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Demystifying Illiquid Assets: Expected Returns for Private Real Estate

Executive Summary

The growing interest in illiquid assets including real estate means that allocators must carefully consider their risk and return. The challenge is that modeling private real estate is not straightforward due to a lack of good quality data and artificially smooth returns. We try to demystify the subject considering theoretical arguments, historical average returns, and forward-looking yield-based analysis. In the process, we explain why naïve comparisons to public counterparts can be misleading. For institutional investors trying to calibrate their asset allocation decisions for private real estate, we lay out a framework for expected returns, albeit a noisy one, that is based on a discounted cashflow framework similar to what we use for public stocks and bonds.

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Introduction

As investors increasingly embrace illiquid private asset classes, they find themselves posing the following questions: How much should they allocate? What are good yardsticks for assessing performance? Are the higher fees of illiquid assets justified by higher expected returns over public markets? How can one assess their risk and diversification potential?

The comparison to public assets is not straightforward. Illiquid assets are inherently harder to model, and this is exacerbated by a lack of good quality and transparent data. We try to demystify the subject, focusing on the medium-term expected return (ER) of private real estate (RE), while a companion piece focuses on private equity.[1] We view the topic from multiple lenses: theoretical required returns, historical performance, and finally our favored approach of extending our discounted-cashflow-based (DCF) methodology for equity and fixed income to the realm of RE.

While we focus on expected returns, our analysis also touches on the hidden risks and factor exposures of RE, and accordingly, suggests better comparisons to public counterparts like real estate investment trusts (REITs). The reported volatility and equity beta of private assets tend to be understated unless one desmooths their returns, which may not be a clear-cut exercise. This makes their diversification potential or naïvely measured alpha overstated. Even if one expected RE to provide zero excess return over REITs, the assumption that RE was less risky, and significantly less correlated to public equity, would call for an increased allocation to RE.

We estimate medium-term expected returns for U.S. private commercial real estate, as represented by the NCREIF indices.[2] We caveat that returns for individual RE funds can vary vastly from the industry average, due to a wide dispersion of returns by geographic region, sector, and manager.

1 See Ilmanen et al. (2019).
2 NCREIF offers two quarterly indices. The first is the NCREIF Property Index (NPI) which is appraisal-based. The second is the NCREIF Transaction Based Index (NTBI) which is transaction-based and includes only NPI properties sold during the quarter.

Frameworks for Expected Returns

As in the companion piece on private equity, we approach the topic through three complementary perspectives described in Ilmanen (2011): theoretical required returns, historical evidence on past average returns, and yield-based analysis that considers current valuations and market conditions.

As is the norm with other asset classes, we present real (inflation-adjusted) compound rates of return for the asset class as a whole for a horizon of 5 to 10 years. Over such intermediate horizons, initial market yields and valuations tend to be the most important inputs. For multi-decade forecast horizons, the impact of starting yields is diluted, so theory and long-term historical average returns (or yields) may matter more in forecasting expected returns. Our estimates are intended to assist investors with their strategic allocation and planning decisions, and, in particular, with setting appropriate medium-term expectations. They are highly uncertain and are not intended for market timing. The framework may be more useful and informative than the numbers themselves.

Theory

Real estate returns have two components. The first is a steady income component from rental leases, akin to the periodically reset coupon on an inflation-linked bond (though, as we mention in the Appendix, real estate is an imperfect inflation hedge). The second is a considerably more volatile price appreciation component, which, like equities, is driven by changes in growth expectations. Shepard et al. (2015) indicate that, as an asset class, real estate is pro-cyclical and growth-sensitive. Thus, real estate can be viewed as a levered combination of equities, fixed income, real estate specific factor(s), and a possible illiquidity premium.

What factor tilts can we expect RE to have over publicly traded real estate investment trusts (REITs)? First, in principle, RE should command an illiquidity premium over REITs. But as we show later, several empirical studies have found none.[3] Second, REITs should be more equity-like and have more equity exposure than RE. Thus, perhaps the illiquidity premium of RE is offset by the equity beta premium of REITs? But we remind readers that the reported returns of RE are artificially smoothed, leading to an understatement of its true risk and equity beta when using naïve measures. Shepard et al. (2015) observe that once private real estate returns are desmoothed, their correlation to equities is 0.66, only slightly lower than the 0.82 correlation of REITs to equities. Further, on desmoothing RE returns, the correlation between REITs and RE, too, increases to 0.77. The daily correlation between RE and REITs may be misleadingly low as RE does not reflect mark-to-market fluctuations. But over the long run, RE and REITs are more highly correlated due to their common economic risk and growth sensitivity. Assuming that RE has no illiquidity premium to REITs and that RE fees offset any alpha, a theoretical public proxy approach suggests that the expected return for REITs might be a reasonable

3 See Pagliari et al. (2005) and Ang et al. (2013).

proxy for the net-of-fee expected return for RE, provided one adjusts for leverage, industry, and geographic composition.

Historical Performance

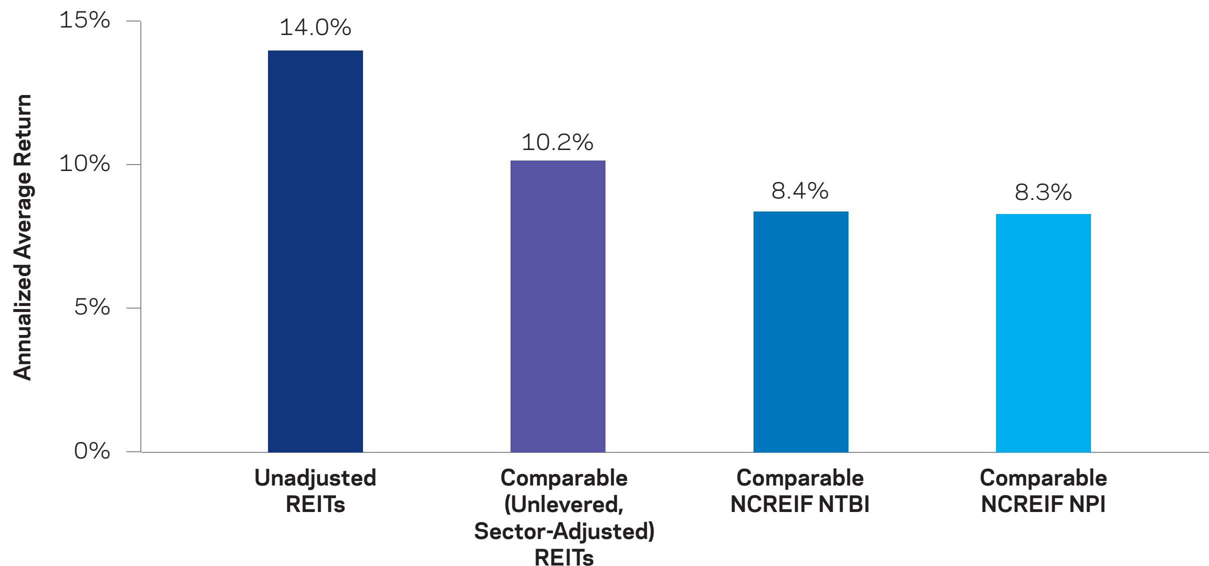
Oddly enough, in North America, REITs have outperformed RE by 1-3% since inception, suggesting an *inverse* illiquidity premium.[4]

As we stressed in our companion piece on private equity, the choice of benchmark is critical. The naïve comparison between RE and REITs needs to be adjusted for the different leverage and sector compositions of the indices. As NPI and NTBI returns are reported on an unlevered basis, they are lower in magnitude than REIT returns. **Exhibit 1** shows the historical performance of RE and REITs, before and after making them more comparable.[5] After adjusting for leverage and sector, the inverse premium almost disappears, but we still see no positive illiquidity premium. This is in line with the findings of Pagliari et al. (2005).

Exhibit 1

Private vs. Public Real Estate: Returns Comparison Before and After Adjustments for Leverage and Sector Composition

April 1, 1980 – December 31, 2012



Source: AQR, Ang et al. (2013). Available history starts in Q2 1984 for NTBI and Q2 1980 for other series. All series end in Q4 2012. The REITs series is the CRSP/Ziman Real Estate data series. Returns are annualized from the quarterly returns reported in Ang et al. (2013). Returns are gross of fees, cash, and t-costs. For illustrative purposes only and not representative of any portfolio or strategy that AQR currently manages. Please refer to footnote 5 for more detail.

4 Source: Bloomberg. Using arithmetic (geometric) means, the FTSE NAREIT All REITs index has outperformed RE indices, namely, the NCREIF NPI by 2.9% (1.6%) and the NTBI by 1.8% (1.0%) annually since their respective inception dates of 1978 and 1984.

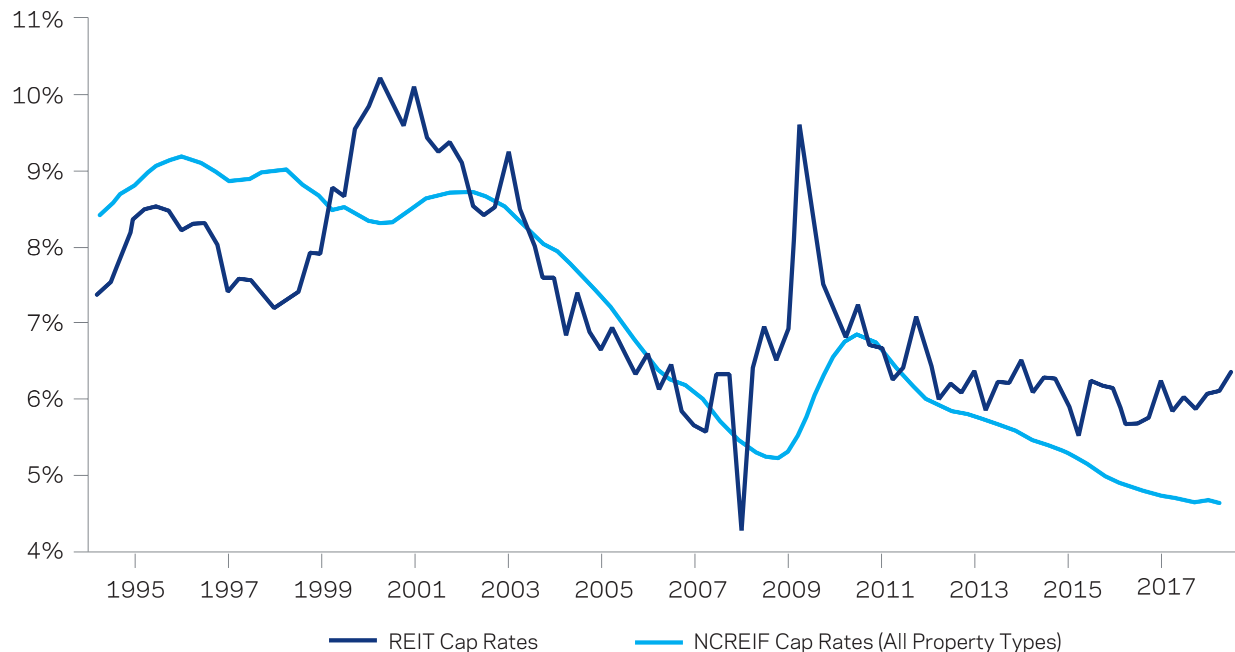
5 To construct a comparable REIT return series, Ang et al. (2013) unlever the monthly returns of REITs in the four core property types (apartment, retail, office, and industrial) that are common to NCREIF. They then adjust the REIT returns to have the same sector weights as the NPI and NTBI indices (second bar in Exhibit 1). To construct comparable NPI and comparable NTBI returns (last two bars in Exhibit 1), they exclude hotels from the NPI (hotels are excluded from the NTBI). As both the NPI and NTBI are unlevered by construction, no leverage adjustment is necessary.

Digging deeper into historical valuations, we see in **Exhibit 2** that real estate exhibits the trend of richening valuations and decreasing yields we see in equities and fixed income, with NCREIF yields currently at an all-time low.[6] Exhibit 2 plots the cap rates, or Net Operating Income (NOI) yields, for the NCREIF and NAREIT indices. Both indices exhibit similar patterns. During the boom-and-bust cycle of the 2000s, yields declined as prices appreciated steadily, and then rose sharply during the Global Financial Crisis as prices plummeted. Of note, NCREIF cap rates are highly smoothed and considerably lagged versus NAREIT cap rates, pointing to the stale pricing and artificial smoothing inherent in RE appraisals. Exhibit 2 shows that in recent years, RE cap rates have declined compared to REITs; that is, RE has richened relative to REITs. If valuations are an indicator of future returns, that suggests RE may deliver lower returns than comparable REITs in the future.

Exhibit 2

The Valuation Gap between Private and Public Real Estate

January 1, 1994 – June 30, 2018



Source: NCREIF, CoStar Portfolio Strategy. Data as of June 30, 2018. The implied cap rate for REITs is the implied *unlevered* cap rate of the FTSE NAREIT index. For illustrative purposes only and not representative of any portfolio or strategy that AQR currently manages.

6 NCREIF yields in Exhibit 2 as of June 30, 2018. Also, see AQR Alternative Thinking Q1 2018: Capital Market Assumptions for yield-based expected returns and historical yields for U.S. equities (S&P 500) and fixed income (10-year U.S. Treasuries).

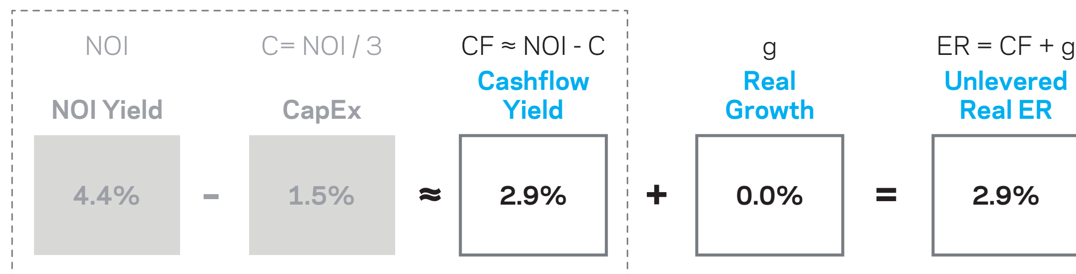
Yield-Based Approach

Real estate can be characterized by a relatively steady income component and more volatile price appreciation. Our yield-based approach for RE is similar to our DDM-based approach for equities, where we sum payout yield and expected long-term growth rates to derive ER. **Exhibit 3** depicts the building blocks of our approach for RE. We provide detail on our assumptions in the Appendix.

Exhibit 3

Real Expected Returns for Private Real Estate

As of September 30, 2018



Source: AQR, NCREIF Webinar Q3 2018. NOI Yield from NCREIF as of September 30, 2018. For illustrative purposes only and not representative of any portfolio or strategy that AQR currently manages.

- **Yields:** The payout or free cashflow on RE is the net operating income (NOI) generated by a property (for example, rental income) minus the capital expenditure required to maintain the property. As shown by Pagliari (2017), this capital expenditure has averaged around a third of the NOI. Thus, RE free cashflow yield can be approximated as two-thirds of NOI Yield (NOI / Market Cap). As of September 30, 2018, the NCREIF NOI yield was roughly 4.4%, leading to a free cashflow yield of 2.9%.

- **Growth Rates:** We expect that *on average*, the long-term growth rate in real estate cashflows should equal inflation; i.e., the real growth rate in earnings is zero.

- **Multiple Expansion:** As is our general norm with most asset class expected returns, we assume no reversion in multiples.

Putting this together gives us a gross real ER of roughly 3% for unlevered RE. We report unlevered ER to make it comparable to the unlevered returns reported by NCREIF, but caveat that the actual levered ER could vary vastly with the leverage employed in the RE fund. This is roughly on par with our gross real ER estimate of 2.7% for a U.S. 60/40 portfolio (4% for U.S. equities, 0.7% for U.S. 10-year Treasuries). We expect the (desmoothed) volatility of RE to be slightly higher (roughly 11% for unlevered RE) than the volatility of a 60/40 portfolio (roughly 9%), indicating a Sharpe ratio of around 0.3 for both.[7] In other words, risk-adjusted returns are in-line, too.

7 U.S. 60/40 portfolio ER estimates as of September 30, 2018. U.S. equities represented by the S&P 500, fixed income represented by U.S. 10-year Treasuries, and the risk-free rate represented by the expected return on 3-month U.S. T-bills. See AQR Alternative Thinking Q1 2018: Capital Market Assumptions for further details on methodology. As RE data is available only with a meaningful lag, it is debatable whether the most relevant comparison is to contemporaneous public market yields.

Conclusion

In this article, we present more comparable benchmarks or suitable adjustments for evaluating the past performance of RE, and a yield-based framework to estimate future returns. We humbly admit that return estimates for any asset class come with a great deal of uncertainty, and our framework is a work in progress that we may fine-tune in the future. We hope it is a first step toward a more intuitive and transparent comparison between public and private assets.

Appendix: Assumptions

Here, we expand on the assumptions for expected returns that were summarized in the main body:

- **Yields:** The rental income on a property can be measured by its Net Operating Income (NOI). But NOI overstates the net cashflows that investors receive, as it does not deduct the recurring capital expenditure required to simply maintain real estate. Pagliari (2017) finds that over the long-run, this recurring expense has averaged one-third of NOI, though it varies per RE sector. Thus, cashflow yield can be approximated as two-thirds of NOI Yield (NOI / Market Cap).

- **Growth Rates:** Pagliari (2017) finds a negative long-term real growth rate in earnings for RE.[8] RE has turned out to have an imperfect inflation pass-through rate (roughly 0.67); that is, earnings have not kept up with inflation. We can contrast this finding with some evidence that rental income may grow in tandem with GDP-per-capita and population growth, at a modest positive real rate.[9] We take the middle ground and expect that *on average*, the long-term growth rate in real estate cashflows should equal inflation; i.e., the real growth rate in earnings is zero.

- **Multiple Expansion:** We assume no reversion in multiples. The long-run evidence on home price appreciation (which excludes rental income) is disappointing. The Case-Shiller Home Price Index (which reflects residential real estate only) shows that U.S. home prices barely kept up with inflation over the long run since 1890, though readers may recollect only the more recent bubble during the 1990s and the bust during the financial crisis.[10]

Looking at broad historical evidence beyond commercial real estate, a recent study by Jordà et al. (2017) documents unusually high long-run returns for housing, driven both by a high rental yield and positive price appreciation. However, these appear to be overstated for several reasons.[11] Among the critics of this study, Dimson et al. (2018) find a long-run average real home price appreciation of 0.3% in the U.S. and 1.3% across 11 countries. Notably, when adjusting the series for quality improvements and home expansions, they find a negative real growth rate of -2.1%. Again, we remind readers that there can be a wide dispersion in price appreciation, based on geographic region, RE sector, and time period.

8 This is the per-property growth rate as calculated by NCREIF, not growth in the aggregate index. This is analogous to the per-share growth rate in earnings that accrues to existing shareholders, as opposed to growth in aggregate GDP.

9 Takáts (2010) estimates that both real GDP-per-capita growth and total population growth boost real house prices one for one; that is, a 1% increase in either series raises real house prices by 1%.

10 The Case-Shiller Home Price Index reflects a 0.4% real price appreciation over the period 1890 to 2017. As Ilmanen (2011) reports, this surprising finding is consistent with the fact that housing in a great location like Manhattan (Amsterdam) barely maintained its real value over 100 (400) years.

11 Jordà et al. (2017) report that U.S. housing achieved a long-run nominal total return of 11.1%, including 7.6% rental income and 3.5% price appreciation, over the period 1891 to 2015. This is roughly on-par with their nominal total return for equities of 11.1% over the same period. Their rental yield estimate may be overstated if it did not deduct expenses for regular capital expenditure.

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