liquidated by YE2017. After we further restrict initial cash flows to those occurring during 1994–2015, as well as exclude debt-focused funds, the Burgiss sample reduces to 643 funds. The final sample of 559 PERE fund observations from Burgiss results from eliminating funds that do not have NAV estimates or positive cash flows by YE2017.

A. Offering Process and Fund Characteristics

New equity subscriptions for UL-REITs are sold through a continuous offering process using traditional investment advisory channels. The share price is fixed throughout the offering period and conventionally set at $10 per share. The initial offering expiration date is typically set at either 2 or 3 years, although the offering period can be extended by filing additional S-11 offerings.

When offered, share redemption programs typically allow investors to redeem shares at 95% of the stated share price. The opening of a share redemption program is, however, at the discretion of management. As documented by Wiley (2014), 31% of UL-REITs with a stated redemption program never open it to investors. Furthermore, redemption programs that actually open are likely to become restricted or canceled soon after the offering period closes. Thus, share redemption is largely illusory. This combined with the absence of a secondary market for UL-REIT shares implies that retail investors have very limited liquidity for their shares until the fund itself liquidates.

There are no capital calls with UL-REITs, hence no incentive mechanism to qualify retail investors. Instead, only minimum investor statutory requirements must be met, which are as low as $45,000 in household income and $45,000 in net worth, with a $1,000 minimum investment in the majority of our sample.

UL-REIT investors are presented with fund offering–organizing documents on a "take it or leave it" basis. The documents are designed by management, who have substantial discretion in their construction. The governance structure and provisions are considerably weaker than those of L-REITs and PERE funds. PERE funds, for example, typically include provisions for GP removal based on a majority vote of participating LPs. UL-REIT shareholders, in contrast, typically have no

[3]Vintage classifications for PERE in the study are based on the first reported cash flows, as opposed to vendor-reported vintages, which can differ. Summary fund-level data are available for 2,680 PERE funds covering 1994–2015 vintages. They do not, however, consistently include cash flow data, relying instead on GP self-reported internal rates of return (IRRs). We choose a smaller sample with detailed cash flow data so that the performance measures can be calculated.

such authority, having to rely on the management's hand-picked board for representation. Furthermore, UL-REIT organizing documents typically include strong antitakeover provisions, including staggered board member elections, expansive boards, and preferred stock plans controlled by management with superior voting rights.

Panel A of Table 1 displays summary statistics associated with UL-REIT offering outcomes. Considering closed offerings only, the average fund raises $1.26 billion in gross equity from retail investors. Regarding financial leverage, the UL-REIT sample mean is 44% of book assets, with a standard deviation of 19%. This compares to the average L-REIT leverage of 47% documented by Riddiough and Steiner (2020), with a standard deviation of 15%. Leverage is thus comparable between UL-REITs and L-REITs.

TABLE 1

UL-REIT Offering Characteristics

Table 1 displays summary statistics for offering characteristics in our sample of UL-REITs. Panel A reports outcomes for 102 closed offerings. TOTAL_FUND_FLOWS equal the offering price multiplied by the number of shares outstanding when the offering ends. LEVERAGE is total liabilities divided by total assets, both in book values at the offering end date. OFFERING_LENGTH measures years from the initial offering being declared effective by the SEC until the final offering ends (spanning all follow-on offerings by the same fund). INITIAL_DIVIDEND_YIELD is the annualized initial dividend paid divided by the gross-of-fees offering price. FUND_SEQUENCE counts the current fund plus the number of preceding funds offered by the same Sponsor. GP_OWNERSHIP equals the number of shares owned by the general partner (GP) divided by the total number of common equity shares outstanding at the offering end date. Panel B displays fees from the S-11 filings for 113 open and closed offerings, where *n* reports the number of funds for which the corresponding fee is observed. SELLING_COMMISSIONS are paid to the investment adviser. DEALER_MANAGER_FEES are paid to the captive Dealer Manager, typically a wholly owned subsidiary of the fund sponsor. These fees are for marketing and administrative expenses associated with the offering. OFFERING_EXPENSES are reimbursed to the captive fund advisor. ACQUISITION and DISPOSITION_FEES are analogous to real estate brokerage commissions, paid to the advisor as a percentage of the contract purchase or sale price. ACQUISITION_EXPENSES cover reimbursements for costs involved in the pursuit of an asset purchase. ASSET_MANAGEMENT and SERVICING_FEE are paid to the advisor annually or more frequently and are based on the total asset value during the period. TOTAL_ASSET_VALUE is based on either the appraised value or the investment cost. CARRIED_INTEREST measures the percentage share the advisor receives when a liquidity event is achieved and in the event the hurdle rate is surpassed. HURDLE_RATE is the cumulative pre-tax noncompounded return that shareholders must receive before carried interest is activated.

Panel A. Nonfee Characteristics

Closed Offerings (102 Funds)	Min	25th	Median	Mean	75th	Max
TOTAL_FUND_FLOWS ($millions)	$2.8	$254.0	$925.2	$1,262.5	$1,792.7	$8,112.5
TOTAL_ASSETS ($millions)	$5.2	$368.5	$1,089.1	$1,720.5	$2,445.7	$11,328.2
LEVERAGE	1%	33%	48%	44%	58%	79%
OFFERING_LENGTH_(years)	0.6	2.1	3.0	3.3	4.2	7.6
INITIAL_DIVIDEND_YIELD	0.0%	5.5%	6.3%	6.0%	7.0%	10.0%
FUND_SEQUENCE	1st	1st	2nd	3.7	5th	16th
GP_OWNERSHIP	0.003%	0.01%	0.03%	0.3%	0.1%	9.8%

Panel B. Fees

Open and Closed Offerings (113 Funds)		*n*	Mode (%)	Mean (%)	Std. Dev. (%)	Min (%)	Max (%)
Front-end fees	Basis						
SELLING_COMMISSION	Gross equity raised	113	7.0	6.8	0.9	3.0	8.0
DEALER_MANAGER_FEE	Gross equity raised	104	3.0	2.6	0.7	0.4	3.5
OFFERING_EXPENSES	Gross equity raised	113	1.5	2.0	1.0	0.0	5.5
ACQUISITION_FEE	Assets acquired	107	2.0	1.9	0.8	0.5	4.5
ACQUISITION_EXPENSES	Assets acquired	113	0.5	0.5	0.0	0.5	0.5
Operational fees							
ASSET_MANAGEMENT_FEE	Total asset value	111	0.8	0.8	0.4	0.2	3.0
SERVICING_FEE	Total asset value	10	1.0	1.0	0.3	0.5	1.5
Liquidation fees							
DISPOSITION_FEE	Total asset value	113	3.0	3.0	0.0	3.0	3.0
CARRIED_INTEREST	Distributions	103	15.0	14.2	4.1	3.0	35.0
HURDLE_RATE		103	7.0	7.0	1.3	0.0	10.0

The length of the average UL-REIT offering period is 3.3 years. In more than half of our sample, the Sponsor is observed submitting an extension to the offering period. Considering initial and extended offerings together, we find the lengthiest continuous offering in our sample to be 7.6 years.

In comparison, institutional-grade PERE funds have a median offering period of 1.6 years in the Preqin sample, with 75% of PERE funds closing fundraising within 2 years of inception.[4] The median first reported asset acquisition in the Preqin sample occurs within 9 months of the start of fundraising. PERE funds continue to make capital calls after fundraising has closed. The most common contractual lifespan in our Preqin sample is 8 years to 10 years and can typically be extended by 2 years or more if approved by investor vote. The median final capital call occurs after 7.5 years for liquidated PERE funds, while the median overall life of liquidated PERE funds is 10.5 years in the Preqin sample. The late timing of the median final capital call is influenced by opportunistic and value-add fund investment strategies that require the funding of capital improvements made to previously acquired assets.

During the process of share marketing to retail investors, investment advisors typically highlight the UL-REIT's "constant" offering share price, high dividend yield, and the share redemption program.[5] The most common practice is for UL-REIT managers to provide self-reported NAVs at par value throughout the offering period. To some investors, the so-called constant self-reported share price can give the impression of a bond-like security with little to no share price volatility.

The average initial dividend yield for UL-REITs is 6% of the offering price, with more than half the sample clustered between 6% and 8%. Initial dividend yields exceed dividend yields in the L-REIT sector by 2.4% per year, on average, and 88% of our sample posts an initial dividend yield that exceeds the dividend yield of the L-REIT market index. Wiley (2014) documents that initial dividends paid during the offering period often exceed available cash flow from operations, with the residual being funded by increased leverage, the return of capital, or even new investor subscriptions. Some dividends during the offering period are paid before the fund has any invested assets. Only 25% of UL-REITs generate cash flow from operations sufficient to fund distributions within 2 years of origination (Wiley (2014)). Distributions to shareholders tend to decline abruptly following the close of the offering period, since management no longer needs the lure of high dividend yields to raise additional capital (Wiley (2018)). Appendix A provides further details on the practice of funding distributions from offering proceeds in the UL-REIT sector.

There are 36 unique Sponsors for the 113 UL-REITs in our sample, implying 36 offerings that qualify as first in the fund sequence. Several UL-REIT Sponsors

[4]Preqin's offering length is based on its Months in Market variable, which equals the difference between Fund Raising Launch Date and Final Close Date in the Preqin fund-level description data.

[5]See, for example, the industry reports by Green Street Advisors dated Mar. 28, 2012, and Aug. 27, 2014. For additional perspectives on industry marketing practices, see the FINRA complaint filed against David Lerner and Associates, the exclusive soliciting broker–dealer for Apple REIT (Sponsor of nine fund observations in our sample; see https://www.finra.org/media-center/news-releases/2011/finra-charges-david-lerner-associates-soliciting-investors-purchase (accessed Dec. 8, 2020)).

are observed producing one highly similar offering after another.[6] Based on the number of fund offerings, the nine most successful Sponsors collectively account for greater than 75% of the total fundraising in the sector.

The typical UL-REIT GP contributes $200,000 in equity at fund inception, with no fees deducted. With no further contributions, GP ownership is increasingly diluted as fundraising progresses, resulting in less than a 0.03% ownership share, on average, based on the number of shares outstanding. By comparison with institutional-grade PERE, the median GP ownership share from the Preqin sample is 3% of contributed capital, which is 100 times the GP ownership share of the average UL-REIT.

B. Fees

Panel B of Table 1 provides summary statistics for fee structures obtained from the S-11 filings. Using modes, the front-end load includes a 7.0% selling commission paid to the investment adviser, 3.0% to the Dealer Manager (i.e., the GP/Sponsor) to cover marketing costs, and 1.5% reimbursement paid to the Advisor (also the GP/Sponsor) for offering expenses. The sum of the amounts above total to 11.5% of contributed capital, not yet accounting for acquisition fees and related expenses. By comparison, front-end loads paid to the GP are virtually nonexistent in most forms of private equity and extremely rare among institutional-grade PERE funds.

After these fees have been deducted in the process of equity fundraising, front-end acquisition fees and expenses are incurred. Modal acquisition fees are 2.0% plus 0.5% allocated for the reimbursement of acquisition expenses, payable to the Advisor. This structure implies the total front-end load is approximately 13.7% of contributed equity.[7]

Once the UL-REIT has assets under management, operating fees are collected. The most common asset management fee is 0.8% of asset value, which is determined based on either the appraised value or the investment cost. The typical fund is 44% levered, implying the corresponding management fee is approximately 1.5% of invested capital. By comparison, from the Preqin data set, we observe modal asset management fees at 1.5% of committed or invested capital for institutional-grade PERE funds. For L-REITs, general and administrative expenses are typically in the range of 1.2%–1.5% of market equity.

At the liquidation stage, exit can take the form of an exchange listing, a merger, or asset liquidation in the private market, including bankruptcy. If properties are sold, the Advisor typically receives a 3.0% disposition fee based on the asset value. Carried interest is a common fee structure for UL-REITs. The modal hurdle rate is a 7.0% preferred return to shareholders, with the Advisor receiving 15.0% of all

[6]There is minimal overlap between the UL-REIT and Preqin samples. In total, there are four UL-REIT Sponsors that have also offered PERE funds (based on Preqin cash flow data). Generally, the investment style and time periods are nonoverlapping, with UL-REIT offerings more likely to pursue core investment strategies and to have a North American focus.

[7]Here, $13.7\% = 1 - [(1 - 0.07 - 0.03 - 0.015) \times (1 - 0.02 - 0.005)]$. This calculation assumes acquisition fees are paid only on equity. When acquisitions are levered, acquisition fees will exceed this estimate.

proceeds in excess of the amount required to meet the hurdle rate. We find that carried interest is unpaid in more than two-thirds of our sample of liquidated funds and otherwise represents a very small percentage of total compensation in cases when it is paid.[8]

III. Performance Versus Listed REITs

In this section, we measure the investment performance of UL-REITs. Performance measures include the PME of Kaplan and Schoar (2005), along with the direct alpha of Gredil, Griffiths, and Stucke (2014).[9] The direct alpha values are similar (correlation 0.99) to those obtained by combining PMEs with fund-specific duration estimates (e.g., Phalippou and Gottschalg (2009)). L-REIT returns over matching investment horizons are used as the public market discount factor. The L-REIT market index has factor exposure that is closely related to that of both UL-REITs and PERE, which mitigates concerns of lack of power and discount factor misspecification.[10] The direct alpha values are calculated on both a net-of-fees and a gross-of-fees basis to quantify fee drag.

As previously documented, UL-REITs engage in a continuous offering process that averages 3.3 years. To estimate the PMEs and direct alphas, an assumption regarding the initial investment timing is necessary. Define "First investors" as those who invested in the UL-REIT at the earliest practical point, with dividends paid throughout the offering period. Define "Last investors" as those who invested at the latest possible point during the offering period, immediately prior to the close of fundraising. Last investors do not receive dividends paid during the offering period, relying more on subsequent dividends and capital gains or losses. The vintage listed for First investors coincides with the beginning of the property acquisition period, while that for Last investors generally coincides with final property acquisitions. Overall, we find that returns to Last investors are similar to those to First investors, providing assurance that our findings are not overly dependent on investor entry timing. For brevity in exposition, we present the results for First investors throughout, with occasional reference to Last investors.

A. Net-of-Fees Cash Flows

All relevant cash flows, fees, and investment values must be identified to calculate the investment performance for UL-REITs. The initial offering share price is obtained from the S-11 filing, along with all fee types and their associated

[8]Evidence from Hüther, Robinson, Sievers, and Hartman-Wendels (2020) suggests that GP incentives to earn carried interest affects performance in VC partnerships. VC performance is better when carried interest is paid on a deal-by-deal basis, as opposed to whole-fund carry provisions. For UL-REITs, carried interest is exclusively paid on a whole-fund basis.

[9]The L-REIT market index has periodic index values $I = \{i_0,\ldots,i_T\}$. UL-REIT cash flows include the initial contribution from investors, CF_0; distributions to investors, $CF_1, \ldots, CF_T$; and the residual value, V_T. The direct alpha is calculated as the IRR from the following series, with each cash flow inflated to its future value at liquidation time T, based on the market index: IRR $\{CF_0 \times (i_T/i_0), CF_1 \times (i_T/i_1), \ldots, CF_T, V_T\}$.

[10]See Gupta and Van Nieuwerburgh (2021), who find that PERE funds have factor exposure that is closely tied to the L-REIT market index.

formulas. Dividend payments per share are collected from the SNL database and adjusted for reverse stock splits. The terminal cash flow equals the final dividend payment plus the liquidated share price. We assume that UL-REIT investors do not exercise share redemptions and do not participate in dividend reinvestment plans, electing instead to receive cash dividends.

We classify 63 UL-REITs as "Exited" and the remaining 50 UL-REITs as "Active". Exited funds have terminal liquidation values that are observable, such as the exchange-traded share price, the tender offer (in the case of a merger), or liquidating distribution payments (in the case of asset sales in the private market). The investment performance of Exited funds is calculated by assuming that investors take cash at the earliest possible point. For exchange listings, we use the market close share price on the opening day of trading. Thus, for Exited funds, terminal values are observable and do not need to be estimated. Liquidation fees have already been subtracted from the terminal value that is observed for Exited funds.

To quantify investment performance for Active funds, we need an estimate of the share value. The market value per share was not consistently reported as the NAV in the UL-REIT sample until NASD Rule 2340 was amended, effective Apr. 11, 2016. Even after the amendment, UL-REITs were permitted to report NAVs at par value throughout the offering period and for up to 18 months after the offering closes. From 2007 through 2016, UL-REIT managers were required to provide some estimate of share value that was approved by the Board of Directors.[11] The most common practice throughout our sample is to report the original offering share price as the estimate of share value on the grounds that par value was the most recently observed price at which the securities were sold. However, front-end fees for UL-REITs are nearly 14%, on average, implying the net proceeds available for investment are approximately 86% of the gross investment amount. Thus, for the large majority of Active funds, self-reported NAVs/market values are unreliable estimates of true share values.

To obtain a robust estimate of value for Active funds, we approximate the liquidation value by applying the market-to-book (MB) ratio of total assets from a matched sample of L-REITs. Appendix B provides details on the matched sample procedure. With the liquidation value estimate in hand, we then subtract the liquidation fees to obtain a net-of-fees terminal share value estimate for Active funds. On average, we calculate the terminal values at 78% of the initial gross investment amount for Exited funds. For Active funds, we approximate the average values as of YE2017 at 95% of the initial gross investment amount, implying low to moderate capital gains realized for the average Active fund.

B. Gross-of-Fees Cash Flows

Gross-of-fees cash flows for the fund are calculated by adding fees to the net-of-fees cash flows for investors, based on disclosed fee formulas. The grossed-up cash flows do not necessarily represent actual cash flows that would have been

[11]Prior to 2007 there was no share value reporting requirement for UL-REITs, although some funds voluntarily reported share value. For the six funds that never reported share value, we rely on the implied share price from the dividend reinvestment plan, which allowed subscription at 95% of the share value. Share value reporting is based on requirements imposed by ERISA for retiree investors.

received in a zero-fee environment, since managerial incentives would have been affected. The initial cash flow, CF_0, is the posted share price paid by investors during the offering, minus all front-end fees.[12] Periodic cash flows, CF_1 to CF_{T-1}, are dividends paid per share, adjusted for reverse stock splits, and are identical to those used to generate net-of-fees returns. The final cash flow, CF_T, equals the final dividend plus the gross-of-fees terminal value per share. The gross-of-fees terminal value equals the net-of-fees share price observed in the liquidity event, which is inflated by adding back all liquidation fees. Liquidation fees to be added back include the disposition fee and, in certain cases, incentive fees paid to the Advisor for exceeding the hurdle rate. The gross-of-fees terminal value is further inflated by compounded asset management fees incurred and paid to the Advisor over the holding period.

C. Investment Performance

Table 2 displays summary statistics for UL-REIT investment performance as classified by type of liquidity event. Each performance metric is calculated using UL-REIT cash flows along with returns from the L-REIT market index over the corresponding horizons. Overall, UL-REITs underperform the public market benchmark. For the full sample, \$1 invested in UL-REITs is worth \$0.77, on average, after discounting all cash flows to the initial capital contribution date.

Direct alphas are calculated on a net-of-fees and gross-of-fees basis. Net-of-fees, the direct alpha has an arithmetic average (median) of −6.5% (−6.1%) per year. Only 16 of 113 funds, or 14% of our sample, exceed the performance of the L-REIT market benchmark over the fund's life on a net-of-fees basis. The direct alpha on a gross-of-fees basis is −1.5% per year. Here, 46 of 113 funds, or 41% of our sample, exceed the public market benchmark on a gross-of-fees basis. The differential between the gross-of-fees and net-of-fees direct alphas represents the fee drag. Fee drag equals 5% per year, on average, which does not adjust for incentives the existing fee structures create.

Active funds outperform Exited funds by a substantial margin. Active funds are generally the youngest funds in the sample and have not yet liquidated. Because returns for Active funds rely on inferred terminal values, there is a possible upward bias in our terminal value estimates that inflate the performance measures.

The investment performance for Exited UL-REITs is categorized as either an exchange listing, a merger, an asset sales in the private market, or a bankruptcy. An exchange listing is typically coupled with an IPO, where additional equity shares are sold. Exchange listings provide an objective market-based valuation of the UL-REIT's equity value on the liquidation date. Reverse stock splits occur in advance of the exchange listing for 15 of 25 UL-REITs, but these are extremely rare among other listed firms. Even under exchange listings, investor liquidity might

[12]Specifically, CF_0 = Posted share price × $(1 - b - d - w - e) \times (1 - a - x)$, where Posted share price is the initial offering price, b is the selling commission, d is the dealer manager fee, w is the working capital reserve, e is organizational and offering expenses, a is the acquisition fee, and x is the acquisition expense.

TABLE 2

UL-REIT Investment Performance

Table 2 displays summary statistics of investment performance for First investors based on UL-REIT status at YE2017. A total of 50 funds are classified as Active, including 11 with open offerings at YE2017 and 39 with closed offerings; 63 funds exited by YE2017, including 25 via exchange listings, 26 via mergers, 11 liquidating via asset sales, and one via bankruptcy. Performance measures are for First investors and include the PME, following Kaplan and Schoar (2005), along with the direct alpha using net-of-fees (α_{net}) and gross-of-fees (α_{gross}) cash flows, calculated according to the methodology described in Gredil, Griffiths, and Stucke (2014). The PME and direct alpha calculations are derived from returns realized in the L-REIT market index over the holding period covering the active life of the UL-REIT.

		PME			Direct α_{net}			Direct α_{gross}		
Subsample	*n*	Median	Mean	Std. Dev.	Median (%)	Mean (%)	Std. Dev. (%)	Median (%)	Mean (%)	Std. Dev. (%)
Full sample	113	0.79	0.77	0.25	−6.1	−6.5	9.6	−1.1	−1.5	9.5
Active	50	0.85	0.84	0.22	−5.1	−4.7	4.6	−0.3	0.8	5.5
Open offering	11	0.98	1.01	0.16	−0.5	−0.5	3.0	7.2	6.7	4.1
Closed offering	39	0.79	0.79	0.21	−6.8	−5.9	4.2	−1.4	−0.8	4.7
Exited	63	0.73	0.72	0.27	−6.5	−7.9	12.1	−2.6	−3.4	11.5
Exchange listing	25	0.79	0.75	0.30	−6.8	−6.7	7.2	−0.4	−2.3	7.3
Merger	26	0.82	0.82	0.15	−3.7	−4.5	4.7	−0.6	−0.1	5.5
Asset sales	11	0.48	0.48	0.15	−10.7	−11.4	4.3	−6.4	−7.1	3.7
Bankruptcy	1	0.02	0.02	0.00	−89.4	−89.4	0.0	−77.7	−77.7	0.0

not be fully realized for some time, since some funds elect to have unlisted shares convert to listed shares according to a staggered schedule. As reported in Table 2, the investment performance of exchange-listed funds is slightly below the full sample average.

A merger is the most frequent path to exit, with 26 of 63 Exited UL-REITs having been acquired by another fund. Mergers can involve cash payments for shares outstanding, special dividends, conversion to common or preferred shares, or some combination thereof. When exiting via a merger, investor liquidity might not be fully realized for some time in cases in which the merger involves conversion to shares in another UL-REIT. In 15 cases the acquisition is by an unaffiliated REIT, while in 11 of 26 cases the merger involves an affiliate of the Sponsor. Among Exited funds, mergers generate the most favorable investment performance.

Private market asset sales and bankruptcy occur less frequently in our sample and are generally undesirable outcomes, since such events involve breaking up the UL-REIT and terminating it as a going concern. When exiting via asset sales or bankruptcy, investor liquidity is typically not fully realized until all assets have been sold and liquidating distributions made. Asset sales underperform the L-REIT market index in all cases on both a net-of-fees and a gross-of-fees basis.

D. Fees, Performance, and Fund Characteristics

We sort UL-REITs into PME terciles to examine cross-sectional differences in fees, performance, and fund characteristics. Table 3 reports the results. With the exception of other front-end fees, average fees in the lowest PME tercile are not significantly different from those in the highest PME tercile. In further untabulated analysis, we do not find any evidence that managers of high-fee funds generate better investment performance, not even on a gross-of-fees basis.

TABLE 3

UL-REIT Performance, Fees, and Fund Characteristics

Table 3 displays the mean values with UL-REITs sorted into terciles by PMEs to First investors. The table displays the mean values for investment performance (PMEs and direct alphas), duration, fund life, and fees, along with initial dividend yields. The PME and direct alpha measures are described in the notes to Table 2. Duration equals the difference between the weighted-average year of fund inflows and the weighted-average year of fund outflows, where the weights are based on the present value of the corresponding discounted cash flows. Fund life is measured in years from the start of fundraising to exit for Exited funds, or to 4Q2017 for Active funds. All other variables are defined in the notes of Table 1. Carried interest is a contingent fee based on returns in excess of the hurdle rate, whereas all other fees are noncontingent. The far-right column displays the *t*-test results for the difference in means between the lower and upper terciles.

PME Tercile	Lower	Middle	Upper	(Lower–Upper)
Statistic	Mean	Mean	Mean	(*t*-Test)
PME	0.50	0.79	1.04	(−16.1)
DIRECT_α_{net}	−13.1%	−6.2%	−0.1%	(−5.9)
DIRECT_α_{gross}	−9.1%	−1.1%	5.6%	(−7.2)
DURATION	5.7	4.8	4.8	(2.4)
FUND_LIFE	8.3	6.1	6.0	(3.3)
SELLING_COMMISSION	6.9%	6.8%	6.7%	(1.0)
OTHER_FRONT-END_FEES	7.4%	7.0%	5.7%	(3.0)
OPERATIONAL_FEES	0.9%	0.7%	1.1%	(−1.5)
CARRIED_INTEREST	13.9%	12.1%	12.8%	(1.0)
INITIAL_DIVIDEND_YIELD	6.2%	7.6%	6.9%	(−1.2)

IV. Performance Versus Institutional PERE

In this section, we calculate and compare PMEs and GPMEs for institutional-grade PERE with those of UL-REITs. The comparison is tightly focused on contractual and investor clientele differences in private fund investment, since the underlying asset market risk exposures and asset investment processes for PERE and UL-REITs are very similar. The primary differences lie with governance and contracting structures, as well as with fundraising practices. Perhaps most importantly, UL-REITs attract investment capital from retail investors, whereas PERE funds focus primarily on institutional investors. Institutional-grade PERE consequently makes for an interesting comparison group, since it does not appear to make any claims about value creation through governance or operational engineering. There is also prior evidence that PERE funds underperform public market benchmarks.[13]

A. PMEs by Vintage

Table 4 displays PMEs and fund durations by vintage for UL-REIT First and Last investors, along with those for PERE funds using the Preqin and Burgiss data sets. The fund duration calculations follow those of Phalippou and Gottschalg (2009). Duration in this case equals the difference between the weighted-average month of fund inflows and the weighted-average month of fund outflows. Weights are based on the present value of corresponding cash flows discounted using returns to the L-REIT index.

When distinguishing between First and Last investors, we find that $1 invested in UL-REITs is worth between $0.77 and $0.79 after discounting all cash flows to

[13] See, for example, Ang et al. (2014), Bollinger and Pagliari (2019), Pagliari (2020), and Gupta and Van Nieuwerburgh (2021). We cite the 2014 working paper version of Ang et al. (2014) here, which includes the relevant analysis for PERE funds.

TABLE 4

PMEs by Vintage

Table 4 displays the number of observations (n) by fund vintage, along with the sample means of the PMEs and duration. Duration equals the difference between the weighted-average year of fund inflows and the weighted-average year of fund outflows, where the weights are based on the present value of corresponding discounted cash flows. The first two sets of results are for UL-REITs based on the investment timing assumption of First and Last investors, respectively. Vintages correspond to investment timing. The latter two sets of results are for institutional-grade PERE, based on Preqin and Burgiss data sets. For all PME and duration calculations, the market index is the FTSE Nareit index for all U.S. equity REITs. The latest cash flow data observations for calculations in Table 4 are from 4Q2017.

	UL-REITs						PERE					
	First Investors			Last Investors			Preqin			Burgiss		
		PME	Duration		PME	Duration		PME	Duration		PME	Duration
Vintage	n	Mean	Mean	n	Mean	Mean	n	Mean	Mean	n	Mean	Mean
1994	2	0.75	7.2				1	1.09	5.2	8	1.09	3.7
1995	0						1	0.95	3.9	10	1.13	3.4
1996	1	0.88	5.6				2	1.09	3.2	9	1.05	4.0
1997	2	0.88	8.0	1	1.00	6.1	5	1.09	3.6	18	0.98	4.3
1998	2	0.70	6.6	1	0.92	4.4	1	0.80	3.0	27	0.88	4.4
1999	2	0.81	4.4	1	0.68	4.5	1	1.01	2.7	15	0.80	4.1
2000	1	0.31	6.2	0			7	0.89	3.7	12	0.96	2.8
2001	2	0.79	6.2	2	0.92	4.5	1	0.93	2.5	15	1.04	3.3
2002	2	0.46	4.5	2	0.57	3.9	2	0.95	2.9	16	0.98	3.1
2003	5	0.62	6.2	3	0.86	5.1	6	1.07	3.3	15	0.90	3.7
2004	4	0.64	6.6	3	0.78	3.2	7	0.85	4.4	26	0.89	4.3
2005	5	0.76	7.4	1	0.55	5.4	14	0.82	4.8	43	0.72	5.0
2006	8	0.87	6.5	5	1.13	3.5	20	0.62	6.0	38	0.55	5.7
2007	2	1.04	6.3	2	0.70	5.6	29	0.73	5.1	57	0.71	5.2
2008	8	0.89	5.4	4	0.61	5.3	21	0.89	4.2	30	0.91	4.4
2009	11	0.61	5.8	4	0.32	4.4	9	1.07	3.8	15	0.97	4.2
2010	11	0.66	5.6	6	0.68	4.0	23	1.11	3.4	18	1.10	3.8
2011	12	0.66	3.8	6	0.64	3.6	39	1.16	2.9	26	1.17	2.9
2012	7	0.96	4.0	5	0.88	2.8	24	1.16	2.6	34	1.13	2.6
2013	8	0.89	4.0	18	0.79	2.4	35	1.16	2.3	44	1.11	2.3
2014	13	0.88	3.3	14	0.88	3.0	40	1.09	1.8	38	1.08	1.8
2015	5	0.91	2.4	12	0.87	2.2	51	1.05	1.1	45	1.05	1.3
Total	113	0.77	5.1	90	0.79	3.3	339	1.01	3.1	559	0.93	3.6

the capital contribution date. By comparison, $1 invested in PERE funds is worth between $0.93 and $1.01, based on Burgiss and Preqin data, respectively. Given highly comparable factor exposures to the L-REIT benchmark, as well as comparable fund durations, we find that, within the real estate asset class, private fund investment for retail investors underperforms private equity for institutional investors.

B. GPMEs and Subsamples

The GPME introduced by Korteweg and Nagel (2016) is estimated within a generalized method of moments framework, enabling statistical inference. The standard errors (SEs) generated from the GPME estimations are robust to cross-correlation between fund cash flows. Whereas the PME reports the ratio of discounted cash inflows to cash outflows, the GPME reports the difference between the two quantities. In these specifications, we set $a = 0$ and $b = 1$ with respect to the L-REIT market index, which produces a measure consistent with the PME of Kaplan and Schoar (2005). In the context of the one-factor model, $b = 1$ has the interpretation of the relative risk aversion parameter (i.e., γ). As shown in Korteweg and Nagel (2016), misspecification of γ does not bias inference regarding NPV, as long as the fund "beta" relative to the market risk factor is close to one.

This restriction is plausible when using the L-REIT market index. The null hypothesis to be tested is that GPME equals zero.

Table 5 displays the results from our GPME calculations. Considering full samples, the NPV from investing $1 into either an equal-weighted or capital-weighted portfolio of UL-REITs is −$0.25 for First investors and −$0.18 for Last investors. In both cases, we reject the null hypothesis that GPME equals zero. By comparison, GPMEs for PERE funds are insignificantly different from zero across the full samples of Preqin and Burgiss data, indicating comparable net-of-fee investment performance to the L-REIT market index. Following the method of Hall and Sen (1999), we further conduct a nested test for whether the GPME of UL-REITs is different from that of PERE funds. Using the more comprehensive Burgiss sample for PERE, we reject the null of moments' equality between the two samples, indicating that UL-REIT GPMEs are significantly lower than PERE GPMEs.

We further estimate GPMEs across subsamples by fund investment style category, including core, value-add, and opportunistic.[14] UL-REITs generate negative and significant GPMEs for each investment category. With the exception of opportunistic funds in the Burgiss sample, PERE funds do not appear to underperform the L-REIT market index.

PERE funds appear to have improved performance in post-2008 vintages (see the PME results by vintage in Table 4). We report GPME results across 1994–2008 and 2009–2015 vintages for core-focused funds for comparison with UL-REITs that predominantly pursue this investment style (96 out of 113 funds). Appendix C provides a list of all 113 funds identified in the sample. UL-REITs underperform the market benchmark across both vintage groupings, while core-focused PERE funds only underperform during the 1994–2008 vintage. One possible explanation for the difference is that the post-2009 vintage includes fewer PERE funds that have been liquidated. When we extend the sample of cash flows for Active PERE funds through 4Q2018 for Burgiss and 2019:Q1 for Preqin, we find that our PME calculations decline significantly after 2009. Thus, PERE values as of 2017:Q4 can reflect overly optimistic NAV estimates. In the final rows of Table 5, we confirm that GPMEs for Exited PERE funds tend to be considerably lower than those for Active funds, whose investment performance calculations rely on self-reported NAVs.

C. Persistence

We now examine persistence in investment performance. Persistence refers to the ability of Sponsors of high-performing funds to form subsequent funds that are also high performers. In Table 6, following the approach of Kaplan and Schoar (2005), we regress Sponsor current performance (measured as PME) on past performance. The results show no evidence of a significant persistence relation for UL-REITs.[15] However, for PERE funds, we find evidence of persistence in both

[14] In Preqin, *core* includes core-plus funds, and *opportunistic* includes distressed funds. In Burgiss, *core* includes generalist funds. For UL-REITs, we classify fund investment strategies based on a review of each fund's prospectus.

[15] In untabulated analysis, we alternately consider both net-of-fees and gross-of-fees IRRs, respectively, and we find no evidence of a significant persistence relation in the UL-REIT sample.

TABLE 5

GPMEs and Subsamples

Table 5 reports the generalized PME (GPME) calculations, along with subsample observations (*n*), and standard errors (SE), which are generated from generalized method of moments estimations. SEs are robust to cross-correlation between fund cash flows. The GPME calculations impose the restrictions that $a = 0$ and $b = 1$ (consistent with assumptions implicit in the PME), utilizing the L-REIT market index as the discount factor. The *p*-value is based on the *J*-test of the GPME equal to zero. The first two sets of results are for UL-REITs based on the assumption of First investors and Last investors, where vintages correspond to investment timing. The last two sets of columns are for institutional-grade PERE, based on Preqin and Burgiss data sets. The subsamples span the rows and include the full sample, investment styles (CORE, VALUE-ADD, and OPPORTUNISTIC), core-focused funds in the 1994–2008 and 2009–2015 vintages, Active funds, and Exited funds that have liquidated. In Preqin, CORE includes core-plus funds, and OPPORTUNISTIC includes distressed funds. In Burgiss, what we classify as core is classified as generalist funds. For the equal-weighted results (Panel A), the GPME calculations assume a $1 investment in each firm. For the capital-weighted results (Panel B), the GPME calculations assume the weighted-average investment is $1 per firm, where the weights are based on the total equity fundraising of each fund. The latest possible cash flow data observations for the calculations in Table 5 are from 4Q2017.

	UL-REITs								PERE							
	First Investors				Last Investors				Preqin				Burgiss			
Sample	*n*	GPME	SE	*p*-Value	*n*	GPME	SE	*p*-Value	*n*	GPME	SE	*p*-Value	*n*	GPME	SE	*p*-Value
Panel A. Equal-Weighted																
FULL	113	−0.245	0.022	0.000	90	−0.177	0.030	0.000	339	−0.008	0.146	0.956	559	−0.079	0.060	0.187
CORE	96	−0.231	0.021	0.000	78	−0.165	0.031	0.000	34	0.031	2.889	0.991	131	−0.083	0.083	0.317
VALUE-ADD	8	−0.251	0.066	0.000	6	−0.202	0.550	0.713	160	0.007	0.128	0.956	272	−0.065	0.071	0.362
OPPORTUNISTIC	9	−0.382	0.106	0.000	6	−0.298	0.060	0.000	118	−0.040	0.338	0.906	128	−0.119	0.066	0.072
CORE																
1994–2008	42	−0.264	0.018	0.000	23	−0.147	0.057	0.011	6	−0.133	0.032	0.000	84	−0.163	0.074	0.027
2009–2015	54	−0.206	0.060	0.001	55	−0.173	0.062	0.005	28	0.066	0.022	0.003	47	0.058	0.047	0.215
ACTIVE	50	−0.170	0.039	0.000	28	−0.114	0.134	0.395	271	0.002	0.313	0.995	305	−0.033	0.103	0.748
EXITED	63	−0.304	0.017	0.000	62	−0.205	0.041	0.000	68	−0.049	0.052	0.345	254	−0.135	0.038	0.000
Panel B. Capital-Weighted																
FULL	113	−0.249	0.049	0.000	90	−0.181	0.063	0.004	339	0.003	0.067	0.964	559	−0.064	0.050	0.202
CORE	96	−0.274	0.054	0.000	78	−0.200	0.070	0.004	34	−0.020	0.447	0.964	131	−0.077	0.054	0.153
VALUE-ADD	8	−0.101	0.024	0.000	6	−0.023	0.325	0.944	160	−0.066	0.152	0.664	272	−0.104	0.097	0.285
OPPORTUNISTIC	9	−0.120	0.040	0.002	6	−0.090	0.037	0.014	118	0.038	0.047	0.416	128	−0.014	0.070	0.841
CORE																
1994–2008	42	−0.419	0.043	0.000	23	−0.155	0.099	0.117	6	−0.193	0.032	0.000	84	−0.210	0.086	0.014
2009–2015	54	−0.161	0.139	0.248	55	−0.218	0.099	0.028	28	0.053	0.042	0.209	47	0.077	0.060	0.203
ACTIVE	50	−0.191	0.062	0.002	28	−0.189	0.207	0.362	271	0.028	0.064	0.664	305	−0.006	0.072	0.933
EXITED	63	−0.296	0.045	0.000	62	−0.177	0.057	0.002	68	−0.154	0.113	0.172	254	−0.190	0.062	0.002

TABLE 6
Persistence

Table 6 presents results from the least squares estimation for PMEs, as a function of PME_{t-1}, which is the PME from the immediately preceding fund formed by the same Sponsor. The results are displayed for UL-REIT First investors, along with institutional-grade PERE, using the Preqin and Burgiss data sets. The estimations include calendar year fixed effects (FEs) based on the offering vintage of the immediately preceding fund. *** and * denote statistically significant coefficients at the 1% and 10% levels, respectively. The *t*-statistics are based on standard errors clustered at the fund manager level.

Sample	UL-REITs		PERE: Preqin		PERE: Burgiss	
Dependent	PME		PME		PME	
	Coef.	(*t*-Stat)	Coef.	(*t*-Stat)	Coef.	(*t*-Stat)
PME_{t-1}	−0.1	(−1.3)	0.2*	(1.8)	0.2***	(5.1)
Year FEs	Incl.		Incl.		Incl.	
Adj. R^2	3.9%		24.8%		19.7%	
No. of obs.	77		240		419	

the Preqin and Burgiss samples. Thus, an important difference appears to be that top-performing PERE fund managers more consistently generate attractive returns, whereas UL-REIT fund managers display no such persistence.

V. Fund Flows

Thus far we have documented i) UL-REIT fee structures that prominently include high front-end loads, ii) absolute performance that, on average, falls below the public market alternative on a gross-of-fees basis, and iii) net-of fees performance that significantly underperforms both the public market alternative and PERE that is available to institutional investors. This rather unflattering track record begs the question of how and why UL-REITs have survived as an investment alternative available to retail investors. To address this issue, in this section we analyze fund flows to UL-REITs.

UL-REIT fund flows are defined at the fund level as the offering share price multiplied by the number of common equity shares outstanding at the time the offering closes.[16] To identify the offering period closing date, we carefully review public filings to confirm that no offerings were extended. For funds with open offerings at the end of our sample period, we calculate fund flows as of YE2017.

The first two columns in Panel A of Table 7 display aggregated UL-REIT fund flows based on the year in which the offering began. During the years 1994–2002, only one or two funds were launched per year. Aggregate fund flows then increased significantly starting in 2003, reaching at least $134 billion by 2017. Blue Vault, a private research and consulting firm, estimates the sector raised $142 billion from

[16]We observe the UL-REIT reporting of total gross offering proceeds in 64 of 102 closed offerings. When we compare these to our fund flows measure (i.e., the offering price multiplied by the number of shares outstanding at the time the offering closes), we find the calculated value is 2.1% lower, on average, than the reported value, with a correlation of 0.997. Discrepancies occur when shares are sold via a dividend reinvestment plan (typically $9.50 per share vs. $10 per share), when shares outstanding are reported net of share redemption plans, and when the timing of observed shares outstanding at the subsequent 10-Q/K filing differs from the timing of the offering close. As an alternative, we find qualitatively similar results when using the book value of common equity observed at the end of the offering and inflated by fees used to raise equity.

TABLE 7

Fund Flows

Panel A of Table 7 displays fund flows, in $Millions, by vintage year. For UL-REITs, the vintage year is based on First investors, the earliest possible point investor subscriptions could be received. Fund flows equal the offering price multiplied by the number of shares outstanding in the year the offering closes, or at YE2017 for Open offerings. For PERE, fund flows are collected from Preqin and Burgiss data sets. Panel B displays the UL-REIT subsample means by selling commission category, considering Closed offerings only.

Panel A. By Vintage

	UL-REITs					PERE					
	Closed		Open			Preqin			Burgiss		
Vintage	*n*	Mean	*n*	Mean	Total	*n*	Mean	Total	*n*	Mean	Total
1994	2	$412			$824	1	$488	$488	8	$341	$2,726
1995					$0	1	$273	$273	10	$331	$3,309
1996	1	$305			$305	2	$875	$1,750	9	$388	$3,488
1997	2	$1,858			$3,716	5	$765	$3,824	18	$351	$6,325
1998	2	$3,630			$7,261	1	$2,261	$2,261	27	$473	$12,776
1999	2	$1,192			$2,384	1	$1,203	$1,203	15	$374	$5,603
2000	1	$47			$47	7	$1,121	$7,847	12	$427	$5,120
2001	2	$674			$1,348	1	$119	$119	15	$286	$4,293
2002	2	$971			$1,942	2	$654	$1,307	16	$307	$4,910
2003	5	$2,842			$14,210	6	$443	$2,660	15	$478	$7,164
2004	4	$1,606			$6,422	7	$624	$4,366	26	$328	$8,531
2005	5	$2,222			$11,110	14	$586	$8,209	43	$449	$19,314
2006	7	$792	1	$172	$5,721	20	$1,124	$22,473	38	$709	$26,958
2007	2	$1,954			$3,908	29	$1,314	$38,107	57	$966	$55,078
2008	8	$1,650			$13,204	21	$1,111	$23,327	30	$484	$14,526
2009	11	$1,040			$11,443	9	$741	$6,669	15	$723	$10,843
2010	11	$980			$10,776	23	$586	$13,474	18	$565	$10,166
2011	11	$838	1	$406	$9,620	39	$1,058	$41,248	26	$1,169	$30,387
2012	6	$1,554	1	$1,382	$10,708	24	$739	$17,733	34	$489	$16,632
2013	7	$1,334	1	$103	$9,439	35	$790	$27,643	44	$604	$26,556
2014	8	$662	5	$626	$8,426	40	$710	$28,408	38	$655	$24,897
2015	3	$385	2	$138	$1,432	51	$1,014	$51,698	45	$1,035	$46,597
Total	102	$1,263	11	$497	$134,248	339	$900	$305,086	559	$619	$346,200

Panel B. By Selling COMMISSION, UL-REITs

Selling Commission	*n*	Mean
≤ 6%	11	$734
> 6% to 6.5%	10	$1,104
> 6.5% to 7%	64	$1,249
> 7%	17	$1,750

2000 to 2017, where their estimate includes funds launched in 2016 and 2017 and does not subtract share redemptions.

Considering closed offerings only, flows are $1.26 billion in equity, on average, per fund. By comparison, as seen in the columns on the right-hand side of Panel A of Table 7, average fund flows for institutional-grade PERE are $619 million in the Burgiss sample and $900 million in the Preqin sample. In the PERE sector, only a portion of fund flows is actually contributed when the fundraising cycle closes. The remainder is classified as committed capital, drawn from future capital calls as needed.

Panel B of Table 7 displays UL-REIT fund flows by the selling commission rate. Recall that UL-REITs are sold through investment advisor channels and that investment advisors receive approximately 7.0% in selling commissions, on average, on UL-REIT sales. At a 7.0% selling commission, which we understand to be at the very top end of the advisor commission rate schedule for financial products, the corresponding fund flows average $1.25 billion. There are 17 funds with selling commissions greater than 7.0%, with a corresponding fund flow average of

$1.75 billion. Fund flows are seen to monotonically increase in the selling commission, the opposite direction of what standard economic reasoning might suggest.

To further assess this relation, we examine the determinants of UL-REIT fund flows in an estimation that considers fees, initial dividend yields, fund sequence, and fund offering length. Fees include variables for the selling commission, other front-end fees, operational fees, and carried interest.[17] We also include fixed effects (FEs) for property type allocations and offering vintage year. The property type percentage is based on the primary uses of commercial property held by a particular REIT, where the calculation method comes from Geltner and Kluger (1998) and Riddiough, Moriarty, and Yeatman (2005).

Table 8 displays our estimation results. The dependent variable is the log of individual UL-REIT fund flows. Since fund flows are not fully accounted for until the end of the offering period, the estimation includes only 102 funds with closed offerings. We find that front-end selling commissions have a positive and significant effect on fund flows. A 1% increase in the selling commission is associated with 76% greater fund flows.[18] For robustness, we consider two alternate specifications: the first suppressing property type FEs, and the second suppressing calendar year FEs. The finding of a positive and economically large impact from selling commissions is consistent across all three estimations.

These front-end fee results for UL-REITs contrast sharply with the findings in other sectors. In the mutual fund sector, investors are sensitive to high front-end expenses, including brokerage commissions and acquisition fees, resulting in

TABLE 8

Determinants of Fund Flows: UL-REITs

Table 8 presents results from the least squares estimation for UL-REIT fund flows, logged. Observations are for closed offerings only, with values for fund flows taken at the end of the offering period. All variables are defined in the notes of Table 1. FUND_SEQUENCE and OFFERING_LENGTH are logged. The columns display the variable name, the estimated coefficient (coef.), and the corresponding *t*-statistic (*t*-stat). The estimations include 20 calendar year fixed effects (FEs) based on offering vintage (suppressed in the third estimation), and six property type FEs based on observed investments at the end of the offering (suppressed in the second estimation). ** and * denote statistically significant coefficients at the 5% and 10% levels, respectively.

	Dependent Variable: Fund Flows					
	Coef.	(*t*-Stat)	Coef.	(*t*-Stat)	Coef.	(*t*-Stat)
SELLING_COMMISSION	56.6**	(2.2)	52.5**	(2.2)	52.2**	(2.5)
OTHER_FRONT-END_FEES	−1.9	(−0.2)	−1.5	(−0.2)	−3.4	(−0.4)
OPERATIONAL_FEES	−37.3	(−0.8)	−22.6	(−0.5)	−37.1	(−0.9)
CARRIED_INTEREST	−1.3	(−0.4)	0.9	(0.3)	−3.5	(−1.2)
INITIAL_DIVIDEND_YIELD	−8.2	(−0.7)	1.8	(0.2)	2.7	(0.3)
FUND_SEQUENCE	0.4*	(1.7)	0.4*	(1.8)	0.5**	(2.6)
OFFERING_LENGTH	0.6*	(1.7)	0.6	(1.5)	0.8**	(2.6)
Year FEs	Incl.		Incl.		–	
Property type FEs	Incl.		–		Incl.	
Adj. R^2	22.1%		14.6%		22.8%	
No. of obs.	102		102		102	

[17]Other front-end fees include the sum of the dealer manager fee, expense reimbursements, acquisition fees, and acquisition expense reimbursements. Operational fees include the asset management fee plus the servicing fee, where applicable.

[18]Based on the first estimation in Table 8, the estimated fund flows multiplier from a 1% increase in the selling commission (roughly 1 standard deviation) is calculated as $e^{0.566} - 1 = 76\%$.

significantly lower fund flows (Sirri and Tufano (1998), Barber, Odean, and Zheng (2005)). In private equity, Phalippou, Rauch and Umber (2018) document a negative relation between performance-insensitive fees and fund flows.

We consider three possible explanations for our findings. The first is that high-fee funds could outperform low-fee funds on a net-of-fees basis, justifying the higher fund flows. A second possible explanation is that high-fee funds provide unobservable benefits, such as lower search costs (Hortacsu and Syverson (2004)), valuable financial advice (Choi, Laibson, and Madrian (2010)), and diversification. A third explanation is that retail investors do not fully comprehend the high fee loads, either due to financial literacy issues, vulnerability to marketing efforts, disclosure failures, or perhaps even misrepresentation. Collectively, the evidence we report in this study is most consistent with the latter explanation.

In untabulated analysis, we find that past fund flows to UL-REITs are positively related to fund flows in subsequent offerings by the same Sponsor. All other determinants of fund flows are endogenous and suppressed, since Sponsors rarely change fee structures from one offering to the next. UL-REIT Sponsors dedicate significant resources to build and maintain their retail investor marketing networks, recovering these costs through front-end Dealer Manager fees. As additional evidence of the success of Sponsor-specific fundraising platforms, we estimate fund flows as a function of Sponsor-only FEs and find the adjusted R^2 is 51%.

These findings relate to the literature discussing how individual choices are influenced by the salience of information, starting with Bordalo, Gennaioli, and Shleifer (2012), (2013). Regarding retail investors, Kronlund, Pool, Sialm, and Stefanescu (2021) find that providing salient fee disclosure affects retail investor portfolio allocations. Specifically, retail investors reallocate away from higher-fee funds following an enhancement to 401(k) disclosure requirements. Badoer, Costello, and James (2020) find that enhanced disclosure of indirect fees led to reductions in compensation to 401(k) service providers.

Follow-on Funds

We now examine the probability of follow-on fund offerings, as well as growth in the size of follow-on fund offerings. We do this to evaluate whether fundraising outcomes are related to "return chasing" or rational investor learning explanations (e.g., Berk and Green (2004)). PERE funds are also considered in our analysis to provide a benchmark with which to compare UL-REIT findings.

Following Chung et al. (2012), we calculate the final IRR of the preceding fund (IRR_{t-1}), since IRRs are the most likely representation of past performance given to prospective investors. We include FEs for offering the vintage of the preceding fund, to control for aggregate factors that could affect the ability to raise a follow-on fund and to control for differences in performance across vintages. We also consider interim IRRs based on the date of the start of fundraising for the subsequent fund, or at the 3-year mark for PERE funds that do not have subsequent offerings (2-year mark for UL-REITs). For both UL-REITs and PERE funds, we utilize self-reported NAVs to approximate the liquidation values for interim IRR calculations.

Self-reported NAVs provide an opportunity for fund managers to manipulate the interim performance of an existing unresolved fund at the time of a follow-on offering. For institutional private equity, Chakraborty and Ewens (2018) provide evidence that VC funds delay write-offs in an attempt to "signal jam" the information content of NAV in prior funds in order to pool with better-performing funds. Brown, Gredil, and Kaplan (2019) find that underperforming fund managers who inflate returns during fundraising are, however, less likely to succeed at fundraising for the next fund.

There is not a single case in our sample in which an UL-REIT attempts to raise capital for a new fund after the prior fund has achieved liquidation. Given questionable NAV estimates provided by UL-REIT fund sponsors, we also examine whether equity book value calculated from financial filings provides useful information to investors. We calculate the net book value of common equity per share (BV) as total assets minus liabilities and noncontrolling interests, divided by the number of shares of outstanding. The BV will be lower than the par value in cases when i) distributions are funded from sources other than cash flow from operations, ii) substantial fees and expenses are paid in connection with the public offering, and iii) there is accumulated depreciation and amortization of real estate. While depreciation and amortization schedules are comparable across funds that invest in the same property type, the high fee loads and dividend distributions are important differentiating components of the UL-REIT business model.

If investors are sensitive to dilution that results from high fees and distributions funded by offering proceeds, then one would expect a positive relation between BV-based interim IRRs and future fundraising. On the other hand, if fundraising is accomplished simply by paying higher fees to investment advisors – with investors not responding to the balance sheet signal – then it is possible to observe a negative relation between BV-based interim IRRs and future fundraising.

Table 9 reports the estimation results. Panel A presents estimates of the probability of a follow-on offering for UL-REITs and PERE funds, while Panels B and C present growth in fund size and the log of fund growth conditional on raising a follow-on fund.[19] For PERE, positive and significant relations are found between prior fund performance and the likelihood of follow-on funds, as well as growth in fund size. This evidence is consistent with the assumption that institutional private equity receives a signal regarding current fund performance and responds by directing more capital to better-performing funds.

As for UL-REITs, the only substantive evidence of a positive relation between prior fund performance and the likelihood of a follow-on offering comes from NAV-based interim IRRs. These interim IRRs are generated entirely from dividend payouts and the self-reported NAV. Dividend payouts are known to be high during fundraising, and NAV estimates are generally reported at the constant gross-of-fee offering share price. Thus, the evidence indicates that UL-REITs manage their distributions and NAV estimates during the interim period in anticipation of a

[19]For the UL-REIT and PERE samples, we classify observations as having no follow-on offering when fundraising closed by YE2016 and no follow-on funds were observed from the same Sponsor through YE2018. We classify missing observations as those whose fundraising was not yet closed by YE2016, with no follow-on fund yet observed.

TABLE 9

Follow-on Funds

Table 9 presents results from fund-level estimations to explain follow-on fundraising by the same Sponsor. Panel A displays results from the probit estimation for a follow-on fund. Panels B and C display results from the least squares estimation for growth in fund size, conditional on raising a follow-on fund. The results in each panel are displayed for UL-REIT First investors, along with institutional-grade PERE, based on Preqin and Burgiss data sets. Following Chung et al. (2012), we include either the final IRR of the preceding fund (IRR_{t-1}) or the interim IRR_{t-1} (NAV-based), which is calculated based on the NAV as of the fundraising open date for the subsequent fund, or at the 3-year mark for PERE funds that do not have subsequent offerings (and at the 2-year mark for UL-REITs that do not have subsequent offerings). For UL-REITs, we also include the interim $IRR^{\dagger}_{t-1}$ (BV-based), which is based on the book value of common equity per share, calculated as the book value of total assets minus the book value of total liabilities (adjusted for noncontrolling interests), divided by the number of shares outstanding. The estimations in model 2 include calendar year fixed effects (FEs) based on the offering vintage of the preceding fund. ***, **, and * denote statistically significant coefficients at the 1%, 5%, and 10% levels, respectively. The *t*-statistics (in parentheses) are based on heteroscedasticity-robust standard errors clustered at the fund sponsor level.

Panel A. Probability of Raising Follow-on Fund

Sample	UL-REITs						PERE: Preqin				PERE: Burgiss			
Dependent	Probit: Follow-on						Probit: Follow-on				Probit: Follow-on			
Model	1	2	1	2	1	2	1	2	1	2	1	2	1	2
IRR_{t-1}	6.7**	4.5					1.6**	2.0			1.6**	2.0		
	(2.4)	(1.3)					(2.1)	(1.4)			(2.1)	(1.4)		
INTERIM_IRR_{t-1} (NAV-based)			17.8***	15.4*					0.9**	0.9*			0.8**	0.9*
			(2.8)	(1.8)					(2.6)	(1.9)			(2.2)	(1.9)
INTERIM_$IRR^{\dagger}_{t-1}$ (BV-based)					−0.8	−4.7***								
					(−1.0)	(−3.1)								
Year FEs	–	Incl.	–	Incl.	–	Incl.	–	Incl.	–	Incl.	–	Incl.	–	Incl.
Pseudo-R^2	9.0%	22.5%	11.1%	24.8%	0.8%	33.4%	1.9%	11.9%	2.5%	13.0%	2.0%	13.9%	1.6%	13.7%
No. of obs.	98	98	98	98	94	94	333	333	327	327	409	409	402	402

Panel B. Growth in Fund Size, Conditional on Raising Follow-on Fund

	UL-REITs						PERE: Preqin				PERE: Burgiss			
	Growth in Fund Size						Growth in Fund Size				Growth in Fund Size			
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
IRR_{t-1}	−34.2	−48.1					0.3**	0.4**			0.5***	0.7***		
	(−1.5)	(−1.4)					(2.0)	(2.5)			(4.0)	(4.3)		
Interim IRR_{t-1} (NAV-based)			−16.0		−16.0				0.3**	0.2			0.3***	0.4***
			(−0.9)	(−0.9)					(2.4)	(1.6)			(4.2)	(3.4)
Interim $IRR^{\dagger}_{t-1}$ (BV-based)					−14.5***	−12.6***								
					(−4.4)	(−4.5)								
Year FEs	–	Incl.	–	Incl.	–	Incl.	–	Incl.	–	Incl.	–	Incl.	–	Incl.
Adj. R^2	3.1%	−4.3%	−1.1%	−11.5%	12.6%	−2.0%	0.6%	5.6%	2.1%	7.6%	3.0%	11.2%	4.4%	23.0%
No. of obs.	77	77	77	77	74	74	237	237	231	231	409	409	402	402

(continued on next page)

TABLE 9 (continued)

Follow-on Funds

Panel C. log(2 ± Growth in Fund Size), Conditional on Raising Follow-on Fund

Sample	UL-REITs						PERE: Preqin				PERE: Burgiss			
Dependent	log(Fund Growth + 2)						log(Fund Growth + 2)				log(Fund Growth + 2)			
Model	1	2	1	2	1	2	1	2	1	2	1	2	1	2
IRR_{t-1}	−2.0	−2.0					0.1*	0.2**			0.3***	0.3***		
	(−1.2)	(−0.7)					(1.9)	(2.4)			(4.1)	(4.3)		
Interim IRR_{t-1} (NAV-based)			−3.4	−4.1					0.1**	0.1			0.2***	0.2***
			(−1.0)	(−1.4)					(2.4)	(1.6)			(4.3)	(3.4)
Interim $IRR^{\dagger}_{t-1}$ (BV-based)					−0.9***	−0.9**								
					(−3.8)	(−2.7)								
Year FEs	–	Incl.	–	Incl.	–	Incl.	–	Incl.	–	Incl.	–	Incl.	–	Incl.
Adj. R^2	0.7%	−5.6%	0.2%	−5.1%	5.0%	−1.4%	0.4%	4.6%	2.0%	6.7%	2.9%	10.9%	4.5%	24.3%
No. of obs.	77	77	77	77	74	74	237	237	231	231	409	409	402	402

follow-on offering. As seen in Panels B and C of Table 9, such a practice is not penalized by reduced flows for the follow-on fund.[20] This evidence of NAV manipulation by funds that successfully stage follow-on offerings complements the findings of Chakraborty and Ewens (2018).[21]

Equity BV-based interim IRRs are negatively related to the probability of a follow-on offering (Panel A of Table 9), as well as growth in fund size (Panels B and C of Table 9). BV-based interim IRRs will be lower when dividends are funded from sources other than cash flow from operations or when front-end fees are higher. These findings indicate that investors do not see through the low equity BVs to interpret them as a negative signal. Instead, this evidence indicates that retail investors are susceptible to the UL-REIT marketing platforms that simultaneously highlight "stable" (albeit manipulated) share prices and high dividends while paying high sales commissions to investment advisors.

VI. Conclusion

In our analysis of private funds marketed to ordinary people, we document high front-loaded fees and poor investment performance. We specifically focus on UL-REITs that are marketed to small-unit retail investors. This result is in contrast to PERE funds, which are marketed to high net worth individuals and institutional investors. Both fund types have factor exposure closely related to the listed REIT market index, which is used as the public market benchmark.

The private funds we study, which are marketed to retail investors of modest wealth, significantly underperform the public benchmark. The arithmetic average (median) of the direct alpha value is −6.5% (−6.1%) per year on a net-of-fees basis, and −1.5% (−1.1%) per year on a gross-of-fees basis. The difference of 5% per year represents the magnitude of underperformance attributable to fees, which are predominantly performance insensitive. The highest fee is the selling commission that is paid up-front to investment advisors, and is typically set at 7% of contributed capital. That selling commission explains fundraising, having a strong positive effect. The overall fee structure as well as documented performance and fundraising relations in our study stand in sharp contrast with the findings in the literature studying other forms of private equity and retail-oriented mutual funds.

Private funds for institutional investors (PERE) face similar constraints resulting from the finite-life structure, yet outperform UL-REITs. Outperformance seems largely due to important differences in fee structures and

[20]To further evaluate whether retail investors fail to respond to past performance signaling, we consider several indicator variables for UL-REIT underperformance in untabulated analysis. The measures include an IRR less than −7% (1 standard deviation below the mean), an exit price less than 72.5% of the offering price (bottom quartile), a difference between the realized yield and the promised yield of less than −2.9% (bottom quartile), and an indicator for asset sales and bankruptcy liquidation outcomes. Collectively, we do not find consistent evidence of a significant relation between particularly severe underperformance and future fund flows in the UL-REIT sample.

[21]In untabulated analysis, we do not find consistent evidence of a relation between NAV reporting patterns and future fundraising that would support an NAV signaling hypothesis. UL-REIT investors appear insensitive to past NAV reporting patterns.

governance mechanisms. Fees paid on institutional-grade PERE funds are lower overall and ultimately realize greater performance sensitivity. Contractual governance provisions are stronger for PERE investors than for UL-REIT investors. There is evidence of linkages between past performance and fund flows for institutional PERE, creating reputational mechanisms. No such linkage is found with UL-REITs, where, instead, we find that marketing platforms and selling commissions explain fundraising.

We document vulnerabilities among retail investors who reach out to investment advisors for guidance. The opaque nature of compensation contracts, together with the investment advisor–UL-REIT sponsor marketing channel, facilitates the imposition of high fees that are unrelated to performance. UL-REITs provide self-reported NAVs that are largely uninformative, while their predecessor funds never resolve before the next offering begins. Altogether, our study highlights what can go wrong in a "for-retail" adaptation of a private fund model that conventionally involves experienced, deep-pocketed institutions bargaining over cash flow and control rights. The evidence we provide appears consistent with consequences that follow from managerial conflicts of interest, inadequate governance mechanisms, opaque disclosure, and poor investment advice.

Appendix A. Funding Distributions From Offering Proceeds

It is common practice for UL-REITs to declare and pay cash distributions before the fund has any assets under management. These funds are allowed to pay distributions from offering proceeds, which amounts to a return of capital from an accounting perspective.

As an example, American Realty Capital Healthcare Trust opened its offering to investors in Feb. 2011. In its earliest public filing, dated Aug. 27, 2010, the company stated, "Until we are generating operating cash flow sufficient to make distributions to our stockholders, we intend to pay all or a substantial portion of our distributions from the proceeds of this offering or from borrowings." Subsequent 10-Q and 10-K filings included supplemental tables outlining source of funds for distributions. During 2011, 100% of the distributions paid to incumbent investors were funded from offering proceeds.

While not all UL-REITs provide similar supplemental tables, a broader comparison is available based on the classification of distributions for tax reporting purposes. In the case of American Realty Capital Healthcare Trust, more than 80% of distributions paid during the offering period are classified as return of capital. The IRS offers the following guidance for return of capital classification: "A distribution generally qualifies as a return of capital if the corporation making the distribution does not have any accumulated or current year earnings and profits."

For a more comprehensive view of this practice, we collect tax classification data on distribution payments by individually scanning 10-K filings, available for 99 of the 113 UL-REITs in our sample. From the initial 10-K filings, the median values for the return of capital from distributions paid are 91% in the first year, 68% in the second year, and 67% in the third year. The practice of funding distributions from offering proceeds is thus pervasive within the UL-REIT sector.

Appendix B. Approximating Liquidated Share Value for Active UL-REITs

This section provides details on our approach to approximate the liquidation value for Active funds in the UL-REIT sample. We apply the market-to-book (MB) ratio of total assets from a matched sample of L-REITs. To be included in any matched sample, the L-REIT must hold assets that are primarily of the same property type and have a firm age within 3 years of the subject UL-REIT. To classify by property type, we require at least 80% of the properties held at YE2017 to be of the same type. Firms that do not have at least 80% concentration of a single property type are classified as diversified. For each of the 50 matched samples constructed (one for each Active UL-REIT), we use the median MB ratio, to reduce the influence of outliers in small samples. The matched MB ratio is then multiplied by total assets for the corresponding UL-REIT. The book value of priority claims is then subtracted to approximate the market value of common equity.

From the matched samples, the average MB ratio is 1.22. To evaluate robustness, we consider four alternative approaches as reference points. First, we regress the market value of total assets on its book value for newly listed REITs and find that the estimated coefficient for the book value of total assets is 1.14. The estimation includes 29 L-REITs that are no more than 3 years old at YE2017. We include only newly listed L-REITs, since MB ratios tend to increase with firm age. Imposing a zero-intercept constraint, the adjusted R^2 is 81%, indicating a strong association between market values and book values of total assets for L-REITs. Second, the actual MB ratios for the 20 UL-REITs that Exited via an exchange listing is 1.14, on average, at the time of exchange listing, with only three out of 20 having MB ratios that are greater than 1.22. Third, we consider implied valuations using a 4% capitalization rate to generate NAV estimates that are 1.16 times the book value of total assets for the average Active UL-REIT at YE2017. The NAV estimates are collected from SNL for each UL-REIT as of YE2017. SNL applies the capitalization method (which is an inverse operating income multiple) to the net operating income of the portfolio. In the SNL database, cap rates vary from 4% to 11%, with the lowest cap rates (highest valuations) ascribed to firms holding the highest-quality, lowest-risk assets. Fourth, we apply propensity score matching to the combined sample of L-REITs and Active UL-REITs to find that the nearest-neighbor matched MB ratio averages 1.27. The probit model to generate propensity scores for L-REIT selection includes firm age, cash (scaled by total assets), total assets, total liabilities (scaled by total assets), along with the percentage of each property type held at YE2017. The estimation includes 227 observations and has a pseudo-R^2 of 36%. All in all, the MB ratios that we obtain from the matched samples appear reasonable and robust.

The standard disposition fee is 3% of the asset value, applied to each of the 50 Active UL-REITs. Carried interest adjustments are applied to 17 out of 50 Active UL-REITs that would have exceeded the respective hurdle rate had liquidity been provided at YE2017 (based on our approximation of terminal value). For those 17 funds, carried interest ranges from 5% to 35% of the cash flow available for distribution. For PERE funds that have not liquidated, in both the Preqin and Burgiss data sets we use the most recent self-reported NAV (prior to YE2017), and we do not subtract 3% in liquidation fees, since reported NAVs are net of all claims from creditors and Sponsors.

In the gross-of-fees calculations for Active funds, our approximation of the terminal share value assumes liquidation at YE2017, with book assets inflated by compounded asset management fees incurred over the holding period, and liquidation fees are not subtracted (as they were in the net-of-fees cash flow calculation).

Appendix C. Sample of UL-REITs

American Finance Trust, Inc.
American Realty Capital – Retail Centers of America, Inc.
American Realty Capital Daily Net Asset Value Trust, Inc.
American Realty Capital Global Trust II, Inc.
American Realty Capital Healthcare Trust III, Inc.
American Realty Capital Healthcare Trust, Inc.
American Realty Capital New York City REIT, Inc.
American Realty Capital Trust III, Inc.
American Realty Capital Trust IV, Inc.
American Realty Capital Trust, Inc.
Apple Hospitality Five, Inc.
Apple Hospitality REIT, Inc.
Apple Hospitality Two, Inc.
Apple REIT Eight, Inc.
Apple REIT Seven, Inc.
Apple REIT Six, Inc.
Apple REIT Ten, Inc.
Apple Residential Income Trust, Inc.
Apple Suites, Inc.
Behringer Harvard Opportunity REIT I, Inc.
Black Creek Diversified Property Fund Inc.
Bluerock Residential Growth REIT, Inc.
Carey Watermark Investors 2 Incorporated
Carey Watermark Investors Incorporated
Carter Validus Mission Critical REIT II, Inc.
Carter Validus Mission Critical REIT, Inc.
CatchMark Timber Trust, Inc.
Chambers Street Properties
Clarion Partners Property Trust Inc.
CNL Growth Properties, Inc.
CNL Healthcare Properties, Inc.
CNL Hotels & Resorts, Inc.
CNL Lifestyle Properties, Inc.
CNL Retirement Properties, Inc.
Cole Corporate Income Trust, Inc.
Cole Credit Property Trust IV, Inc.
Cole Credit Property Trust V, Inc.
Cole Office & Industrial REIT (CCIT II), Inc.
Cole Real Estate Income Strategy (Daily NAV), Inc.
Cole Real Estate Investments, Inc.
Columbia Property Trust, Inc.
Corporate Property Associates 12 Incorporated
Corporate Property Associates 14 Incorporated
Corporate Property Associates 15 Incorporated
Corporate Property Associates 16 – Global Incorporated
Corporate Property Associates 17 – Global Incorporated
Corporate Property Associates 18 – Global Incorporated
DCT Industrial Trust Inc.
G REIT, Inc.
Global Income Trust, Inc.
Global Net Lease, Inc.
Griffin Capital Essential Asset REIT II, Inc.
Griffin Capital Essential Asset REIT, Inc.
Griffin-American Healthcare REIT II, Inc.
Griffin-American Healthcare REIT III, Inc.
Hartman Short Term Income Properties XX, Inc.
Healthcare Trust of America, Inc.
Healthcare Trust, Inc.
Hines Global Income Trust, Inc.
Hines Global REIT, Inc.
Hines Real Estate Investment Trust, Inc.
Hospitality Investors Trust, Inc.
Independence Realty Trust, Inc.
Industrial Income Trust Inc.
Industrial Property Trust Inc.
Inland Diversified Real Estate Trust, Inc.
Inland Real Estate Income Trust, Inc.
Inland Residential Properties Trust, Inc.
Inland Retail Real Estate Trust, Inc.
InvenTrust Properties Corp.
IRC Retail Centers
Jones Lang LaSalle Income Property Trust, Inc.
KBS Legacy Partners Apartment REIT, Inc.
KBS Real Estate Investment Trust II, Inc.
KBS Real Estate Investment Trust III, Inc.
KBS Real Estate Investment Trust, Inc.
KBS Strategic Opportunity REIT II, Inc.
KBS Strategic Opportunity REIT, Inc.
Landmark Apartment Trust, Inc.
Lightstone Value Plus Real Estate Investment Trust II, Inc.
Lightstone Value Plus Real Estate Investment Trust III, Inc.
Lightstone Value Plus Real Estate Investment Trust V, Inc
Lightstone Value Plus Real Estate Investment Trust, Inc.
Monogram Residential Trust, Inc.
Moody National REIT I, Inc.
Moody National REIT II, Inc.
MVP REIT, Inc.
New York REIT, Inc.
NorthStar Healthcare Income, Inc.
O'Donnell Strategic Industrial REIT, Inc.
Paladin Realty Income Properties, Inc.
Parking REIT, Inc.
Phillips Edison & Company, Inc.
Phillips Edison Grocery Center REIT II, Inc.
Piedmont Office Realty Trust, Inc.
Plymouth Industrial REIT, Inc.
Resource Real Estate Opportunity REIT II, Inc.
Resource Real Estate Opportunity REIT, Inc.
Retail Properties of America, Inc.
RREEF Property Trust, Inc.
Sentio Healthcare Properties, Inc.
Signature Office REIT Inc.
SmartStop Self Storage, Inc.
Spirit Realty Capital, Inc.
Steadfast Apartment REIT, Inc.
Steadfast Income REIT, Inc.
Strategic Realty Trust, Inc.
Strategic Storage Growth Trust, Inc.
Strategic Storage Trust II, Inc.
Summit Healthcare REIT, Inc.
T REIT, Inc.
TIER REIT, Inc.
Whitestone REIT

References

Ang, A.; B. Chen; W. N. Goetzmann; and L. Phalippou. "Estimating Private Equity Returns from Limited Partner Cash Flows." Working Paper, Columbia Business School Research Paper (2014).

Axelson, U.; M. Sorensen; and P. Strömberg. "Alpha and Beta of Buyout Deals: A Jump CAPM for Long-Term Illiquid Investments." Working Paper, London School of Economics (2014).

Badoer, D. C.; C. P. Costello; and C. M. James. "I Can See Clearly Now: Salience and the Impact of Disclosure Requirements." *Journal of Financial Economics*, 136 (2020), 471–489.

Barber, B. M.; T. Odean; and L. Zheng. "Out of Sight, Out of Mind: The Effects of Expenses on Mutual Fund Flows." *Journal of Business*, 78 (2005), 2095–2119.

Berk, J. B., and R. C. Green. "Mutual Fund Flows and Performance in Rational Markets." *Journal of Political Economy*, 112 (2004), 1269–1295.

Bollinger, M. A., and J. L. Pagliari. "Another Look at Private Real Estate Returns by Strategy." *Journal of Portfolio Management*, 45 (2019), 95–112.

Bordalo, P.; N. Gennaioli; and A. Shleifer. "Salience Theory of Choice Under Risk." *Quarterly Journal of Economics*, 127 (2012), 1243–1285.

Bordalo, P.; N. Gennaioli; and A. Shleifer. "Salience and Consumer Choice." *Journal of Political Economy*, 121 (2013), 803–843.

Brown, G. W.; O. R. Gredil; and S. N. Kaplan. "Do Private Equity Fund Managers Manipulate Reported Returns?" *Journal of Financial Economics*, 132 (2019), 267–297.

Carhart, M. M. "On Persistence in Mutual Fund Performance." *Journal of Finance*, 52 (1997), 57–82.

Chakraborty, I., and M. Ewens. "Managing Performance Signals Through Delay: Evidence from Venture Capital." *Management Science*, 64 (2018), 2875–2900.

Choi, J. J.; D. Laibson; and B. C. Madrian. "Why Does the Law of One Price Fail? An Experiment on Index Mutual Funds." *Review of Financial Studies*, 23 (2010), 1405–1432.

Chung, J. W.; B. A. Sensoy; L. Stern; and M. S. Weisbach. "Pay for Performance from Future Fund Flows: The Case of Private Equity." *Review of Financial Studies*, 25 (2012), 3259–3304.

Evans, R. B., and R. Fahlenbrach. "Institutional Investors and Mutual Fund Governance: Evidence from Retail–Institutional Fund Twins." *Review of Financial Studies*, 25 (2012), 3530–3571.

Fama, E. R., and K. R. French. "Luck Versus Skill in the Cross-Section of Mutual Fund Returns." *Journal of Finance*, 65 (2010), 1915–1947.

Geltner, D., and B. Kluger. "REIT-Based Pure-Play Portfolios: The Case of Property Types." *Real Estate Economics*, 26 (1998), 581–612.

Gompers, P., and J. Lerner. "An Analysis of Compensation in the U.S. Venture Capital Partnership." *Journal of Financial Economics*, 51 (1999), 3–44.

Gredil, O.; B. Griffiths; and R. Stucke. "Benchmarking Private Equity: The Direct Alpha Method." Working Paper, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2403521 (2014).

Gupta, A., and S. Van Nieuwerburgh. "Valuing Private Equity Investments Strip by Strip." *Journal of Finance*, 76 (2021), 3255–3307.

Hall, A. R., and A. Sen. "Structural Stability Testing in Models Estimated by Generalized Method of Moments." *Journal of Business & Economic Statistics*, 17 (1999), 335–348.

Harris, R. S.; T. Jenkinson; and S. N. Kaplan. "Private Equity Performance: What Do We Know?" *Journal of Finance*, 69 (2014), 1851–1882.

Hortacsu, A., and C. Syverson. "Product Differentiation, Search Costs, and Competition in the Mutual Fund Industry: A Case Study of S&P 500 Index Funds." *Quarterly Journal of Economics*, 119 (2004), 403–456.

Hüther, N.; D. T. Robinson; S. Sievers; and T. Hartman-Wendels. "Paying for Performance in Private Equity: Evidence from VC Partnerships." *Management Science*, 66 (2020), 1756–1782.

Ippolito, R. "Consumer Reaction to Measures of Poor Quality: Evidence from the Mutual Fund Industry." *Journal of Law and Economics*, 35 (1992), 45–70.

Kaplan, S. N., and A. Schoar. "Private Equity Performance: Returns, Persistence, and Capital Flows." *Journal of Finance*, 60 (2005), 1791–1823.

Korteweg, A., and S. Nagel. "Risk-Adjusting the Returns to Venture Capital." *Journal of Finance*, 71 (2016), 1437–1470.

Kronlund, M.; V. K. Pool; C. Sialm; and I. Stefanescu. "Out of Sight No More? The Effect of Fee Disclosures on 401(k) Investment Allocations." *Journal of Financial Economics*, 141 (2021), 644–668.

Lim, J.; B. A. Sensoy; and M. S. Weisbach. "Indirect Incentives of Hedge Fund Managers." *Journal of Finance*, 71 (2016), 871–918.

Metrick, A., and A. Yasuda. "The Economics of Private Equity Funds." *Review of Financial Studies*, 23 (2010), 2303–2341.

Pagliari, J. L. "Real Estate Returns by Strategy: Have Value-Added and Opportunistic Funds Pulled Their Weight?" *Real Estate Economics*, 48 (2020), 89–134.
Phalippou, L., and O. Gottschalg. "The Performance of Private Equity Funds." *Review of Financial Studies*, 22 (2009), 1747–1776.
Phalippou, L.; C. Rauch; and M. Umber. "Private Equity Portfolio Company Fees." *Journal of Financial Economics*, 129 (2018), 559–585.
Riddiough, T. J.; M. Moriarty; and P. J. Yeatman. "Privately Versus Publicly Held Asset Investment Performance." *Real Estate Economics*, 33 (2005), 121–146.
Riddiough, T. J., and E. Steiner. "Financial Flexibility and Manager–Shareholder Conflict: Evidence from REITs." *Real Estate Economics*, 48 (2020), 200–239.
Robinson, D. T., and B. A. Sensoy. "Do Private Equity Fund Managers Earn Their Fees? Compensation, Ownership, and Cash Flow Performance." *Review of Financial Studies*, 26 (2013), 2760–2797.
Sirri, E. R., and P. Tufano. "Costly Search and Mutual Fund Flows." *Journal of Finance*, 53 (1998), 1589–1622.
Sorensen, M.; N. Wang; and J. Yang. "Valuing Private Equity." *Review of Financial Studies*, 27 (2014), 1977–2021.
Wiley, J. A. "Illiquidity Risk in Non-Listed Funds: Evidence from REIT Fund Exits and Redemption Suspensions." *Journal of Real Estate Finance & Economics*, 49 (2014), 205–236.
Wiley, J. A. "Dividend Manipulation at Unlisted REITs." *Real Estate Economics*, 46 (2018), 887–935.