PRIVATE EQUITY FOR THE COMMON MAN: FEES, FUND FLOWS & PERFORMANCE

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Abstract

We study private equity for retail investors. Fee structures are skewed heavily toward performance-insensitive components of the compensation contract, particularly front-end loads. Our sample covers the unlisted REIT sector for its superior cash flow and fee data, and its comparability to exchange-listed REITs. Unlisted REITs underperform by 6.5% per year, net-of-fees. Fees are 5.5% per year, with trivial amounts paid as incentive fees. Managers of high-fee funds do not appear to earn their fees. Fund flows depend only on selling commissions. Altogether, our findings for retail investors fail to reconcile with standard economic rationale for private equity.

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I. Introduction

Capital commitments to private equity have experienced tremendous growth over the past 40 years, including particularly to venture capital (VC) and buyout funds. A number of studies document outperformance relative to public markets. Disproportionate capital flows go to funds that persist in delivering superior returns. While access to the sector is generally limited to institutional investors and ultra-high-net worth individuals, growing numbers of retail investors have attempted to participate. Yet very few studies exist for private equity targeted to the retail investor clientele.

The goal of this paper is to evaluate the fundraising mechanisms, compensation contracts, and relative performance of private equity for retail investors by exploiting data advantages to the unlisted real estate investment trust (UL-REIT) sector. We provide evidence that the sector has underperformed public markets, applying listed REITs (L-REITs) as the particular benchmark. How do private equity funds raise capital from retail investors? What are the determinants of fund flows? What are the fee structures and how does the compensation contract differ from other forms of private equity? How does investment performance compare to an index of corresponding exchange-listed funds that invest in substitutable assets? Is there evidence of efficiency gains attributable to this investment vehicle? Our goal is to answer these questions.

Most empirical work in private equity relies on either commercial databases or proprietary data voluntarily submitted by large investors. Commercial data suffer from inconsistent performance reporting, incomplete coverage, survivorship, and self-reporting biases.[2] While proprietary data may offer more complete performance accounts, such sourcing potentially suffers from investor selection bias and fee structures that are only partially observed. Furthermore, a non-

[2] See Phalippou and Gottschalg (2009), Harris, Jenkinson, and Kaplan (2014), and Robinson and Sensoy (2016) for discussion of data challenges facing private equity researchers.

trivial measurement issue involves selecting the appropriate benchmark to evaluate private equity performance. For instance, a typical VC fund invests in risky start-ups for which there are few, if any, exchange-listed counterparts. A related issue involves selecting the appropriate performance measure, since IRR calculations are often excessively complex or infeasible (Ang et al., 2018; Kaplan and Schoar, 2005).

Our sample includes 113 commercial real estate funds, representing over $115 billion in equity invested by retail investors from 1994 to 2017. The average [median] fund liquidation size in our sample is $1.9 billion [$1.1 billion] in book assets, as compared to $551 million [$173 million] in the VC and buyout fund samples of Robinson and Sensoy (2016). By focusing on the REIT investment vehicle, we are able to draw a direct performance comparison to an index of exchange-listed funds (L-REITs) that invest in highly-substitutable assets. In doing so, we are able to quantify performance differences that result from structuring as private equity for retail investors. The sample is constructed to identify and include all UL-REITs for which such comparison can be drawn.

A unique feature of our data is where we observe the compensation contract in its entirety for each fund, which allow us to directly link fees to investor cash flows. Our dataset is comprehensive for the sector, and the first available in the literature to provide such complete information for analysis of retail investment in private equity. Since a number of firms in our sample have not fully exited by the end of our sample period, we develop a methodology to approximate fund value as if liquid, rather than rely on self-reported net asset values (NAVs). Ultimately, our findings are consistent with results generated from the smaller sample of fully-liquidated funds.

Our major findings are as follows. First, retail investors encounter different fee structures from other forms of private equity, skewed heavily toward front-end loads and other performance-insensitive components of the compensation contract. Front-end loads in our sample are nearly 14% of contributed capital. Such fees, in form and magnitude, are almost non-existent in other forms of private equity. The typical fee structure for VC and buyout funds includes a 2% asset management fee, 1% ownership by the general partner (GP), and carried interest of 20% above an

8% carry hurdle (Metrick and Yasuda, 2010; Robinson and Sensoy, 2013). By comparison, in our sample, asset management fees are similar, but GP ownership is less than 0.03% of contributed capital. Carried interest is set at 15% once a return carry of 7% is surpassed. We find, however, that the return carry is unmet in more than two-thirds of our sample. For the remaining one-third of funds, carried interest amounts to only 0.3% per year, representing less than 6% of total fees paid from these funds. Thus, nearly all managerial compensation in our sample is for performance-insensitive components. This finding differs greatly from VC and buyout funds, where an estimated one-third of fees paid are incentive fees (Phalippou and Gottschalg, 2009).

A particular feature of the front-end load involves a 7% selling commission that is paid to the investment advisor/broker-dealer. Our second main finding is that incrementally higher selling commissions *increase* fund flows. A 1% increase in the selling commission approximately doubles fund flows. This result is in direct opposition to findings in other sectors, such as mutual funds, where investors are highly-sensitive to front-end fees (Sirri and Tufano, 1998; Barber, Odean, and Zheng, 2005). Whereas a positive relation between fund flows and past performance is documented for hedge funds (Lim, Sensoy, and Weisbach, 2016), as well as for VC and buyout funds (Chung et al., 2012), we find no evidence of such relations in our sample. Instead, there is simply a positive relation between current fund flows and past fund flows to the same Sponsor. Funds that experience past success at equity fundraising are likely to continue to do so, irrespective of past fund performance. Taken together, these findings allude to the harvesting of capital through retail investment advisor networks primarily by paying high selling commissions, and without any link to past or future performance.

As part of the VC and buyout fundraising process, limited partners (LPs) make an initial capital contribution along with a commitment to fund future capital calls. The need to fund future capital calls creates strong incentives for the GP to fully qualify all investors, thereby limiting access to institutional investors and ultra-high-net worth individuals. The typical VC or buyout fund is sourced from a small number of investors and involves large capital commitments. Since the population of potential investors is limited as well as sophisticated, there are reputational incentives for GPs that are estimated to be at least as large as direct incentive fees (Chung et al.,

2012). By contrast, in the UL-REIT sector, investors are less sophisticated and far more populous. There are no capital calls with UL-REITs, hence no incentive mechanism to qualify retail investors. Instead, only minimum 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 (depending on investor State of residence and year). Fund ownership is dispersed and reputational mechanisms diminished when equity is sourced from large numbers of small-unit retail investors.

Our third main finding is underperformance on a net-of-fees basis. A distinct feature of our study is performance comparison to a market index of exchange-listed counterparts. Given highly similar asset characteristics and leverage quantities, we find that UL-REITs underperform the L-REIT market by more than 6.5% per year on a net-of-fees basis. This includes no adjustment for illiquidity. Standard economic reasoning would suggest that investors should require a premium for investing in illiquid securities, however we calculate returns that are consistently lower. Fewer than 16% of funds provide holding period returns to investors that outperform the L-REIT market index. The number of outperforming funds would be even lower if we were to make adjustments to compensate for illiquidity and other investment risks. In VC and buyout funds, average returns are generally higher than a public market index, but dispersion in investment performance is also higher. Lopez-de-Silanes, Phalippou, and Gottschalg (2015) find that 10% of private equity investments return no invested capital whatsoever, whereas 25% of investments produce IRRs exceeding 50%. In our sample of UL-REITs, only 1 in 113 UL-REITs does not return any invested capital, while none have IRRs above 50%. This follows because, in contrast to risky start-ups and leverage buyouts, stabilized commercial real estate tends to lie on the lower-risk end of the investment spectrum.

Our fourth main finding is that returns on a gross-of-fees basis are comparable to the L-REIT market index. The gross-of-fees comparison suggests that there are no systemic operating performance differences between L-REIT and UL-REIT funds. Gross-of-fees returns are lower than the L-REIT market index by 1% per year, an economically small amount. 45% of funds in our sample are estimated to have gross-of-fee returns that exceed the L-REIT market index. Thus,

performance differences resulting from operational engineering or investment strategy are idiosyncratic. These findings contrast with the outperformance of buyout funds on a gross-of-fees basis, estimated to be 8% per year by Axelson, Sorensen, and Strömberg (2013). Unlike managers of VC and buyout funds which deliver higher gross-of-fees performance when charging higher fees (Robinson and Sensoy, 2013), we find no evidence in our sample that higher fees correspond with higher gross-of-fees returns.

The difference between gross-of-fees and net-of-fees returns imply that fees erode investment performance by 5.5% per year. Our fee estimate is similar to that of Phalippou and Gottschalg (2009), who estimate fees to be 6% per year for VC and buyout funds. A material difference for UL-REITs is in the shift toward front-end loads, particularly high selling commissions to raise equity from retail investors. Thus, in our sample, performance-insensitive components of the compensation contract explain almost all of the return erosion. Due to heavy front-loaded fees, return erosion is most severe at UL-REITs with the shortest holding periods. Overall, the UL-REIT sector lacks meaningful incentive fees and suffers from diminished reputational mechanisms. Higher rents charged under the private equity structuring do not appear justified relative to the public market substitute, not even on a gross-of-fees basis.

Our findings contribute to several threads of the private equity literature. Our work outlines the fundraising process and contracting mechanisms for 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 directly connect fundraising to investor cash flows and quantify investment performance for retail investors, extending studies of VC and buyout funds that include Kaplan and Schoar (2005), Phalippou and Gottschalg (2009), and Harris, Jenkinson, and Kaplan (2014), among others. Our findings that consider the relations between fee structures, fund flows, and performance also link to literature on other forms of delegated asset management that include hedge funds (Lim, Sensoy, and Weisbach, 2016) and mutual funds (Ippolito, 1992; Carhart, 1997; Barber, Odean, and Zheng, 2005; Fama and French, 2010), the latter of which are similarly marketed to retail investors.

The remainder of the paper proceeds as follows. Section 2 describes our sample, detailing the offering process and fee structures involved with raising equity from retail investors. In Section 3 we evaluate fund flows and their determinants. Section 4 describes our performance measures, and outlines our central findings with respect to net-of-fees and gross-of-fees performance. In Section 5, we conclude by discussing the ways in which our findings for retail investors fail to reconcile with standard economic rationale for private equity, as there do not appear to be efficiency gains in this sector from operational, financial, nor governance engineering.

II. Sample

Our focus in this study is on a particular type of private equity investment vehicle known as the unlisted REIT. UL-REITs issue shares of common stock to raise equity, but the shares are not exchange-listed. They are organized with finite-life, limited liability structures. REITs were created by the tax code and introduced to the US in 1960.[3] They qualify as tax-exempt 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. Both L-REITs and UL-REITs generally invest in income-producing commercial real estate.[4] UL-REITs are operationally quite similar to exchange-listed L-REITs, as they share many of the same characteristics and invest in substitutable assets.[5] However, the mechanisms employed to raise equity and the associated fee structures create important differences between

[3] For additional background and history of REITs, see the website of the REIT industry trade group known as NAREIT, at reit.com.

[4] Some REITs, known as mortgage REITs, invest in debt secured by real estate. In this study, we focus only on equity REITs, which invest directly in real estate.

[5] To compare characteristics of 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. Of those transactions, a total of 12,355 U.S. commercial real estate properties were acquired by UL-REITs. Seventy-five percent of those transaction occur in markets where a specific L-REIT acquired at least one comparable asset of the same property type, approximately the same property size (within 30 percent based on either square footage, number of units, or hotel rooms), and purchased within a 12-month window of the UL-REIT transaction date.

UL-REITs and L-REITs. A primary empirical objective in this study is to quantify differences in returns between UL-REITs and their L-REIT counterparts.

Whereas L-REITs have been studied extensively and data are readily available, there are very few studies on UL-REITs (or any other forms of private equity for retail investors). This is largely due to difficulties in obtaining and assembling data. For this study, the sample must be constructed from several sources. First, we require fund coverage in SNL Financial for symmetry of comparison to L-REITs. Only US-based funds are considered for consistency in REIT regulation. Second, we require the fund to have Form S-11 filed with the Securities and Exchange Commission (SEC), which is used for securities registration by REITs.[6] By examining the content of S-11 filings in the SEC EDGAR database we establish whether (a) the firm intends to have shares listed on an organized stock exchange concurrent with the initial public offering (IPO), or (b) the firm does not intend to apply for exchange listing and instead will utilize a continuous offering process. The former describes firms that originate as L-REITs; the latter identifies firms that originate as UL-REITs. We restrict the sample of UL-REITs to include those with S-11 filings in 2015 or earlier, since returns will be measured through YE2017. As of May 2018 (the moment of data collection), the intersection between SNL data coverage and the set of confirmed firms based on S-11 filings includes 113 UL-REITs with annual data from 1994 to 2017. As of YE2017, 102 funds in the sample have Closed offerings, averaging $1.1 billion per fund in gross equity raised from investors.

Continuous offering process

A unique feature to private equity is the continuous offering process, as opposed to the IPO single-day issuance event. New equity subscriptions for UL-REITs are sold through traditional investment advisory channels at a fixed share price for an extended period of time, in some cases exceeding 7 years. The initial offering expiration date is typically set at either 2 or 3 years, although the original offering period can be extended by submitting follow-on S-11 filings coinciding with

[6] See https://www.sec.gov/about/forms/forms-11.pdf, accessed on January 15, 2019.

the expiration date of the preceding offering. The subscription share price is conventionally set at $10 per share and held constant through the continuous offering period, which includes all consecutive follow-on offerings.

Panel A of Table 1 displays summary statistics associated with offering outcomes. Considering Closed offerings only, the average fund raises $1.1 billion in gross equity from retail investors, representing $1.7 billion in book assets by offering end. By comparison, average committed capital in the sample of Robinson and Sensoy (2016) is $208 million for VC and $988 million for buyout funds, however only a small portion of committed capital in those sectors is actually contributed when the fundraising cycle closes (the remainder arrives from future capital calls as needed).

Panel A of Table 1 also displays the distribution of financial leverage. The UL-REIT sample mean is 44% leverage, with standard deviation 19%. For comparison to a study of L-REIT capital structures by Riddiough and Steiner (2019), the L-REIT sample mean is 47% leverage, with standard deviation 15%. Thus, aggregate leverage quantities are comparable between UL-REITs and L-REITs, although considerable cross-sectional variation can exist. In later analysis, we evaluate UL-REITs by property type (e.g., multifamily, office, retail) and find that financial leverage is similar to matched samples of L-REITs.

We also evaluate whether high-leverage UL-REITs generate higher excess returns, and find that they do not.[7] Leverage affects our return calculations since several fee components are assessed based on NAV, including acquisition, disposition, and asset management fees. To approximate the value of NAV-based fees in our return calculations, we utilize observable book values for assets. Finally, we note that we do not adjust the L-REIT benchmark index to compensate for any differences in leverage, since our analysis indicates sufficiently comparable leverage between L-REITs and UL-REITs. Our empirical strategy is to calculate returns for UL-

[7] When sorted into leverage terciles, high-leverage funds do not perform significantly different from low-leverage funds. Net-of-fees excess returns in the high-leverage tercile are -6.4% (average leverage is 63%), compared to excess returns of -5.8% in the low-leverage tercile (where average leverage is 21%). Further, we regress excess returns on leverage with calendar year and property type fixed effects and find no significant relation. We discuss our calculations for net-of-fees excess returns in a later section.

REITs that investors realized (net-of-fees basis), or that they would have realized if there were zero fees (gross-of-fees basis), then compare directly to returns from investing directly into the L-REIT market index.

Continuing from Panel A of Table 1, the average offering length is 3.3 years. Several funds close their offering early, even when the stated maturity is 2 or 3 years. Based on a review of company filings, the explanation provided for an early closing is generally either an opportunity for a liquidity event (e.g., exchange listing, merger offer), or the fund was sufficiently successful at raising equity that the maximum offering amount was reached before the expiration date. Following either case, a new UL-REIT from the same Sponsor is offered almost immediately following an early closure. At the other end of the spectrum, some UL-REITs do not meet maximum proceeds by the initial offering expiration date. In more than half of our sample, the Sponsor is observed submitting follow-on offerings for the same UL-REIT, timing each follow-on to coincide with expiration date of the preceding offering. One Sponsor is observed to have submitted a total of 7 consecutive offerings for the same UL-REIT. Considering initial and follow-on offerings together, the lengthiest continuous offering in our sample is 7.6 years.

When marketing to retail investors, investment advisors are able to highlight potentially salient features such as the "constant" stated share price, high dividend yields, and the share redemption program. To some investors, the "constant" stated share price may give the impression of little to no share price volatility. Initial dividends, particularly those paid during the open offering, are almost always in excess of dividend yields for L-REITs (Wiley, 2018). Share redemption programs claim they allow investors to redeem shares at typically 95% of the stated share price. The share redemption program is almost always kept open during the offering period (Wiley, 2014). Retail investment advisors may also emphasize that the proceeds will be used to invest in income-producing commercial real estate, which might be perceived as generating stable

cash flows over time and offering an inflation hedge. These marketed investment features are likely attractive to investors approaching retirement and retirees on fixed incomes.[8]

Retail investors with moderate wealth and income requirements are the primary investor clientele. Institutional investors almost never invest in this financial product due to the high fee structures. Wiley (2018) evaluates data on 13(f) filings and documents only a trivial amount of institutional ownership by UL-REITs (maximum institutional ownership totals 0.4%). The majority of UL-REITs have no institutional ownership whatsoever. Considering UL-REITs that transition to become L-REITs, Wiley (2018) documents steady increases in the level of institutional ownership following the exchange listing.

With respect to "promised" yields, we are aware that investors are routinely given assurance that there will be high and stable dividend yields, but we are unable to harvest such data in any systematic manner from marketing brochures used by retail investment advisors. As an alternate, we construct its proxy using the annualized initial dividend paid divided by the gross-of-fees offering price. Applying this approach, the average initial yield is 6% and more than half of initial yields in our sample are clustered between 6% and 8%.

At offering launch, 88% of our sample has an initial dividend yield that exceeds dividend yields from the NAREIT FTSE Index – an index which tracks industry-level performance for L-REITs (hereafter referred to as the L-REIT market index). UL-REIT initial dividend yields exceed those from the contemporaneous L-REIT market index by 2.4% on average. The initial dividend yield we refer to here is relative to the stated offering price, which would increase if front-end fees were deducted from the equity investment. Dividends are typically paid during the continuous offering while the Sponsors continue to raise equity from new investors. In the earliest stage of the offering, such dividends are paid even before the fund has invested assets and represent a return of capital.

[8] According to an article (titled "Direct Investments at a Glance") published by the Investment Program Association (IPA) on November 2015: "1,203,477 investors had non-listed REITs or Business Development Companies in their investment portfolio… where 85% of investors were age 50 and over, and 43% were age 65 and over."

Sponsors that experience success at raising equity from retail investors are observed producing one highly similar offering after another, typically immediately following the end of the offering for the predecessor. The analog at VC and buyout funds is where Sponsors attempt to launch a new fund every 3 to 5 years (Kaplan and Schoar, 2005; Chung et al., 2012), and there is evidence that fund flows and performance are positively related to GP experience (Kaplan and Schoar, 2005; Sensoy, Wang, Weisbach, 2014). There are 36 unique Sponsors for the 113 UL-REITs in our sample, hence 36 offerings are first in fund sequence. The 9 most successful Sponsors account for greater than 75% of total fundraising, each responsible for anywhere between 4 and 16 distinct funds in our sample. On the other end of the spectrum, 15 Sponsors appear only once and contribute less than 0.4% per fund to aggregate fund flows in our sample.

Financial engineering, among other factors, is argued as a rationale for the existence of private equity (Kaplan and Strömberg, 2009; Gompers, Kaplan, and Mukharlyamov, 2016), and GP ownership may affect incentive alignment. For UL-REITs, the typical GP contributes a fixed amount of $200,000 at inception. Thus, GP ownership is increasingly diluted with fundraising success. Since *ex post* fund flows average $1.1 billion per fund in our sample, GP ownership is often less than 0.03%. For a VC or buyout fund, GP ownership is typically set at 1% of contributed capital (Robinson and Sensoy, 2013) – more than 30 times GP ownership of the average UL-REIT in our sample.

Fees

Panel B of Table 1 provides summary statistics for the most common fee structures from S-11 filings of the 113 UL-REITs contained in our sample. Taking modes, the front-end load includes a 7% selling commission paid to the investment adviser, 3% to the Dealer Manager to cover administrative and marketing costs, and 1.5% reimbursement paid to the Advisor for organization and offering expenses. The Dealer Manager and the Advisor are wholly-owned subsidiaries of the Sponsor. Based on the above fee percentages, 88.5% of equity raised is available for investment (not yet accounting for acquisition fees and expenses). By comparison, front-end loads to the GP are virtually non-existent in other forms of private equity, including VC and buyout funds. The

nearest analog is for fees that are paid by about 20% of LPs who hire gatekeepers (Lerner, Hardymon, and Leamon, 2004), or if the other 80% of LPs who do not hire gatekeepers were to account for their internal resources required to screen funds.

TABLE 1 HERE

After fees have been deducted in the process of equity fundraising, acquisition fees and expenses are incurred to invest in commercial real estate. Modal acquisition fees are 2% plus 0.5% allocated for reimbursement of acquisition expenses, payable to the Advisor. This structure implies the total front-end load is approximately 13.7% of contributed equity.[9] Transaction fees are extremely rare in VC, but may occasionally enter as hidden fees at buyout funds (Robinson and Sensoy, 2013).

Once the UL-REIT has assets under management, operational fees can be collected. During the continuous offering process, the fund is both acquiring new assets and operating existing assets. The Advisor collects not only front-end loads from new investors during the offering, but also operational fees on assets under management. The most common operating fee involves a 0.8% asset management fee based on aggregate NAV. The typical fund uses around approximately 45% leverage, implying a corresponding management fee of approximately 1.5% of contributed capital. By comparison, management fees for VC and buyout funds are typically set at 2% of either committed capital or net invested capital (Robinson and Sensoy, 2013).

In a few cases, the UL-REIT collects an additional servicing fee that is set at 1% of NAV, payable to the Dealer Manager. The servicing fee provides an alternate method of compensating the Dealer Manager, and tends to appear when shares are sold with a reduced up-front selling commission. Several other operating fees are possible, but are not reported in Table 1 since they do not appear consistently across the sample. Examples include property management fees (4.5% of gross property revenues), oversight fees for third-party property management (1% of gross property revenues), construction and development fees (5% of development costs), and financing

[9] 13.7% = 1 – [(1–.07–.03–.015)*(1–.02–.005)]. A similar amount, 13.5%, obtains if mean values for fees are used rather than modal values. The calculation assumes capital structure of 100% equity. In a later section, we discuss our return calculations, which incorporate leverage based on observable cash flow and asset data (as opposed to simulations generated from the compensation contract).

coordination fees (1% of total debt involved in each acquisition, payable to the Advisor). Property management and oversight fees are paid to the Property Manager, which is typically a wholly-owned subsidiary of the Advisor.

In the liquidation stage, a liquidity event can take the form of an exchange listing (or an IPO if new shares are also issued), a merger with an existing firm, or asset liquidation in the private market, including bankruptcy. If properties are sold, either the Advisor receives a 3% disposition fee, or the real estate commission is deducted when an outside broker is used. Upon liquidation, there is also the possibility of option-like payoffs to the Advisor, referred to as "the promote" in real estate private equity, or "carried interest" in other sectors. Once investors receive a full return of capital plus distributions that exceed the carry hurdle, the Advisor is entitled to a greater share of the residual fund value. The mode carry hurdle is 7% preferred return per year, with the Advisor receiving 15% carried interest on all proceeds from asset sales that exceed the amount required to meet the carry hurdle. The carry hurdle is typically measured based on initial investment before front-end fees are deducted, and calculated as an annual, cumulative, pre-tax, non-compounded return. In the event of an exchange listing or a merger, carried interest takes the form of a special ownership interest, equal to the carried interest percentage of the amount by which the sum of market value plus distributions exceeds the sum of aggregate capital contributed plus the carry hurdle. In later analysis, we find that no carried interest is paid in more than two-thirds of our sample, and, when it is paid at the other one-third of funds, it represents a meager percentage of overall compensation.

III. Fund flows

Fund flows are defined as total common equity from the balance sheet in the year the offering closes, inflated by fees paid to raise equity. As described previously, modal fees to raise equity are 11.5%, including selling commissions, dealer-manager fees, and offering expense reimbursements (but not yet accounting for acquisition fees). For each Closed offering, we identify the offering period closure date with a careful review of public filings to confirm that no follow-on offerings

occurred. For funds with Open offerings at the end of our sample period, we use the common equity balance from the 2017 10-K.

Our measure for fund flows is conservative since some investors exercise their redemption rights during the offering period. An alternate approach is to collect equity proceeds from the consolidated statement of cash flows in each quarter. However, these data are reported in an inconsistent manner. For instance, some UL-REITs report gross equity proceeds and specify offering costs, while others report net proceeds directly without line items for offering costs. Furthermore, some funds differentiate new equity subscriptions from reinvested dividends and share redemptions, while others provide an aggregate tally for net equity flows. When we compare our numbers to data from the consolidated statement of cash flows, we find that our balance sheet measure is similar and holds the advantage of being reported in a consistent manner across funds.

Figure 1 displays the accumulation of fund flows by vintage – the year in which the original offering is declared effective by the SEC (i.e., the date the offering effectively begins and shares can be sold to investors). For the years 1994 to 2002, only one or two funds are launched per year. Aggregate fund flows then gain momentum starting in 2003, reaching at least $115 billion by 2017 (some funds in our sample had open offerings at YE2017). This estimate is likely conservative since our measure is net of share redemptions that occur during the offering, and because our sample excludes several funds with offerings launched in 2016 and 2017. Blue Vault, a private research and consulting firm for alternative investments, estimates that the sector raised $142 billion in new equity subscriptions from 2000 to 2017, where their estimate includes funds launched in 2016 and 2017 and does not subtract share redemptions.

FIGURE 1 HERE

Table 2 displays fund flows by vintage in Panel A, and by the selling commission rate in Panel B. The most common selling commission is 7%, and the corresponding fund flow averages $1.1 billion. There are 17 funds with selling commissions above 7%, and the corresponding fund flow averages $1.5 billion. Fund flows are monotonically increasing with the selling commission – the opposite direction of what economic reasoning might suggest. For instance, mutual fund

flows respond with negative sensitivity to front-end fees (Sirri and Tufano, 1998; Barber, Odean, and Zheng, 2005).

TABLE 2 HERE

We next empirically examine the determinants of fund flows, as fund size may impact subsequent returns when there are scale economies from investing in commercial real estate (Andonov, Kok, and Eichhotlz, 2013). Since fundraising success may impact returns, we estimate determinants of fund flows, measured by total gross equity raised through the end of the offering period. As possible determinants, we consider the impact of fees, initial dividend yields, fund sequence, and offering duration.

Fees include variables for the selling commission, other front-end fees, operational fees, and carried interest. Other front-end fees include the sum of the dealer-manager fee, offering expense reimbursements, acquisition fees, and acquisition expense reimbursements. Operational fees include the asset management fee plus the servicing fee, where applicable. Apart from carried interest, all fees described above reflect performance-insensitive components of the compensation contract. Robinson and Sensoy (2016) document that VC and buyout funds tend to shift compensation toward performance-insensitive components during hot fundraising periods. In the UL-REIT sector, overall fee structures are already heavily skewed toward performance-insensitive components, and Sponsors in this sector rarely alter compensation contracts from one fund offering to the next.

By including the initial dividend yield, we test a form of "window-dressing" that relies on paying high dividends during the offering period. Wiley (2018) documents that UL-REIT initial dividend yields are often lowered after the end of the offering period. Another form of window-dressing in the UL-REIT sector involves a promise of liquidity provision via the share redemption program. Wiley (2014) provides evidence that UL-REITs maintain share redemption programs that are open and unrestricted during the offering period, but then are often canceled or constrained once the offering period ends. For instance, a share redemption program becomes constrained if there are more shareholders requesting redemptions than the firm will allow in a given quarter. We note that other forms of window-dressing may occur in private equity investment, for instance,

when self-reported NAVs are manipulated during fundraising cycles (Jenkinson, Sousa, and Stucke, 2013; Brown, Gredil, and Kaplan, 2013). These other forms of window-dressing are more difficult to compare to UL-REITs, since dividend payments during fundraising are uncommon at VC and buyout funds, as are early redemption programs.

In addition to variables for fees and initial dividend yields, we include fund sequence and offering duration. At VC and buyout funds, there is evidence that performance is positively related to fund sequence and that current performance predicts future fund flows (Kaplan and Schoar, 2005; Sensoy, Wang, Weisbach, 2014). Offering duration is included to evaluate whether the offering length has an impact on fund flows. We also include fixed effects (FEs) for property type focus and the 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 3 displays our estimation results for determinants of fund flows. The dependent variable for fund flows is log of total gross equity raised. Since total fund flows are unrealized until the end of the offering, the estimation includes only 102 funds with Closed offerings.[10] We find that front-end selling commissions have a positive and significant effect on fund flows. An increase in the selling commission of 1% nearly doubles fund flows – a surprisingly large economic effect.[11] Apart from selling commissions, no other offering condition appears to have a significant impact on fund flows.

TABLE 3 HERE

As compared to other sectors, these results are somewhat puzzling. In the mutual fund sector, investors are sensitive to high front-end expenses, including brokerage commissions and acquisition fees, resulting in significantly lower fund flows (Sirri and Tufano, 1998; Barber, Odean, and Zheng, 2005). In the present study, high-fee UL-REITs are found to generate *higher*

[10] Using the full sample of 113 UL-REITs, including both Open and Closed offerings, provides similar results. Apart from the intercept, the only variable to load significant is the selling commission (coef: 61.3, *t*-stat: 2.8).

[11] The estimated impact of a 1% increase in the selling commission (roughly one standard deviation) is calculated as $e^{0.686} = 199\%$.

fund flows. We consider three possible explanations. The first is that high-fee funds may outperform low-fee funds on a net-of-fees basis, justifying higher fund flows. However, high-fee fund managers do not appear to generate returns sufficient to offset net-of-fees, including at VC and buyout funds (Robinson and Sensoy, 2013) and mutual funds (Carhart, 1997; Fama and French, 2010). In later analysis, we find no evidence to suggest that high-fee UL-REITs in our sample outperform on a net-of-fees basis. A second possible explanation is that high-fee funds provide unobservable benefits, such as lower search costs (Hortacsu and Syverson, 2004), or valuable financial advice (Choi, Laibson, and Madrian, 2010). A third explanation is that retail investors do not fully understand fees, and higher fund flows are the result of financial advisors being incentivized to sell high-commission products. Among other possibilities, retail investors may not fully understand fees due to financial literacy issues, disclosure failures, or perhaps even misrepresentation. Based on the data used in this study, we are unable to identify the underlying cause of the failure to fully understand fees, however we note that non-retail investors face similar issues in the private equity sector. When discussing relatively sophisticated investors, Phalippou (2009) argues that the opaque nature of compensation contracts allows private equity fund managers to charge higher fees. If sophisticated investors do not fully understand compensation contracts, what should be expected from retail investors facing similar contracts? In the Conclusion section, we discuss the third explanations as most plausible based on our findings.

In untabulated analysis, we find that past fund flows have a positive and significant impact on subsequent offerings by a Sponsor.[12] All other fund flow determinants are endogenous and suppressed since Sponsors rarely change fee structures from one offering to the next. Sponsors dedicate significant resources to build and maintain their retail investor marketing networks, recovering these costs through the front-end Dealer-manager fee of up to 3% of gross offering proceeds. As additional evidence for the success of Sponsor-specific fundraising platforms, we estimate fund flows as a function of Sponsor-only fixed effects and find the adjusted-R^2 is 51%.

[12] The estimation for fund flows (logged) includes immediate past fund flows from the same Sponsor (logged, or zero for first-time offerings), along with property type and year FEs. The sample includes 102 Closed offerings. The estimated coefficient for past fund flows is 0.08 (*t*-stat: 3.1), and adjusted-R^2 is 21%.

There could be reverse causality. It has been shown that current returns predict future fund flows at VC and buyout funds (Chung et al., 2012), mutual funds (Ippolito, 1992), and hedge funds (Lim, Sensoy, and Weisbach, 2016). Relatedly, there is persistence in returns at VC and buyout funds offered by the same Sponsor (Kaplan and Schoar, 2005). If such a performance-flow channel is relevant in our sample, the connection we find between current and future fund flows could simply be driven by the performance success of current funds. However, in our sample of UL-REITs, we find no evidence to support a performance-flow relation. Net-of-fees or gross-of-fees returns from prior funds are insignificant when included in fund flow estimations, and their inclusion has little impact on the relation between current and future fund flows.[13] Furthermore, in later analysis, we find no evidence of return persistence in subsequent offerings by a Sponsor. Thus, the relation between current and future fund flows in our sample appears consistent with a "blind money" explanation that relies on marketing platforms influencing retail investor decisions, as opposed to any support for a rational learning model (e.g., Berk and Green, 2004) or even "return-chasing". We discuss and evaluate performance measures in the next section.

IV. Investment Performance

In the previous sections we focused on the fee structure of UL-REITs and their equity fundraising process. In this section, we analyze investment performance and compare UL-REIT returns to the L-REIT market index. After quantifying investment performance, we then isolate differences in performance resulting from fee structures and liquidity events. We further evaluate whether subsequent offerings by the same Sponsor exhibit persistence in performance, and we test for relations between fund size and performance.

The performance measure we use is the IRR, calculated on a net-of-fees as well as gross-of-fees basis. The IRR performance measure can be problematic with other forms of private equity,

[13] In untabulated analysis, we run separate estimations to include either net-of-fees or gross-of-fees returns, calculated for both First and Last investors from the immediate preceding offering. In all cases, the performance measure is insignificant, while the relation between current and future fund flows remains significant.

since capital calls on LPs produce multiple periods of cash outflows. The private market equivalent (PME) of Kaplan and Schoar (2005), or other performance measures such as equity multiples, are commonly adopted as a result. By contrast, there are no capital calls with UL-REITs at the individual investor level. Total initial investment occurs at a single point in time, producing one initial cash outflow. IRR calculations are therefore straightforward, since all future periods have non-negative cash inflows (i.e., UL-REITs have limited liability for investors at time of liquidation, and there are no mid-stream capital calls should the fund generate losses).

That said, UL-REITs engage in a continuous offering period, which creates differences in investment timing for investors. This poses an issue that requires an assumption as to initial investor timing. "First investors" are defined as those who invested in the UL-REIT at the earliest practical point. First investors are able to earn maximum dividends, including those paid throughout the offering period. "Last investors" are defined as those who invested at the latest possible point, immediately before the final offering closes. Last investors are able to observe early-stage asset selection and distributions prior to equity subscription, but are not recipients of initial dividends paid. Due to these differences, we calculate returns for both First investors and Last investors to encompass the range of outcomes based on investor timing. Ultimately, we find returns for Last investors are similar to those for First investors in the same fund, providing assurance that our main findings are not dependent on the exact timing of the initial investment. For brevity in exposition, we present results for First investors throughout, and occasionally discuss findings for Last investors from a robustness perspective.

Cash flows, fees, and investment values must be identified to calculate investment performance. To begin, the initial offering share price (typically $10) is obtained from the S-11 filing, along with all fees. Dividend payments per share are collected from the SNL database. The terminal cash flow equals the final dividend payment, plus the liquid share price or tender offer. We assume that UL-REIT investors do not exercise share redemptions and do not participate in dividend reinvestment plans, instead electing to receive cash dividends.

Terminal values

In the sample, 63 out of 113 funds are confirmed to have achieved a full-cycle liquidity event, which we classify as "Exited" funds. Exited funds have terminal values that are observable, such as the exchange-traded share price (in the case of an exchange listing), the tender offer (in the case of a merger), or liquidating distribution payments (in the case of asset sales in the private market). Returns for Exited funds are 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.[14] Thus, for Exited funds, terminal values are observable and do not need to be estimated.

We classify "Active" funds as the remaining 50 out of 113 funds for which liquidation has not yet occurred. For Active funds, we develop a methodology to approximate their terminal share value as of YE2017 by applying a market-to-book (MB) ratio of total assets from a matched sample of L-REITs. In order to be included in any of the matched samples, the L-REIT must hold assets that are primarily of the same property type, and have firm age within three years of the subject UL-REIT.[15] For each of the 50 matched samples constructed (one for each Active UL-REIT), we collect the median MB ratio in order to reduce the influence from 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 are then subtracted to approximate the market value of common equity.

Table 4 provides summary statistics for the matched MB ratios. The average MB ratio is 1.22. To evaluate the robustness of this approach, we consider four alternative approaches as

[14] In four cases, the UL-REIT shareholders are partially locked-in for a period of time following the exchange listing. On opening day, each unlisted share is converted into one share of Class A stock, one share of Class B-1 stock, one share of Class B-2 stock, and one share of Class B-3 stock. Class A stock can be sold on opening day. Class B stock converts to Class A stock on a staggered schedule, typically 6, 12, and 18 months following the exchange listing. This practice effectively limits the amount of shares held by unlisted shareholders which can be sold on opening day. For firms that impose this structure to liquidation, we use the closing share price on the date that each share can be sold and assume that investors receive the corresponding dividend distributions until they sell at the earliest possible point.

[15] To classify a firm as a given property type, we require at least 80% of the number of properties held at YE2017 to be of the same property type. Firms that do not have at least 80% concentration of a single property type are classified as "diversified". Property counts and classifications for all UL-REITs and L-REITs are collected from the SNL database.

reference points. First, we regress market value of total assets on its book value for newly listed REITs and find the estimated coefficient for book value of total assets is 1.14.[16] Second, the bottom section of Table 4 reports that actual MB ratios for the 20 UL-REITs that Exited via an exchange listing are 1.14 on average at the time of exchange listing, and only 3 out of 20 had MB ratios that are greater than 1.22. Third, we consider implied valuations using a 4% cap rate (at the top end of SNL's value range) to generate NAV estimates that are 1.16 times the book value of total assets for the average Active UL-REIT at YE2017.[17] Fourth, we apply a propensity score matching to the combined sample of L-REITs and Active UL-REITs to find the nearest-neighbor matched MB ratio averages 1.27.[18]

Thus, the average 1.22 MB ratio from the L-REIT matched samples is somewhat higher than those for (i) newly-listed L-REITs, (ii) former UL-REITs that became exchange-listed, and (iii) implied NAV's based on SNL's most aggressive cap rate assumption. The average MB ratio from the matched samples is slightly lower than (iv) that obtained from a propensity score matching. However, the use of propensity scores for matching in empirical research has recently drawn criticism (King and Nielsen, 2018). These considerations suggest that the MB ratios which we obtain from the matched samples to generate terminal values and return estimates for Active UL-REITs are robust, and, if anything, likely upwardly biased, resulting in a slight upward bias in investment performance of Active funds.

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[16] The estimation includes 29 L-REITs that are no greater than 3 years old at YE2017. We include only newly listed L-REITs since MB ratios tend to increase with firm age due to depreciation effects on book values. The model imposes 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.

[17] NAV estimates utilize an appraisal method to measure the market value of all underlying real estate assets held on balance sheet, collected from SNL for each UL-REIT as of YE2017. SNL applies the capitalization method to the net operating income of the portfolio to calculate NAV, which requires an assumption about the appropriate risk-adjusted cap rate. In the SNL database, cap rates vary from 4% to 11%, with the lowest cap rates (highest valuations) ascribed to firms that hold the highest-quality, lowest-risk assets. SNL's NAV estimate using a 4% cap rate is available for 46 out of 50 Active UL-REITs.

[18] The probit model used to generate propensity scores for L-REIT selection includes firm age (logged), cash (scaled by total assets), total assets (logged), total liabilities (scaled by total assets), along with measures for the percentage of properties held in each property type at YE2017. The estimation includes 227 observations and has pseudo-R^2 of 36%.

TABLE 4 HERE

In sum, the main function of the matched sample MB ratios is to provide an estimate for the market value of common equity for Active UL-REITs as of the end of our sample period, where actual terminal values at that time are unobservable. Consideration of Active funds increases our sample size from 63 Exited funds to 113 Exited and Active funds. Ultimately, we find similar evidence of underperformance for both Exited and Active UL-REITs, suggesting that our results are not unduly influenced by the choice of methodology for approximating terminal values. Lastly, we note that our approach applies unique MB ratios as matched to individual Active UL-REITs. An alternate approach would be to apply a single MB ratio, such as the 1.22 sample mean, to all Active UL-REITs. Doing so does not alter the central findings which are discussed in the next section.

Net-of-fees returns (investor cash flows)

'Net-of-fees return' refers to the estimated return investors received for Exited funds, or that they would have received for Active funds based on an estimated terminal value assuming full liquidity at YE2017. The initial cash outflow, CF_0, is the posted share price. Periodic cash inflows, CF_1-CF_{T-1}, are paid dividends per share, adjusted for reverse stock splits. The final cash flow, CF_T, equals the sum of the final dividend payment and the net-of-fees terminal value per share. For Exited funds, the net-of-fees terminal value is the share price offered to shareholders immediately after occurrence of a liquidation event, which is net of all liquidation fees and adjusted for reverse stock splits.

For Active funds, we approximate the net-of-fees terminal value per share as follows:

(1) $$\frac{(BV\ of\ Assets * MB\ ratio - Debt - Pref.\ Eq. - OP\ Units) * (1 - Liq.\ Fees)}{\#\ of\ common\ equity\ shares\ outstanding}$$

The book value of assets is multiplied by the MB ratio from the matched sample of L-REITs to approximate market value of total assets. Book values for total debt, preferred equity, and operating partnership units are then subtracted out to approximate the market value of common

equity. Liquidation fees are then netted out to obtain a net-of-fees terminal share value estimate for Active funds.[19]

In Table 5, the first row summarizes net-of-fees returns (IRR_{net}), which has average value of 3.1% for First investors in the UL-REIT. The third and fourth rows of Table 5 compare with the L-REIT market index (ret_{mkt}) over the corresponding calendar period for each fund. The average annualized return would be 9.5% if investors instead selected the L-REIT market index. On average, First investors in UL-REITs are estimated to have underperformed the L-REIT market index by 6.5% per year, over an average holding period of 80 months, with little to no liquidity. The difference in returns for First investors and Last investors is relatively small, providing assurance that our findings are not dependent on the exact timing of the initial investment. In untabulated results following the same methodology, Last investors net-of-fees returns have average value of 2.0%, compared to the L-REIT market index values of 7.6%.[20] Regardless of when during the continuous offering an investor places their capital in the UL-REIT, their investment is likely to underperform the L-REIT market index. Finally, we note that our net-of-fees return calculations for UL-REITs make no adjustments for illiquidity or other relevant investment risks which should require higher returns. Franzoni, Nowak, and Phalippou (2012) estimate the unconditional liquidity premium for private equity to be around 3% per year. Sorensen, Wang, and Yang (2014) apply a theoretical construct to calculate a similar break-even alpha of at least 3% per year to compensate for illiquidity in private equity.

TABLE 5 HERE

[19] In terms of liquidation fees, the standard disposition fee (i.e., real estate commission) is 3% of asset value, which is 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 carry hurdle if full liquidity were provided at YE2017 (based on our approximation of terminal value). The minimum carry hurdles that would have been exceeded include 6% [9 firms], 6.5% [1 firm], 7% [6 firms], and 8% [1 firm]. The management compensation claim (i.e., carried interest) ranges from 5% to 35% of cash flow available for distribution, in the event that these cumulative, non-compounded carry hurdles were exceeded.

[20] Values for the corresponding L-REIT market index differ for Last investors, since they have different holding periods (i.e., assumed to invest at a later date). In addition, the sample size for Last investors is 102 funds (as opposed to 113 funds for First investors) since 11 funds have not yet Closed their offering by YE2017.

Several studies for VC and buyout funds document outperformance to the broader market index on a net-of-fees basis.[21] For instance, Harris, Jenkinson, and Kaplan (2014) estimate private equity to have outperformed the S&P 500 by more than 3% per year since the 1980s. One thread of the literature provides evidence for private equity that is consistent with gains from enhanced operating performance (Kaplan, 1989; Guo, Hotchkiss, and Song, 2011; Davis et al., 2014; Cohn, Mills, and Towery, 2014). Others suggest value is created in private equity as the result of enhanced incentives for fund managers (Gompers and Lerner, 1999; Chung et al., 2012). Kaplan and Strömberg (2009) outline three possible categories for efficiency gains in the private equity sector: operational engineering, financial engineering, and governance engineering. In the Conclusion section, we discuss how the UL-REIT sector appears to fall short of enhancing value across all three dimensions.

Figure 2 provides greater detail on the return comparison by displaying net-of-fees returns for individual UL-REITs on the *y*-axis, along with the corresponding L-REIT market returns during the same period on the *x*-axis.[22] The dashed line depicts the 45° diagonal and is used to distinguish UL-REITs that outperform versus underperform the L-REIT market index. In total, First investors in 18 out of 113 UL-REITs outperform the L-REIT market, including realized returns in 7 Exited funds and approximate returns in 11 Active funds. The graphic in Figure 2 underscores a central finding of this study – investors in UL-REITs are unlikely to outperform the L-REIT market index, doing so only about 16% of the time. When UL-REITs do outperform, excess returns are unlikely to compensate for illiquidity and other added investment risks. For example, if we were to add the required 3% liquidity risk premium to UL-REITs, then only 11 out of 113 UL-REITs outperform on a net-of-fee and liquidity risk-adjusted basis.

FIGURE 2 HERE

[21] See Sorensen, Wang, and Yang (2014) for the alternate perspective that LPs in private equity likely break even relative to public benchmarks after accounting for all relevant risk.

[22] Figure 2 displays net-of-fees returns for First investors in 112 out of 113 UL-REITs. For compactness, one UL-REIT that went bankrupt (net-of-fees return: -88%) is not included in the display.

Gross-of-fees returns (asset cash flows)

'Gross-of-fees return' refers to the estimated return the investor would have received in a hypothetical zero-fee environment. When compared to the L-REIT market index, gross-of-fees returns can be used to quantify differences in performance which may be attributed to property selection, asset management, or the finite life structure of UL-REITs, as opposed to underperformance caused by fee structures.

The gross-of-fees return compares the smaller amount of initial equity that would have been needed to generate the same quantity of assets in a zero-fee environment, to the cash flows that would have been received if no fees were deducted. Consequently, the initial cash outflow, CF_0, is the posted share price paid by investors during the offering, minus all front-end fees.[23] Periodic cash flows, CF_1-CF_{T-1}, are dividends paid per share, adjusted for reverse stock splits and identical to those used in net-of-fees returns.[24] The final cash flow, CF_T, equals the final dividend plus the gross-of-fees terminal value per share.

For Exited funds, the gross-of-fees terminal value is the share price offered to shareholders in the liquidity event, 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 carry hurdle.[25] The gross-of-fees terminal value is further inflated by compounded asset management fees incurred and paid to the Advisor over the holding period.

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[23] Specifically, CF_0 = *Posted share price**(1-*b*-*d*-*w*-*e*)*(1-*a*-*x*), where, *Posted share price* is the initial offering price from S-11 filing, *b* is the commission percentage paid to selling broker, *d* is the dealer-manager fee percentage, *w* is the working capital reserve percentage, *e* is organizational and offering expense percentage, *a* is the acquisition fee percentage, and *x* is the acquisition expense percentage. All expense percentages are firm-specific as detailed in the S-11 filing and summarized in Table 1.

[24] In our calculation for gross-of-fees return, the asset management fee (typically assessed at 0.8% of total assets) is assumed to be reinvested into assets and accumulates over the investment horizon, rather than paid out as dividends. This approach is consistent with the notion that UL-REITs target a constant dividend yield policy which is sustained at least during the equity fundraising period. The alternate approach is to assume that what was otherwise collected as asset management fees would have been paid out in dividends rather than reinvested, which disrupts constant dividend payouts but results in similar gross-of-fees return calculations to those displayed in Tables 5 and 6 and Figure 3.

[25] Incentive fee adjustments are applied to 18 out of 63 Exited UL-REITs that appear to have exceeded the carry hurdle on a net-of-fees basis. To calculate gross-of-fees terminal values for these funds, we solve for the market

For Active funds, our approximation of terminal value per share assuming full liquidity at YE2017 is as outlined previously in Equation (1) with two exceptions. First, book value of assets is inflated by the compounded asset management fees incurred over the holding period. Second, liquidation fees are not subtracted.

In Table 5, the second column summarizes gross-of-fees returns (IRR_{gross}) for First investors. When compared to the L-REIT market index over matching periods, the average UL-REIT underperforms on a gross-of-fees basis by 1% per year. Thus, removing all fees fails to produce positive alpha on average. The comparison is drawn to the L-REIT market index, which has not been adjusted to gross-of-fees. The L-REIT market index is comprised of firms that are predominantly internally-managed with management compensation accounted for as general and administrative (G&A) expense, averaging 1% of total market capitalization on an annual basis.[26] Brokerage fees associated with buying and selling shares on an organized stock exchange are minimal, but could also be accounted. In order to invest in the L-REIT market index, investors can either purchase shares of individual firms, or they may select exchange-traded funds (ETF) from the REIT sector which have expense ratios ranging from 0.07% to 1.3%. Gross-of-fees adjustments to the L-REIT market index (e.g., G&A expenses, brokerage fees, and ETF expense ratios) would only exacerbate our measurement for the extent to which UL-REIT underperformance can be attributed to differences in asset cash flows.

In sum, our results indicate that there is little difference between UL-REIT gross-of-fee performance and the L-REIT market index. Variation across UL-REIT returns on a gross-of-fees basis appears firm-specific and hence idiosyncratic. There do not appear systemic differences resulting from asset selection, as both L-REITs and UL-REITs generally invest in highly similar assets and have similar property type allocations.[27] In our comparison, the UL-REIT investment

value of equity that was required to result in the observed net-of-fees terminal value. The minimum carry hurdle exceeded ranges from 6% to 8%, and the corresponding carried interest paid to the Advisor ranges from 5% to 15%.

[26] For instance, using YE2017 data from SNL for all L-REITs, the average [median] G&A expense is 1.0% [0.6%] of the total market capitalization.

[27] UL-REITs held similar property type to L-REITs in the SNL database. As of YE2017, the distribution of property type holdings by UL-REITs [L-REITs] are as follows: retail – 21% [20%], office – 16% [14%], multifamily – 14%

holding period is measured from fund inception to liquidation, whereas the L-REIT benchmark includes a large number of incumbent firms that already have scale in operational assets. Some underperformance of UL-REITs may be due to be structural inefficiencies associated with launching a "blind pool" offering, attempting to deploy capital into bulky assets while incrementally raising new equity.[28] Such inefficiencies affect buyout funds, for instance, as time-pressured acquisitions tend to underperform (Arcot et al., 2015). However, regardless of these constraints, the overall return calculated on a gross-of-fees basis is relatively similar to the L-REIT market index, within 1% or less per year. By contrast, Axelson, Sorensen, and Strömberg (2013) estimate gross-of-fees returns for buyout funds to be much larger in magnitude, exceeding public markets by 8% per year.

Figure 3 displays gross-of-fees returns for individual UL-REITs on the *y*-axis, against L-REIT market returns over matching periods on the *x*-axis. In total, 51 out of 113 UL-REITs in our sample are estimated to outperform the L-REIT market on a gross-of-fees basis. 31 Active funds out of 50 and 20 Exited funds out of 63 appear above the 45° diagonal. Since nearly half the sample outperforms and the other half underperforms on a gross-of-fees basis, we conclude that differences resulting from asset cash flows appear to be largely firm-specific, rather than systemic for the UL-REIT sector. Thus, operational engineering does not appear to systematically enhance value for retail investors in this form of private equity.

FIGURE 3 HERE

Gross-of-fees vs. net-of-fees

[11%], healthcare – 14% [11%], hotels – 13% [11%], industrial – 11% [12%]. Similar comparisons can be drawn based on geographic allocations, which are similar among UL-REITs and L-REITs.

[28] "Blind pool" refers to the fact that every UL-REIT begins its offering with no assets under management. To accumulate assets, managerial time must be expended in search, due diligence, and closing. From initial search to closing, the complete process for a typical commercial property acquisition typically requires from 6 months to greater than 1 year. An added complication for the UL-REIT manager involves the uncertainty surrounding how much equity will have been raised and whether the amount available will match the equity requirements of the targeted acquisition by the closing date.

In Table 5, the final row summarizes the difference between gross-of-fees and net-of-fees returns. The "gross-net spread" is used to quantify underperformance due to fees. The average annualized return for First investors is estimated to be 5.5% lower than what they would have received in a hypothetical zero-fee environment. That is, 5.5% out of 6.5% of the average underperformance from the UL-REIT fund vehicle is due to fees.

Panel A of Figure 4 illustrates the strong association between the two performance measures. The correlation between the series for gross-of-fees and net-of-fees returns is 0.96. The gross-net return spread widens at the best-performing funds, since incentive fees are incurred once the carry hurdle is surpassed. The gross-net spread averages 5% in the bottom three quintiles for fund returns, 6% in the second highest quintile, and 8% in the top return quintile.

FIGURE 4 HERE

Panel B of Figure 4 displays the gross-net return spread by holding period. The relationship between the gross-net spread and holding period appears convex, with the largest spreads at funds that exit in the shortest amount of time. Lengthier holding periods would allow the effects of high front-end loads to be diluted over time. Indeed, apart from differences in fees across funds, the greatest impact to gross-net spread is caused by the holding period. Focusing on individual private equity investments, Lopez-de-Silanes, Phalippou, and Gottschalg (2015) find that quick flips tend to generate the highest returns. In untabulated analysis, we find that holding period has no significant impact on either net-of-fees or gross-of-fees returns in our sample.

Return erosion

By "return erosion", we refer to the reduction in net-of-fees performance due to the incurrence of specific fees. This follows because we are able to quantify gross-of-fees returns directly from the compensation contract, and we calculate the reduction in net-of-fees returns for individual funds, rather than rely on simulations (e.g., Gompers and Lerner, 1999; Metrick and Yasuda, 2010). Using our calculations for IRR_{gross} and IRR_{net} as the baseline, we set individual components of the

fee structure to zero and recalculate the gross-net spread for each fund in our sample, ceteris paribus.

Table 6 summarizes the calculated change in returns by hypothetically removing individual fee components. Eliminating the selling commission would increase net-of-fees returns by 1.7% on average. A similar 1.7% adjustment occurs due other front end fees. Together, roughly 60% of return erosion results from front-end loads. Removing operational fees increases net-of-fees returns by 1.8% per year. Net-of-fees returns are the most sensitive to operational fees (standard deviation of return changes is 2.9%), which are paid annually and based on self-reported NAVs. Across all categories, the most trivial impact is 0.1% per year from carried interest, which represents the only incentive fee. In Phalippou and Gottschalg (2009), incentive fees represent one-third of management compensation at VC and buyout funds. In our sample, by contrast, incentive fees are responsible for less than 2% of the aggregate erosion in returns, which is less than $1/16^{th}$ that of incentive fees in VC and buyout funds. In fact, more than two-thirds of funds in our sample did not meet the carry hurdle and consequently paid zero incentive fees. For the remaining one-third of funds that paid incentive fees, average carried interest paid amounts to just 0.3% per year. Thus, carried interest as an incentive fee appears a relatively ineffective contracting mechanism in this sector.

TABLE 6 HERE

Excess returns & offering characteristics

Beyond the impact of individual fees on fund performance, we also consider the cross-section of fees and returns. Panel A of Table 7 displays fee structures across performance terciles sorted by net-of-fees excess returns. Recall that net-of-fees excess returns are highly correlated with gross-of-fees excess returns (e.g., see Panel A of Figure 4). With the exception of the "other front-end fees" category, average fees in the lowest tercile are not significantly different from those in the highest return tercile.

TABLE 7 HERE

Panel B of Table 7 provides the cross-sectional empirical test for the impact of fees on investment performance, including net-of-fees excess returns, ($IRR_{net} - ret_{mkt}$), and the gross-net spread, ($IRR_{gross} - IRR_{net}$). In the first estimation, fees have no significant impact on net-of-fees excess returns. Thus, managers of high-fee funds do not earn back their fees by providing higher returns to investors. This is at odds with findings for VC and buyout funds, where managers do appear to earn their fees (Robinson and Sensoy, 2013). In the second estimation, the difference between gross-of-fees and net-of-fees returns in the cross-section appears significantly influenced by selling commissions, other front-end loads, and operational fees. Each of these fees represents a performance-insensitive component of the compensation contract. Furthermore, carried interest has no significant impact on the gross-net spread. These results are largely consistent with our return erosion calculations (displayed in Table 6), albeit from a cross-sectional perspective. Any excess investment performance that may have been generated from firm-specific decisions appear subsumed entirely by fees.

Liquidity events

Table 8 displays UL-REIT sample means for net-of-fees and gross-of-fees returns by liquidity event, along with average returns from the L-REIT market index over the corresponding horizons. Overall, Active funds generate higher estimated returns than Exited funds. The highest UL-REIT returns are estimated for funds with open offerings at YE2017, which are the youngest funds in the sample and do not have fully-realized investment outcomes. This result supports the notion that our methodology is likely upwardly biased when approximating terminal values and return estimates for Active funds.

TABLE 8 HERE

In Table 8, returns for Exited UL-REITs are broken out by category of liquidation event. Possible outcomes including an exchange listing, merger, asset sales in the private market, or bankruptcy. An exchange listing is typically coupled with an IPO, where additional shares of common stock are raised from the public equity market. Reverse stock splits in advance of the

exchange listing are common among UL-REITs, although extremely rare among other listed firms. Specifically, 15 out of 25 exchange listing exits by UL-REITs were preceded by a reverse stock split, which nominally veils the loss in shareholder value relative to the original posted share price.[29] Exchange listings provide an objective market-based valuation of the UL-REIT's equity value on the liquidation date. As reported in Table 8, the average investment performance is rather poor for funds that exit via exchange listing, even on a relative basis within the UL-REIT sample. This result is at odds with VC and buyout funds, where an IPO typically indicates a successful exit (Hochberg, Ljungqvist, and Lu, 2007; Kaplan and Strömberg, 2009; Phalippou and Gottschalg, 2009).

Merger is the most frequent path to exit, with 26 of 63 Exited UL-REITs being acquired by another fund. Mergers can involve cash payment for shares outstanding, special dividends, conversion to common or preferred shares at the acquiring fund, or some combination of the above. 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 the liquidity event options, mergers generate the highest average returns for Exited funds. Affiliate mergers are suspect, however, given that incentives exist for the affiliate acquirer to overpay. Sponsors who are able to demonstrate favorable investment performance from past funds are likely to highlight these outcomes when marketing their next UL-REIT offering. The merger category for liquidity events thus likely inflates calculated returns relative to objective market-based valuations.

Private market asset sales and bankruptcy occur less frequently and are generally undesirable outcomes, since doing so involves breaking up the firm and terminating it as a "going concern." The return calculations displayed in Table 8 validate this assessment, with asset sales underperforming the L-REIT market index in every case on both net-of-fees and gross-of-fees

[29] The 15 reverse stock splits are as follows: Apple Hospitality REIT: 2-for-1, Apple REIT Eight: 2-for-1, Apple REIT Seven: 2-for-1, Bluerock Residential Growth REIT: 2.264881-for-1, CatchMark Timber Trust: 10-for-1, Chambers Street Properties: 4-for-1, Columbia Property Trust: 4-for-1, DCT Industrial Trust: 4-for-1, Healthcare Trust of America: 2-for-1, New York REIT: 10-for-1, Piedmont Office Realty Trust: 3-for-1, Plymouth Industrial REIT: 4-for-1, Retail Properties of America: 10-for-1, TIER REIT: 6-for-1, and Whitestone REIT: 3-for-1. All distributions per share and initial offering prices are corrected for reverse stock splits by Exited UL-REITs that exchange listed.

basis. Negative returns are observed in this case, even when same-period returns on the L-REIT market index are highly positive. Thus, poor investment performance following asset sales appear specific to the UL-REIT and hence idiosyncratic, rather than due to poor industry market conditions.

Persistence?

Persistence refers to the ability of Sponsors with top-performing funds to form subsequent funds that are also top-performers. Kaplan and Schoar (2005) outline three possible explanations for persistence in private equity performance: access to proprietary deal flow, gains from advisory inputs, or better deal terms on acquisitions. Since UL-REITs compete with L-REITs to acquire substitutable commercial real estate, it is not clear that any of the three reasons above should create advantages to the sector.

Survivorship bias may affect an analysis of persistence, which relies on observing subsequent performance. If Sponsors of funds that perform poorly on their first offering are unlikely to produce subsequent offerings, then only the most successful funds will be included in the analysis. Of interest in our sample, average excess returns for one-time funds are not significantly lower than initial funds by Sponsors who offer subsequent funds. Another version of survivorship bias may occur if Sponsors are more likely to produce subsequent offerings when excess returns from the initial fund are positive outliers. We find that average excess returns from first-generation UL-REIT funds are not significantly different from higher-sequence funds in the overall sample.

In Panel A of Table 9, we evaluate transition probabilities based on excess return terciles, failing to show persistence in either direction. Lower [upper] tercile have a similar likelihood of remaining in the same tercile as they do of transitioning to the upper [lower] tercile in the subsequent offering. In Panel B of Table 9, we regress current performance on past performance and find no evidence of a significant relation. All together, we find no evidence of performance persistence in subsequent fund offerings.

TABLE 9 HERE

Scale & performance

In our final section of analysis, we evaluate the relation between scale and performance. Performance may be affected by fundraising success when there are either economies or diseconomies to private equity. For VC funds, there is evidence of a concave relation between performance and size at the fund level, but not for buyout funds (Kaplan and Schoar, 2005). In our sample, there may be economies of scale to investing in commercial real estate (Andonov, Kok, and Eichhotlz, 2013). Performance may also be enhanced by experience, and outperformance may contribute to future fundraising. For VC and buyout funds, performance is positively related to fund sequence and current performance predicts future fund flows (Kaplan and Schoar, 2005; Sensoy, Wang, Weisbach, 2014).

In Table 10, we provide two sets of estimations to test the relation between scale and performance in our sample. In Panel A of Table 10, we estimate excess returns as a function of fund sequence and scale. We find larger funds have greater excess returns on a gross-of-fees and net-of-fees basis, consistent with economies of scale to commercial real estate investments. This finding underscores the importance of successful fundraising. Overall, however, we are able to explain very little regarding excess returns in both gross-of-fees and net-of-fees basis. UL-REIT performance differences appear to be largely idiosyncratic or random. In Panel B of Table 10, we find no evidence that current performance predicts future fund flows in our sample. Sponsor-specific fundraising platforms and corresponding selling commissions are the most important determinants of fund flows, not "return-chasing" or rational investor learning along the lines of Berk and Green (2004).

V. Conclusion

Economic rationale for the existence of private equity funds occurs when value is created that is not possible in public markets. Kaplan and Strömberg (2009) classify three areas for value

enhancement in private equity: (i) operational engineering, (ii) financial engineering, and (iii) governance engineering. Regarding operational engineering, we find no evidence in our sample of systematic gains due to enhanced operating performance. Gross-of-fees returns to UL-REITs are actually less than returns to the L-REIT market index by about 1% per year. Relative to the L-REIT investment alternative, the finite-life structure of the UL-REIT appears to add inefficiency to the process of raising capital, pursuing acquisitions, and attempting to deploy under time constraints. Any random or firm-specific outperformance is subsumed by fees in the vast majority of funds in our sample, without making any adjustments for illiquidity and other added risks.

Financial engineering is useful if performance incentives are increased beyond those at public firms. We find that fee structures differ markedly from other forms of private equity such as VC and buyout funds, where an estimated one-third of fees are paid in incentive fees (Phalippou and Gottschalg, 2009). In our sample, compensation is heavily skewed to front-end loads and other performance-insensitive components. The typical amount of GP ownership is trivial, amounting to just 0.2% by the end of the offering. Apart from GP ownership, incentive fees are unpaid in over two-thirds of our sample because the carry hurdle was unmet. For UL-REIT funds that do pay carried interest, it represents a very small percentage of total compensation.

Governance engineering may add value when there is increased flexibility or more effective ownership structures at invested companies. For instance, it is argued that some buyout funds are able to create value through restructuring and managerial changes that would not be possible without full control of a company (Kaplan and Strömberg, 2009). In the UL-REIT sector, investment occurs directly into commercial real estate (as opposed to companies), and any constraints to asset repositioning are nearly identical to those encountered by L-REIT counterparts. At the fund level, many governance provisions are actually weaker than those at L-REITs. Examples include external management and extensive anti-takeover provisions not commonly found at public firms (Wiley, 2014). The “blind pool” nature of the UL-REIT only deepens agency conflicts between the Advisor and investors. Overall, we find no evidence of value enhancement that results from operational, financial, or governance engineering.

The importance of private equity arises from opportunities to provide liquidity to firms who have high demand for cash. Capital is reallocated from those with long-term investment horizons (e.g., pension funds, endowments) to venture capital funds that invest into early-stage entrepreneurial firms, or to underperforming firms in need of restructuring via buyout funds. Ironically, these conditions are largely reversed in the UL-REIT sector. Liquidity is provided by retail investors, many of whom are retirees on a fixed income, and therefore may be quite sensitive to negative liquidity shocks. Investment is into commercial real estate, which is capital-intensive and long duration. For investors with relatively short investment horizons seeking ownership in long duration assets, public equity markets have proven superior in their ability to provide liquidity and resolve inefficiencies that otherwise manifest under the finite-life structure. The central inadequacy of the UL-REIT sector arises when these shortcomings are combined with excessive fees that do not appear fully earned by management.

Why then does this sector exist? We believe the UL-REIT sector survives as a consequence of vulnerabilities among retail investors who reach out to investment advisors for guidance. These financial advisors are paid extraordinarily high commissions (7% of gross equity) for persuading their clients that the UL-REIT financial product is the right decision. The opaque nature of compensation contracts allows managers to charge high fees that are unrelated to performance. As evidence consistent with their vulnerability, retail investors increase their subscription when selling commissions are higher and do not exhibit rational learning behavior at funds that consistently underperform.

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Table 1. Offering characteristics

Panel A. Non-fee characteristics

Closed offerings [102 funds]	min	25th	median	mean	75th	max
total fund flows ($Millions)	$2.3	$202.7	$805.3	$1,083.1	$1,641.5	$6,581.3
total assets ($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 duration (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 & Closed offerings [113 funds]		n	mode	mean	std dev	min	max
Front-end load	*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	NAV	111	0.8%	0.8%	0.4%	0.2%	3.0%
servicing fee	NAV	10	1.0%	1.0%	0.3%	0.5%	1.5%
Liquidation fees							
disposition fee	NAV	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%
carry hurdle		103	7.0%	7.0%	1.3%	0.0%	10.0%

Notes: Table 1 displays summary statistics for offering characteristics in our sample. Panel A displays ex post offering outcomes for 102 Closed offerings. Total fund flows is the common equity balance taken from the balance sheet in the year the offering ends. Leverage is total liabilities divided by total assets, both in book values at offering end. Offering duration counts 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 is based on 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 total common equity shares outstanding at the offering end.

Panel B displays fees from the S-11 filings for 113 Open and Closed offerings. *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 (wholly-owned subsidiary of the Sponsor) for marketing and administrative expenses associated with the offering. Offering expenses are reimbursed to the captive 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 fees are paid to the Advisor annually, or more frequently, and based on the estimated net asset value (NAV) of assets under management during the period. Carried interest measures the percentage share the Advisor receives when a liquidity event is achieved, and in the event the carry hurdle is surpassed. Carry hurdle is the cumulative, pre-tax, non-compounded return that shareholders must receive before carried interest is activated.

Table 2. Fund flows ($Millions)

Panel A. By vintage

	Closed offerings		Open offerings		
vintage	n	mean	n	mean	total
1994	2	$397.9			$795.8
1995	0	---			$0
1996	1	$298.1			$298.1
1997	2	$1,696.5			$3,392.9
1998	2	$3,512.8			$7,025.6
1999	2	$1,094.0			$2,188.0
2000	1	$43.2			$43.2
2001	2	$651.7			$1,303.4
2002	2	$907.1			$1,814.2
2003	5	$2,369.8			$11,849.0
2004	4	$1,189.4			$4,757.5
2005	5	$1,829.7			$9,148.4
2006	7	$756.4	1	$447.3	$5,741.9
2007	2	$1,847.1			$3,694.2
2008	8	$1,154.5			$9,236.4
2009	11	$888.0			$9,768.5
2010	11	$847.0			$9,316.5
2011	11	$746.4	1	$373.9	$8,584.7
2012	6	$1,415.3	1	$1,226.2	$9,718.0
2013	7	$1,157.4	1	$61.5	$8,163.0
2014	8	$579.5	5	$514.1	$7,207.0
2015	3	$369.5	2	$112.0	$1,332.6
total	102	$1,083.1	11	$445.8	$115,379.0

Panel B. By selling commission

selling commission	n	mean
≤6%	11	$623.8
>6% to 6.5%	10	$979.3
>6.5% to 7%	64	$1,054.5
>7%	17	$1,549.0

Notes: Table 2 displays fund flows, in $Millions. Fund flows is total common equity from the balance sheet in the year the offering closes, or taken at YE2017 for Open offerings. Panel A displays mean fund flows by offering vintage year. Panel B displays subsample means categorically by selling commission, considering Closed offerings only since fund flows is not fully realized until the offering ends.

Table 3. Determinants of fund flows

dependent variable:	fund flows	
	coef.	(*t*-stat)
selling commission	68.6***	(2.7)
other front-end fees	1.0	(0.1)
operational fees	-45.7	(-0.9)
carried interest	-0.3	(-0.1)
initial dividend yield	-8.4	(-0.7)
fund sequence	0.4	(1.3)
offering duration	0.4	(1.0)
intercept	8.0***	(4.4)
year FEs	included [20 yrs]	
property type FEs	included [6 types]	
adj-R^2	20.3%	
obs	102	

Notes: Table 3 presents results from the least squares estimation for fund flows, logged. Observations are for Closed offerings only, with values for fund flows taken at the end of the offering. All variables are defined in the notes to Table 1. Fund sequence and offering duration are logged. The columns display the variable name, the estimated coefficient (coef.), and the corresponding *t*-statistic (*t*-stat). The estimation includes 20 calendar year fixed effects (FEs) based on offering vintage, and 6 property type FEs based on observed investments at the end of the offering. *** denotes statistically significant coefficient at the 1% level.

Table 4. Market-to-book ratios

	Active UL-REITs			matched sample						
		age	leverage	n	age	leverage	matched MB ratio			
property type	obs	mean	mean	mean	mean	mean	mean	std dev	min	max
apartments	6	5.5	65%	4.8	4.9	58%	1.17	0.05	1.10	1.22
industrial	2	6.6	52%	4.0	5.1	52%	1.53	0.00	1.52	1.53
office	5	7.5	55%	2.4	7.6	54%	1.18	0.02	1.16	1.21
retail	8	6.3	50%	6.5	5.2	58%	1.19	0.07	1.08	1.27
healthcare	6	5.8	51%	6.5	4.5	52%	1.13	0.07	1.09	1.25
hotels	6	4.2	59%	6.3	4.5	57%	1.11	0.07	1.05	1.21
diversified	17	5.2	52%	24.9	4.5	58%	1.30	0.14	1.11	1.68
total	50	5.6	54%	12.0	4.7	57%	1.22	0.13	1.05	1.68
Exited†	20	7.2	47%			actual MB ratio:	1.14	0.12	0.95	1.47

Notes: Table 4 displays summary statistics for 50 Active UL-REITs and the matched samples used to generate the market-to-book (MB) ratio of total assets. For each observation (obs) of an Active UL-REIT, the matched MB ratio is collected as the median value from the corresponding matched sample of L-REITs that hold assets primarily of the same property type, and have firm age within three years of the subject UL-REIT. The top section summarizes the sub-sample means for firm age and leverage, along with the matched MB ratios that are collected for 50 Active UL-REITs as of YE2017 and applied to approximate the liquid share value. The bottom row displays the distribution of actual MB ratios for 20 Exited UL-REITs on the date they became exchange-listed. Exited† includes only UL-REITs that exited via exchange listing.

Table 5. Performance measures

performance measure	mean	median	std dev	min	max
IRR_{net}	3.1%	5.0%	10.1%	-87.7%	15.5%
IRR_{gross}	8.5%	9.8%	10.0%	-74.9%	28.2%
ret_{mkt}	9.5%	8.6%	4.2%	1.6%	29.9%
$(IRR_{net} - ret_{mkt})$	-6.5%	-5.8%	10.4%	-97.9%	7.9%
$(IRR_{gross} - ret_{mkt})$	-1.0%	-0.3%	10.4%	-85.1%	19.8%
$(IRR_{gross} - IRR_{net})$	5.5%	4.6%	2.8%	2.1%	17.7%

Notes: Table 5 displays summary statistics for our return calculations, including net-of-fees IRRs (IRR_{net}), gross-of-fees IRRs (IRR_{gross}), and returns from the L-REIT market index (ret_{mkt}) over the corresponding holding period. The table also displays excess returns on a net-of-fees basis ($IRR_{net} - ret_{mkt}$) and gross-of-fees basis ($IRR_{gross} - ret_{mkt}$), along with the gross-net spread ($IRR_{gross} - IRR_{net}$). Performance measures are calculated based on First investors and includes 113 funds, measured from the moment the offering begins (i.e., declared effective by the SEC).

Table 6. Return erosion

ΔIRR_{net}:	mean	std dev
selling commission	1.7%	0.9%
other front-end fees	1.7%	0.8%
operational fees	1.8%	2.9%
disposition fee	0.5%	0.4%
carried interest	0.1%	0.3%

Notes: Table 6 displays summary statistics for return erosion, calculated by the increase in the gross-net spread if an individual fee component is set to zero, ceteris paribus. The increase is measured relative to the base case which includes all fees from the S-11 filing. Return erosion for each fee component is calculated based on returns to First investors for 113 funds and summarized above.

Table 7. Fees & return spreads

Panel A. Excess return terciles

tercile:	lower	middle	upper	(lower-upper)
	mean	mean	mean	(*t*-test)
($IRR_{net} - ret_{mkt}$)	-14.3%	-5.5%	0.4%	(-6.1)
($IRR_{gross} - ret_{mkt}$)	-9.1%	-0.2%	6.3%	(-6.8)
selling commission	6.8%	6.8%	6.7%	(0.5)
other front-end fees	7.3%	6.9%	5.8%	(2.6)
operational fees	0.9%	0.8%	1.0%	(-1.1)
carried interest	14.2%	12.0%	12.6%	(1.3)
initial dividend yield	6.4%	7.2%	7.1%	(-1.3)

Panel B. Cross-section estimations

dependent variable:	(IRR_{net}–ret_{mkt})		(IRR_{gross}–IRR_{net})	
	coef.	(*t*-stat)	coef.	(*t*-stat)
selling commission	-0.50	(-0.3)	0.68**	(2.6)
other front-end fees	-0.46	(-0.8)	0.31***	(3.1)
operational fees	-1.00	(-0.4)	1.61***	(3.3)
carried interest	-0.16	(-0.7)	0.01	(0.2)
initial dividend yield	-0.35	(-0.4)	-0.01	(-0.1)
intercept	0.09	(0.8)	0.02	(1.2)
year FEs	included [20 yrs]		included [20 yrs]	
property type FEs	included [6 types]		included [6 types]	
adj-R^2	-8.8%		56.3%	
obs	113		113	

Notes: Panel A displays excess return terciles, sorted by net-of-fees excess returns ($IRR_{net} - ret_{mkt}$) to First investors. Sorts based on gross-of-fees excess returns are highly consistent. The table displays mean values for excess returns, fees, and initial dividend yields. The far-right column displays the *t*-test for difference in means between lower and upper terciles.

Panel B presents results from the least squares estimation for net-of-fees excess returns ($IRR_{net} - ret_{mkt}$) in the first columns, and for the gross-net spread ($IRR_{gross} - IRR_{net}$) in the last columns. All variables are defined in the notes to Table 1. The panel displays 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, and 6 property type FEs based on investments observed at the end of the offering. *** and ** denote statistically significant coefficients at the 1% and 5% levels, respectively.

Table 8. Liquidity events

		IRR_{net}	IRR_{gross}	ret_{mkt}	$(IRR_{net}–ret_{mkt})$	$(IRR_{gross}–ret_{mkt})$	$(IRR_{gross}–IRR_{net})$
	n	mean	mean	mean	mean	mean	mean
Active	50	4.2%	10.2%	8.1%	-3.9%	2.2%	6.0%
open offering	11	7.2%	15.0%	6.7%	0.5%	8.3%	7.8%
closed offering	39	3.3%	8.9%	8.4%	-5.1%	0.4%	5.6%
Exited	63	2.2%	7.2%	10.7%	-8.5%	-3.6%	5.0%
exchange listing	25	2.1%	6.9%	10.0%	-7.9%	-3.1%	4.8%
merger	26	7.2%	12.2%	12.0%	-4.7%	0.2%	4.9%
asset sales	11	-1.5%	3.3%	9.4%	-11.0%	-6.2%	4.8%
bankruptcy	1	-87.7%	-74.9%	10.2%	-97.9%	-85.1%	12.8%

Notes: Table 8 displays summary statistics for our return calculations based on fund status at YE2017. 50 funds are Active, including 11 with open offerings at YE2017 and 39 with closed offerings. 63 funds have Exited by YE2017, including 25 exchange listings, 26 mergers, 11 liquidating via asset sales, and 1 bankruptcy. Performance measures are for First investors and include net-of-fees IRRs (IRR_{net}), gross-of-fees IRRs (IRR_{gross}), and returns from the L-REIT market index (ret_{mkt}) over the corresponding holding period. The table also displays excess returns on a net-of-fees basis ($IRR_{net} – ret_{mkt}$), gross-of-fees basis ($IRR_{gross} – ret_{mkt}$), and the gross-net spread ($IRR_{gross} – IRR_{net}$).

Table 9. Persistence tests

Panel A. Transition probabilities

		$(IRR_{net} - ret_{mkt})$		
prior tercile:		lower	middle	upper
subsequent tercile:	lower	36%	29%	33%
	middle	32%	43%	29%
	upper	32%	29%	38%

		$(IRR_{gross} - ret_{mkt})$		
prior tercile:		lower	middle	upper
subsequent tercile:	lower	42%	22%	37%
	middle	27%	44%	32%
	upper	31%	34%	32%

Panel B. Past performance

dependent variable:	$(IRR_{gross} - ret_{mkt})$		$(IRR_{net} - ret_{mkt})$	
	coef.	(*t*-stat)	coef.	(*t*-stat)
$(IRR_{gross} - ret_{mkt})_{t-1}$	-0.26	(-1.5)		
$(IRR_{net} - ret_{mkt})_{t-1}$			-0.19	(-1.1)
intercept	0.10**	(2.6)	-0.04	(-1.3)
year FEs	included [20 yrs]		included [20 yrs]	
property type FEs	included [6 types]		included [6 types]	
adj-R^2	9.0%		-11.9%	
obs	77		77	

Notes: Panel A of Table 9 displays conditional Markov probabilities that the subsequent fund offered by the same Sponsor will have excess returns in the lower, middle, or upper terciles (rows), given that the prior fund excess returns were in the lower, middle, or upper tercile (columns). The top section displays observed probabilities based on net-of-fees excess returns ($IRR_{net} - ret_{mkt}$); the bottom section based on gross-of-fees excess returns ($IRR_{gross} - ret_{mkt}$).

Panel B presents results from the least squares estimation for gross-of-fees excess returns ($IRR_{gross} - ret_{mkt}$) in the first columns, and for the net-of-fees excess returns ($IRR_{net} - ret_{mkt}$) in the last columns. The estimation includes the excess return from the immediate preceding fund of the same Sponsor (t-1), along with 20 calendar year fixed effects (FEs) based on the offering vintage, and 6 property type FEs based on investments observed at the end of the offering. 77 funds in our sample were preceded by a fund from the same Sponsor. ** denotes statistically significant coefficient at the 5% level.

Table 10. Scale & performance

Panel A. Economies of scale

dependent variable:	$(IRR_{gross} - ret_{mkt})$		$(IRR_{net} - ret_{mkt})$	
	coef.	(*t*-stat)	coef.	(*t*-stat)
fund sequence	-0.01	(-0.5)	-0.01	(-0.4)
total assets	0.03***	(3.6)	0.03***	(3.7)
intercept	-0.23**	(-2.3)	-0.35***	(-3.4)
year FEs	included [20 yrs]		included [20 yrs]	
property type FEs	included [6 types]		included [6 types]	
adj-R^2	10.3%		8.0%	
obs	113		113	

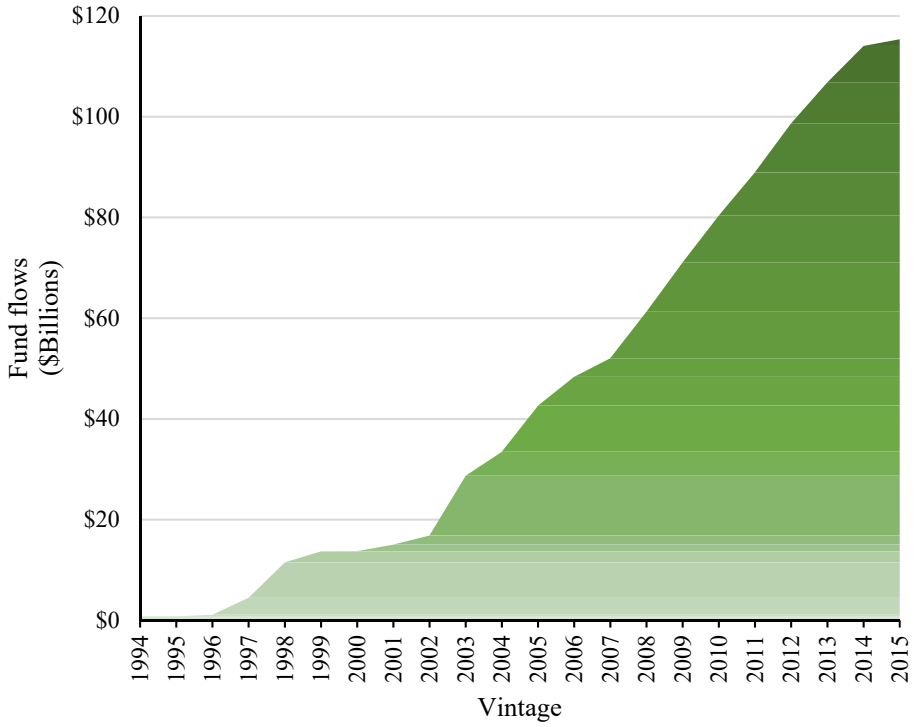
Panel B. Fund flows

dependent variable:	fund flows		fund flows	
	coef.	(*t*-stat)	coef.	(*t*-stat)
$(IRR_{gross} - ret_{mkt})_{t-1}$	-0.35	(-0.1)		
$(IRR_{net} - ret_{mkt})_{t-1}$			0.58	(0.2)
intercept	11.75***	(17.2)	11.67***	(18.7)
year FEs	included [20 yrs]		included [20 yrs]	
property type FEs	included [6 types]		included [6 types]	
adj-R^2	5.8%		5.8%	
obs	77		77	

Notes: Panel A presents results from the least squares estimation for gross-of-fees excess returns ($IRR_{gross} - ret_{mkt}$) in the first columns, and for net-of-fees excess returns ($IRR_{net} - ret_{mkt}$) in the last columns. The estimation includes total assets (in book values at offering end), logged, and fund sequence.

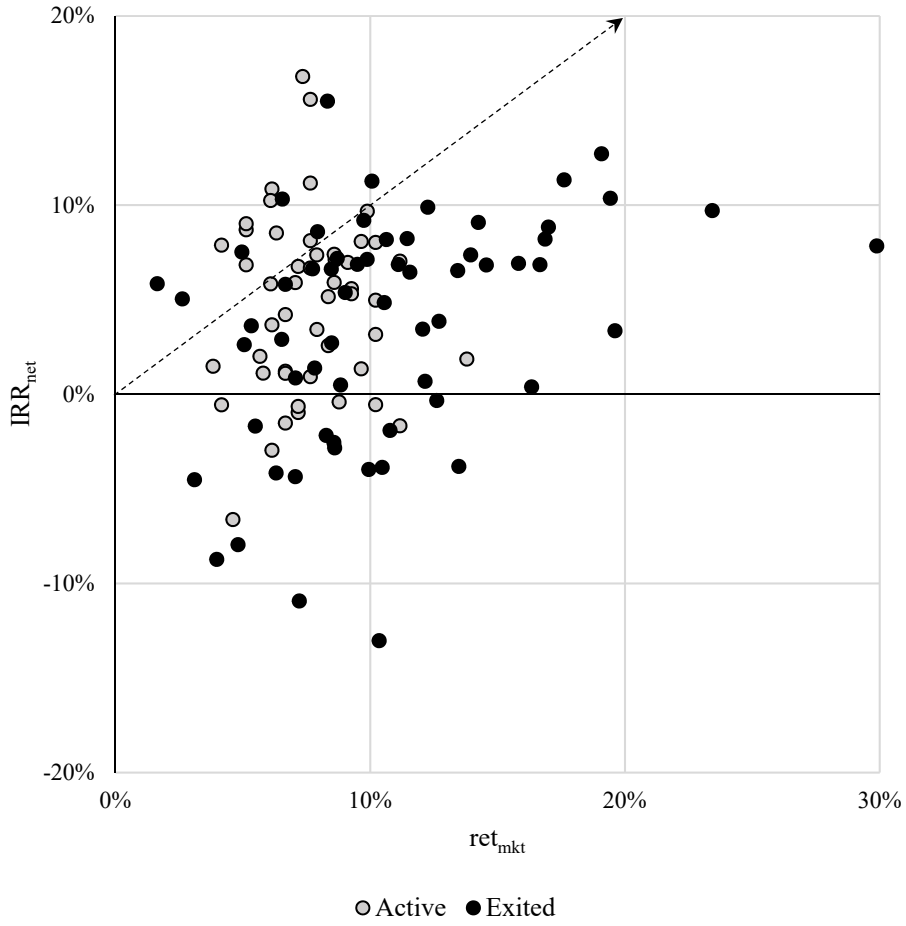
Panel B presents results from the least squares estimation for fund flows, logged. The estimations include excess returns from the immediate preceding fund of the same Sponsor (t-1). 77 of 113 funds in our sample were preceded by a fund from the same Sponsor. All estimations include 20 calendar year fixed effects (FEs) based on the offering vintage, and 6 property type FEs based on investments observed at the end of the offering. *** and ** denote statistically significant coefficients at the 1% and 5% levels, respectively.

Figure 1. Fund flows ($Billions)



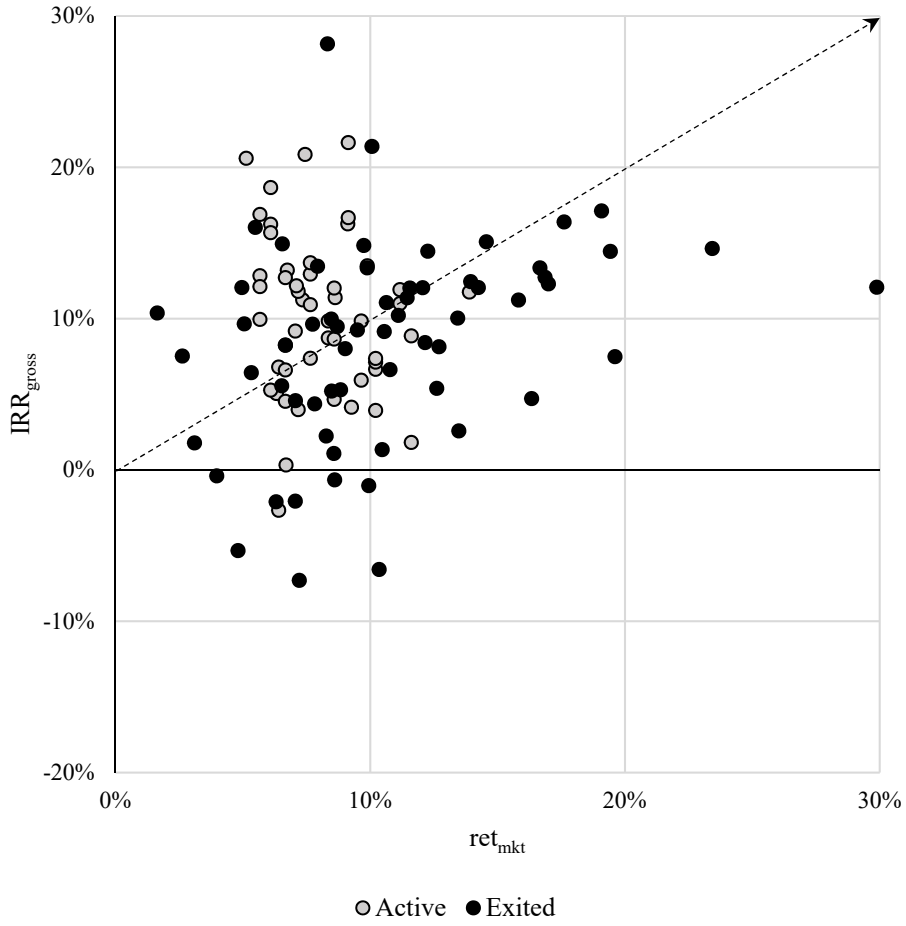
Notes: Figure 1 displays cumulative equity fund flows to the UL-REIT sector in $Billions, based on fund vintage. Fund flows is total common equity from the balance sheet in the year the offering closes, or taken at YE2017 for Open offerings.

Figure 2. Net-of-fees IRR vs. L-REIT market index



Notes: Figure 2 plots calculated net-of-fees IRRs (IRR_{net}) for individual UL-REITs on the *y*-axis against the L-REIT market index (ret_{mkt}) on the *x*-axis. IRRs are measured for First investors, from the moment the offering opens to the moment of a liquidity event for Exited funds [depicted by black dots], or as of YE2017 for Active funds [grey dots]. The L-REIT market index is the NAREIT FTSE index, adjusted to the month the offering opens for the corresponding UL-REIT. The dashed line is the 45º diagonal, distinguishing UL-REITs that outperform vs. underperform the benchmark on a net-of-fees basis. 112 funds are displayed above (excluding one bankruptcy), of which 18 are above the line.

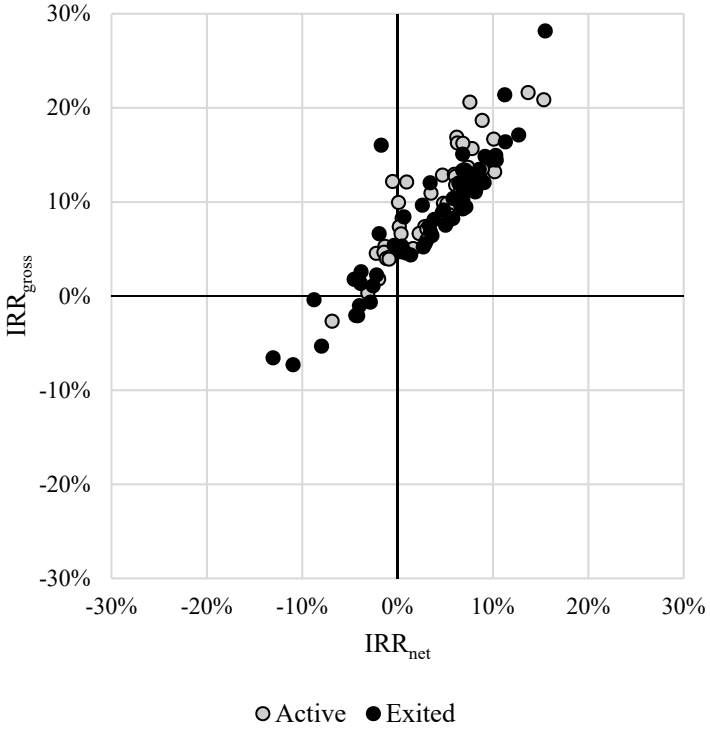
Figure 3. Gross-of-fees IRR vs. L-REIT market index



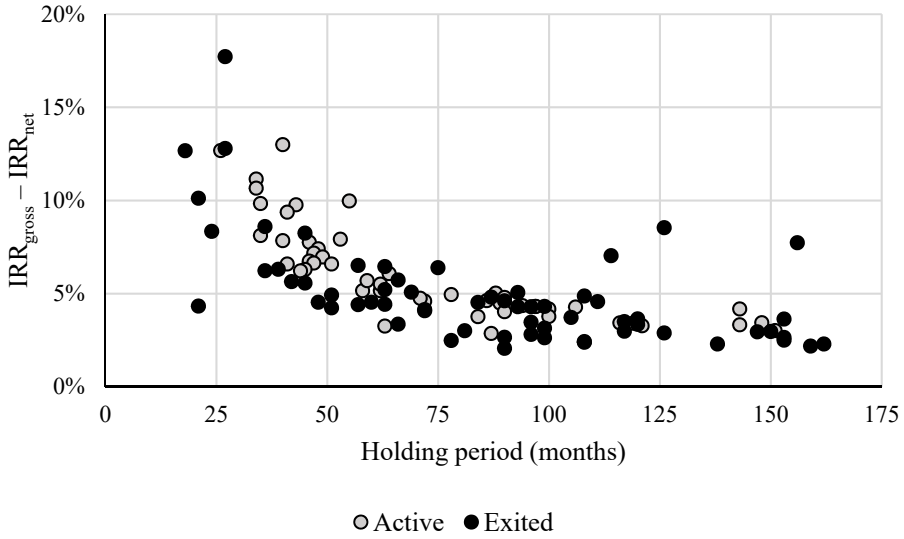
Notes: Figure 3 plots calculated gross-of-fees IRRs (IRR_{gross}) for individual UL-REITs on the *y*-axis against the L-REIT market index (ret_{mkt}) on the *x*-axis. IRRs are measured for First investors, from the moment the offering opens to the moment of a liquidity event for Exited funds [depicted by black dots], or as of YE2017 for Active funds [grey dots]. The L-REIT market index is the NAREIT FTSE index, adjusted to the month the offering opens for the corresponding UL-REIT. The dashed line is the 45º diagonal, distinguishing UL-REITs that outperform vs. underperform the benchmark on a gross-of-fees basis. 112 funds are displayed above (excluding one bankruptcy), of which 51 are above the line.

Figure 4. Gross-of-fees IRR vs. net-of-fees IRR

Panel A. Gross-of-fees IRR vs. net-of-fees IRR



Panel B. By holding period



Notes: Panel A of Figure 4 plots gross-of-fees IRRs (IRR_{gross}) on the *y*-axis against net-of-fees IRRs (IRR_{net}) on the *x*-axis. Panel B plots the gross-net spread ($IRR_{gross} - IRR_{net}$) on the *y*-axis against the holding period over the *x*-axis. IRRs and holding periods (in months) are measured for First investors, from the moment the offering opens to the moment of a liquidity event for Exited funds [depicted by black dots], or as of YE2017 for Active funds [grey dots].

Appendix. Sample of Unlisted (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
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.

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.
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