A BLUEROCK 2021 INSIGHTS PUBLICATION

ADVANCED INSIGHTS SERIES

Diversification for a Yield-Starved World:

The limitations of fixed income in a potentially rising interest rate and inflationary environment, and a multi-faceted solution with institutional real estate.

In our inaugural 2021 issue, we discuss the challenges that arise from today's market reality. Specifically, we address the hurdles that investors face in the years ahead by using fixed income as diversifiers within portfolios.

ISSUE NO 1 | FALL 2021

SECTOR/TOPICS	READ TIME
Diversification, fixed income, interest rates, inflation, institutional real estate	9-14 minutes

Series Overview

Given our continuous collaboration with leading investment firms, asset managers, and advisory firms, complemented by the expertise of our research and investment team, Bluerock has a unique vantage point of the investing landscape and its evolving nature. Furthermore, our robust sourcing and diligence process not only provides access to strategies previously available only to institutions, but also helps shape truly unique investment and educational insights.

Bluerock is excited to introduce this Advanced Insights Series, where we will discuss timely and relevant topics that are top-of-mind to investors. We kick off the series with a frank discussion on the risks that fixed income investors face in an environment of possible higher inflation and interest rates, and potentially attractive alternatives in institutional real estate.

Synopsis

Investors today face **two significant risks** when investing in fixed income securities:

1. **a rising interest rate** environment, and
2. a potentially **higher inflationary environment.**

Although these risks are not new, **we believe that they are larger today** because current low rates and inflation expectations offer little room for interest rates to fall and therefore deliver **small gain potential**, but leave significant potential for interest rates to rise if inflation expectations increase which would deliver **large capital loss potential**.

We study these challenges historically for both fixed income and institutional private real estate. More specifically, we conducted two analyses to quantify the impact of each challenging scenario. The analyses identified every quarter where:

1. the US Federal Reserve raised the Fed Funds Rate (FFR) 25 basis points or more, to represent an increasing interest rate environment;
2. the change in Consumer Price Index (CPI) was greater than 100 basis points, to represent an inflationary environment;

We then measured the returns for institutional real estate for each of those quarters and averaged these returns, and did the same for comparable fixed income indexes. Figure 1 incorporates these average returns in two different 60/40 portfolios, alongside equities. **This historical analysis demonstrates that institutional real estate may be an effective portfolio diversifier and contribute significantly to a portfolio's return during challenging environments, such as those that investors face today.**

FIGURE 1 | **Inflation and Increasing Interest Rates in a Yield-Starved World**

Real estate outperforms in environments where fixed income struggles

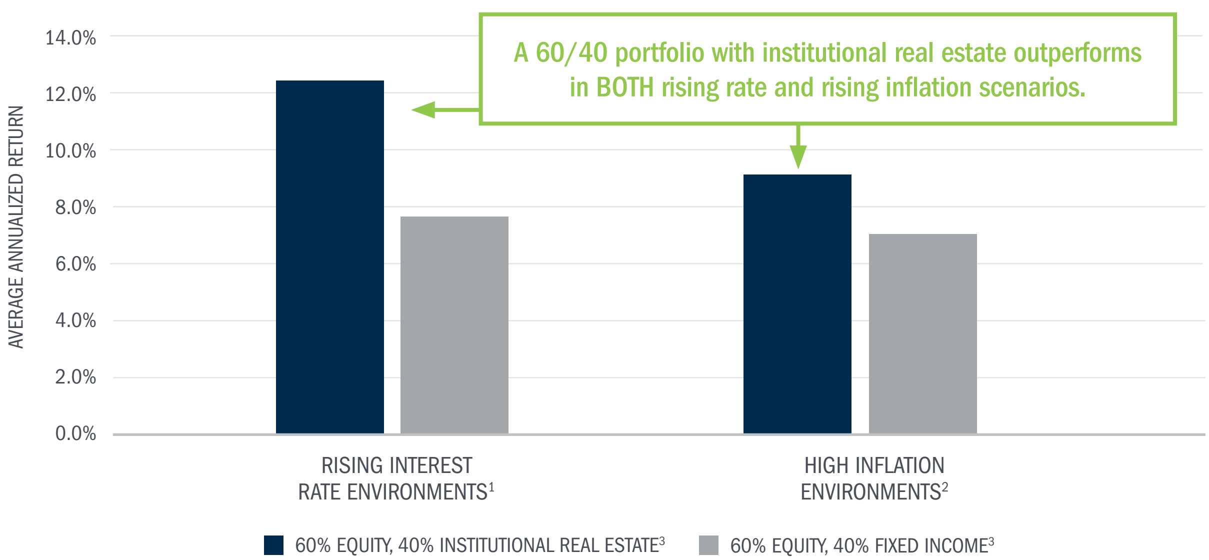


Figure 1 *- Average hypothetical returns of portfolios that use 40% fixed income, versus 40% institutional real estate. Note the higher returns for the portfolios that use real estate.*

[1] Since the NCREIF Property Index inception of January 1978.

[2] Since the Bloomberg Barclays Aggregate Bond TR Index inception of January 1980.

[3] Represents allocation to the following indexes: for equities, S&P 500 index. For fixed income in rising interest rate environments, allocation to 10-year US Treasuries; for high-inflation environments, allocation to Bloomberg Barclays Aggregate Bond TR Index; for institutional private real estate, the NCREIF Property Index. 'Average annualized returns' represents average quarterly return of a 60/40 portfolio rebalanced quarterly and subsequently annualized.

First Risk: Rising interest rates across all maturities

If interest rates increase from today's current lows, fixed income investors may face disproportionate risk of capital loss versus the upside return potential. However, private institutional real estate historically has outsized positive performance during increasing rate periods.

Fixed income securities have historically provided an effective diversifying tool to equity investments *(see our previous whitepaper on the topic)* in part by appreciating in price during decreases in interest rates.

Given the fixed nature of the income associated with this asset class however, if interest rates increase, fixed income investors may face significant loss of principal. Interest rates are low relative to history and the Federal Reserve has repeatedly indicated its intent to target higher inflation levels and higher rates over time.

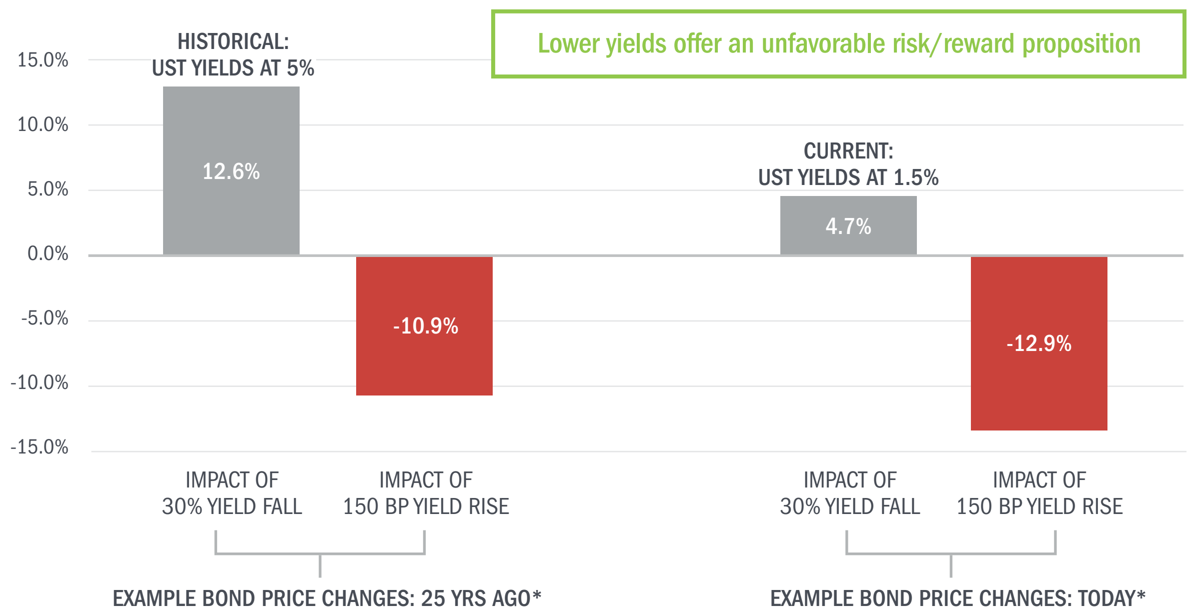
Investors today are thus faced with a challenging situation: accepting very low or no yields when investing in shorter-dated bills or notes, or purchasing longer-dated bonds and facing disproportionate risk of capital loss when interest rates increase.

Figure 2 shows this skewed risk/reward profile numerically and compares two scenarios: the first represents average historical returns when US 10-year Treasury yields were significantly higher than today at 5.0%, and the second captures today's lower yield as of September 2021.

Both periods show two possible scenarios for interest rates (rising or falling), and also show the calculated bond price gain or loss for each. Because interest rates today are so close to 0% and have little room for further declines, potential gains in bond prices are limited. However, given that rates still have room to potentially move substantially higher, potential losses in bond prices can be significant, as indicated in the example in Figure 2 below.

In summary, at current interest rates, bonds do not provide significant current income or upside, and the risks are heavily weighted towards the downside.

FIGURE 2 | **Historical vs. Current Yields: No good outcome in 2021**



Source: US Federal Reserve, Bluerock.

** US Treasury price appreciation (or drop) is calculated as the present value of the bond's future cash flows at the lower (or higher) market yield, assuming bi-annual coupon payments at the initial example yield and ten years to maturity.*

By contrast, private real estate has historically performed well in rising interest rate environments, as higher interest rates have occurred during periods of strong economic activity. Economic growth drives higher occupancy rates and generates net operating income growth, which ultimately drive future real estate value.

Figure 3 quantifies this historical tendency. Using quarterly returns from the NCREIF Property Index (NPI) since the index's inception in 1978 through May 2021, we looked at every quarter where the US Federal Reserve raised the Fed Funds Rate (FFR) 25 basis points or more, which is a widely used metric for a rising rate environment. We then observed the NPI return for each of those quarters and averaged these quarterly NPI returns. **This analysis concludes with an attractive 3.3% average quarterly figure—or 13.9% annualized—for institutional private real estate performance during rising interest rate environments.** We then conducted the same rising rate exercise but instead calculated the total return of 10-year US Treasury notes as a comparison to private real estate.

FIGURE 3 | **Interest Rates and Real Estate: Outperformance during rising interest rate environments**

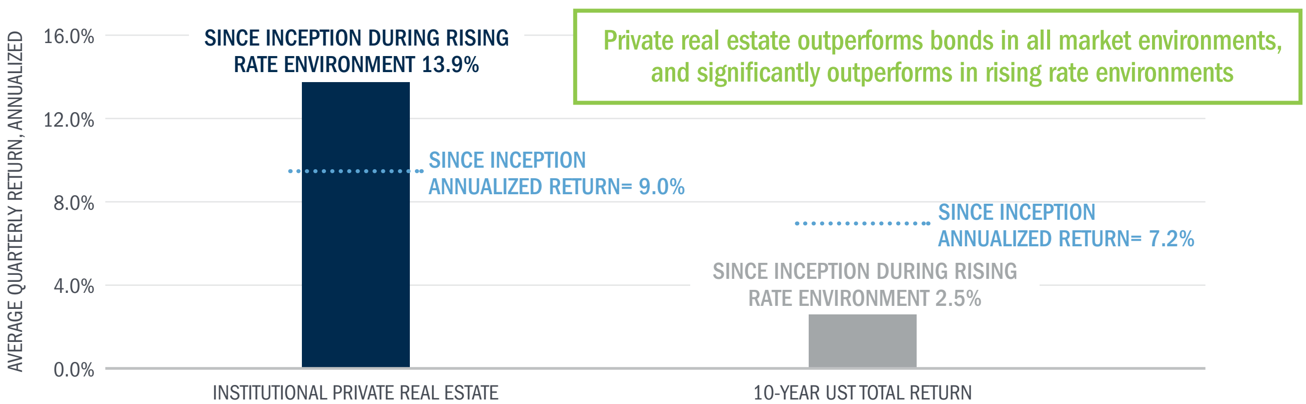


Figure 3 *- Institutional real estate generates higher returns during rising rate environments.*[4]

Second Risk: Rising inflation

Fixed income yield may be fully eroded by inflation; institutional private real estate has higher income and can provide inflation protection.

Currently, (September 2021) **real yields** on US Treasuries (nominal interest rates - inflation) are negative across all maturities, which means that an investor receives less capital value at a bond's maturity than they invested once the effects of inflation are taken into account.

FIGURE 4 | **US Treasury Nominal and Real Yield Curve Rates for inflation, as of September 30, 2021**

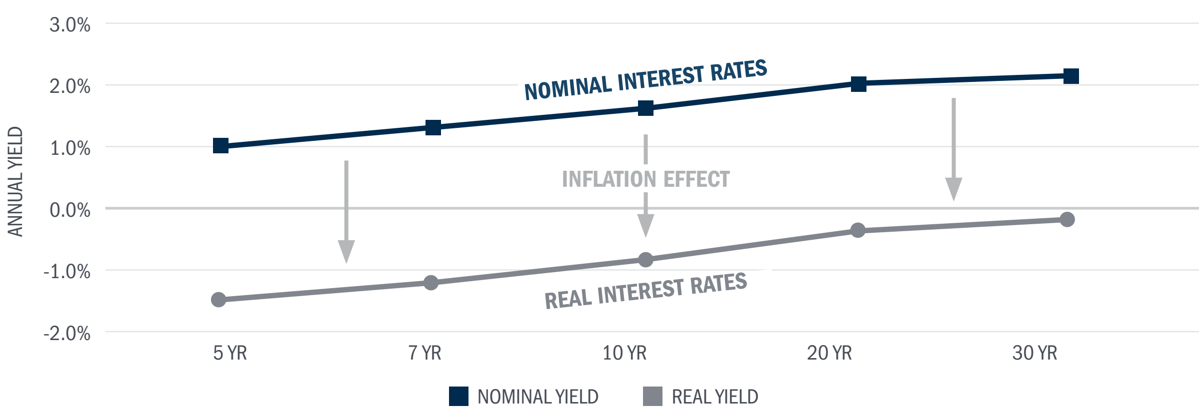


Figure 4 *- Real yield on US Treasuries are negative across the entire mid- and long end of the yield curve.*

Source: US Department of Treasury.

[4] Quarters when interest rates rise 25 basis points or greater in a quarter, as measured by the Effective Federal Funds Rate (FFR), for institutional real estate (proxied by the NCREIF Property Index) versus fixed income (proxied by the ICE BofA US Treasury 7-10 year TR)

Worryingly, investment grade credit securities which historically have a higher yield than US Treasuries (and higher risk), are trending in the same direction. As of September 30, 2021 and using the 5-year expected inflation rate, US investment grade credit securities have an expected real yield of -0.25%.[5]

As a comparison, the NCREIF Property Index has a nominal annualized income level of 4.2% as of September 30, 2021, and even when adjusting for inflation by using the US 5-year breakeven rate, institutional real estate still provides a positive real yield of 1.7%. **Institutional private real estate thus produces the highest inflation-adjusted income among the most common income-producing asset classes.**

FIGURE 5 | **Nominal and Real Yields from Various Asset Classes** - *Institutional Private Real Estate has the Highest Yield after Inflation*

Source: Nominal yearly yield of each investment category minus US 5-year breakeven inflation rate of 2.5% as of September 30, 2021. Index representation is as follows: Institutional Private Equity Real Estate (IPERE) is proxied by the NCREIF Property Index; Bonds are proxied by the Bloomberg US Corporate Fixed Income index, and Notes are proxied by the 10-year US Treasury note.

Furthermore, certain sectors which have shorter lease durations such as one year for multi-family residential, or are in high demand such as industrial, data centers, or life science and can command attractive escalation clauses, which lead to increased incomes and serve to reduce the effects of inflation on a go-forward basis.

[5] As measured by the Bloomberg Barclays US Corporate Index minus the 5-year US Treasury breakeven inflation rate, as of 9.30.2021.

Institutional Real Estate: A multi-faceted solution for a yield-starved world

Fixed income investors face a confluence of challenges that has not been seen in decades: very low yields and income, a risk of negative returns with increasing inflation and total return headwinds with recent rising interest rates.

Institutional private real estate may offer a compelling alternative for investors, as the asset class has historically performed well in this environment in contrast to fixed income. Building on the historical analysis we conducted earlier, we conclude by demonstrating the strength that real estate has offered in historical environments similar to what we face today.

Figure 6 takes the average quarterly returns calculated in each of the two environments and includes each in a 60/40 portfolio alongside equities for four distinct annualized hypothetical returns (two for fixed income and two for real estate). In both of the 60/40 portfolios that included real estate, annual returns were higher by several hundred basis points. Furthermore, the range of probable returns (that is, the confidence interval) was narrower in the portfolios that used real estate, which highlights the more stable return profile offered by institutional real estate.

FIGURE 6 | **Average hypothetical returns of portfolios that use 40% fixed income, versus 40% institutional real estate.**

Note the higher returns and narrower range of probable returns from the portfolios that use real estate.

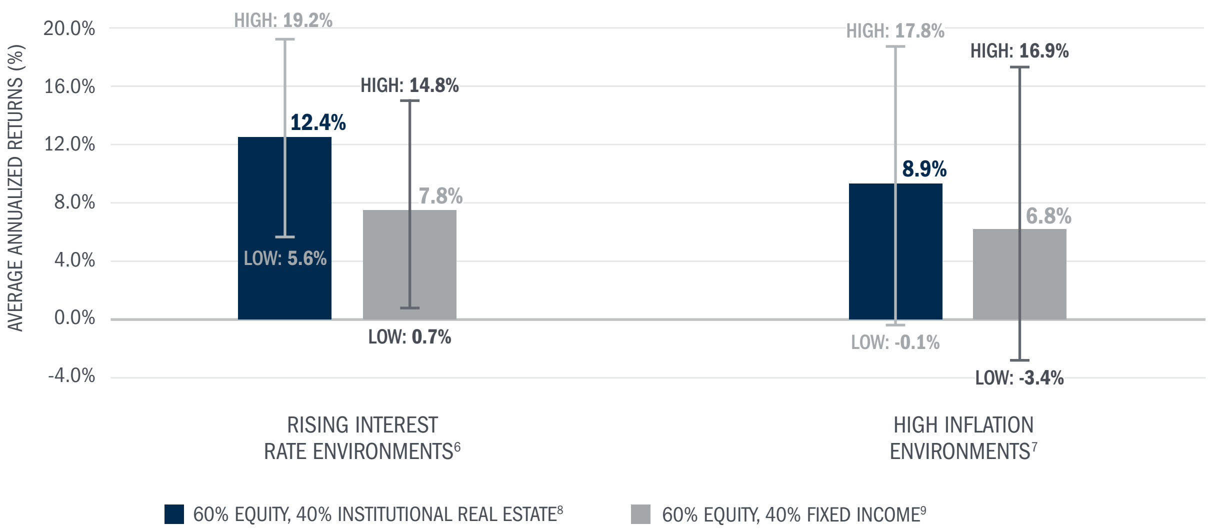


***Figure 6** - Average hypothetical returns of portfolios that use 40% fixed income versus 40% institutional real estate.*

If current trends follow the historical market environments, we can state with a high degree of confidence that institutional private real estate may offer **strong performance in a rising interest rate** environment and high **inflation-resistant income. Investors should strongly consider significantly incorporating institutional real estate into their portfolios.**

We invite you to reach out to your *Bluerock representative* for a further conversation about this strategy, or to connect you with our portfolio management team to discuss this paper.

[6] Since the NCREIF Property Index inception of January 1978.

[7] Since the Bloomberg Barclays Aggregate Bond TR Index inception of January 1980.

[8] Represents allocation to the following indexes: for equities, the S&P 500 index. For institutional private real estate, the NCREIF Property Index.

[9] Represents allocation to the following indexes: for equities, S&P 500 index. For fixed income in rising interest rate environments, allocation to 10-year US Treasuries; for high-inflation environments, allocation to Bloomberg Barclays Aggregate Bond TR Index. 'Average annualized returns' represents average quarterly return of a 60/40 portfolio rebalanced quarterly and subsequently annualized.

Definitions

Modern portfolio theory (MPT), or mean-variance analysis, is a mathematical framework for assembling a portfolio of assets such that the expected return is maximized for a given level of risk. It is a formalization and extension of diversification in investing, Economist Harry Markowitz introduced MPT in a 1952 essay, for which he was later awarded a Nobel Prize in Economics. *Source: Investopedia*

Modified duration is a formula that expresses the measurable change in the value of a security in response to a change in interest rates. Modified duration follows the concept that interest rates and bond prices move in opposite directions. This formula is used to determine the effect that a 100-basis-point (1%) change in interest rates will have on the price of a bond. Modified duration is an extension of the Macaulay duration, which calculates the weighted average time before a bondholder receives the bond's cash flows. *Source: Investopedia*

Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. The CPI measures inflation as experienced by consumers in their day-to-day living expenses. Indexes are available for the U.S. and various geographic areas. *Source: US Bureau of Labor Statistics.*

Standard deviation is the daily percentage change in an investment. Standard deviation shows how much variation from the average exists with a larger number indicating the data points are more spread out over a larger range of values.

About Bluerock

Bluerock is a leading institutional alternative asset manager based in New York with regional offices across the U.S. Bluerock principals have a collective 100+ years of investing experience with more than $48 billion real estate and capital markets experience and manage multiple well-recognized real estate private and public company platforms. Today Bluerock has more than $10 billion in acquired and managed assets and offers a complementary suite of public and private investment programs, with both short and long-term goals, to individual investors seeking solutions aimed at providing predictable income, capital growth, and tax benefits.

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