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Target-date funds: Improving diversification with direct real estate

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Executive summary

- Incorporating direct real estate investments in target-date funds offers the potential to enhance diversification, reduce volatility, and improve outcomes.
- Lower correlations with major asset classes have made direct real estate a unique diversifier for stocks and bonds, with greater potential to reduce risk than real estate investment trusts (REITs)—equity securities more correlated with stocks.
- Direct real estate has provided higher risk-adjusted performance than stocks, bonds, and REITs for the past 20 years.
- TIAA research showed that a 5% allocation to direct real estate improved risk-adjusted returns and retirement accumulations in most scenarios, while also reducing risk.

Introduction

Target-date funds play a critical role in improving retirement plan outcomes for participants who prefer *not to* make investment decisions. The funds provide professional management, broad diversification, and automatic rebalancing to maintain age-appropriate risk exposure. Usage has grown rapidly over the past 10 years, particularly among younger participants. Target-date funds represented 29% of defined contribution (DC) plan assets—the largest share of any asset class—as of December 31, 2016, according to Callan Associates.[1]

As their role in retirement plans has increased, target-date funds have evolved by adding new asset classes designed to improve diversification and risk management. Many have added high-yield bonds and emerging markets equity, for example, to diversify fixed-income and equity exposure. Until recently, however, no target-date mutual fund offered exposure to direct real estate—a separate asset class with investment characteristics distinct from equity and fixed income.

Why invest in direct real estate?

The case for direct real estate rests on projections for rising global demand for investments in high-quality commercial real estate and limited supply. Institutional investors, such as pension and sovereign wealth funds, are increasing allocations to real assets to address various risks: low interest rates, rising asset correlations, and the volatility of traditional asset returns. Defined benefit pension plan allocations to real estate, for example, ranged from 3.9% for private plans[2] to 6% for state plans.[3] Pension allocations to alternative investments, including real estate, have increased over the past decade.

Direct real estate can offer four compelling advantages:

- Low volatility
- Diversification
- Performance
- Inflation hedging

Direct real estate is defined as private investments in institutional-quality commercial property, such as office buildings, apartments, retail malls, and industrial space. It is a distinct asset class combining the potential for bond-like steady income, stock-like capital appreciation, and inflation hedging. Historical returns have tended to be comparable to equities, with much lower volatility. Among target-date funds that include real estate exposure, nearly all invest in shares of publicly traded real estate investment trusts (REITs), a category of equity with returns and volatility similar to other publicly traded stocks.

This paper uses historical returns and Monte Carlo simulation to demonstrate the potential for direct real estate exposure to improve long-term retirement savings outcomes and reduce risk.

Direct real estate: Diversification and performance

Direct real estate's distinct investment characteristics may offer four compelling advantages for diversifying multi-asset portfolios:

- **Low volatility of returns.** Direct real estate returns tend to be more stable than stock returns because income, derived from long-term property leases, represents a much larger proportion of total returns—about two-thirds net of fees. As a result, real estate's income returns have been fairly consistent over market cycles, even during periods of extreme economic distress. In addition, direct real estate more closely reflects the fundamentals of underlying properties because it is not publicly traded and less subject to news headlines and macro events. In contrast, stock returns rely primarily on price appreciation, which is subject to market volatility often unrelated to the underlying investment.
- **Diversification.** Low correlations with both stocks and bonds are a key argument for including real estate in multi-asset portfolios. As private investments, direct real estate is less correlated to market movements than publicly traded vehicles, such as REITs.
- **Performance.** Despite low volatility, direct real estate has outperformed most asset classes over the long term, resulting in superior risk-adjusted returns.
- **Inflation hedging.** Direct real estate is a natural hedge against inflation, with commercial rents and property values highly correlated to rising prices.

Direct real estate versus REITs: Key differences

- **Direct real estate** is the ownership of physical real estate, such as retail shopping malls and office buildings. It is considered a distinct asset class because ownership is private and its performance has low correlations with publicly traded stocks and bonds.
- **Real estate investment trusts** (**REITs**)—a category of equity securities—are issued by companies that own and manage pools of commercial property. REIT shares tend to be highly liquid and trade on public exchanges. Returns are affected by the performance of the underlying real estate *and* stock market fluctuations, which account for returns and volatility similar to other publicly traded equities.

Direct real estate provided higher risk-adjusted returns than stocks, bonds, and REITs for the 20-year period ended December 31, 2016.

Low correlations and high risk-adjusted returns historically

Direct real estate's diversification benefits include low correlations with major asset classes. Figure 1 shows correlations of 0.23 and 0.12 with U.S. and non-U.S. stocks, respectively, and a negative correlation (-0.03) with U.S. bonds. Moreover, stock correlations are significantly lower for direct real estate, compared with REITs.

Figure 1. Correlations[4] between direct real estate and major asset classes

20-year period ended December 31, 2016

	U.S. Equity	Non-U.S. Equity	U.S. Fixed Income	Direct Real Estate	REITs
U.S. Equities	1.00	0.84	-0.34	0.23	0.45
Non-U.S. Equities	0.84	1.00	-0.47	0.12	0.41
U.S. Bonds	-0.34	-0.47	1.00	-0.03	0.09
Direct Real Estate	0.23	0.12	-0.03	1.00	0.13
REITs	0.45	0.41	0.09	0.13	1.00

Asset classes reflect returns for the following indexes: Russell 3000 (U.S. equity); MSCI ACWI-ex USA IMI (non-U.S. equity); Bloomberg Barclays U.S. Aggregate Bond (U.S. bonds); NCREIF Property Index-Open End Funds (NPI-OE) (direct real estate); NAREIT All Equity REITs (REITs). It is not possible to invest in an index. Performance for indexes does not reflect investment fees or transaction costs. Results may be significantly different for other time periods. Source: Macrobond.

Direct real estate outperformed both equity and fixed-income by wide margins for the 20-year period ended December 31, 2016, based on absolute returns. The asset class also had higher risk-adjusted returns measured by Sharpe Ratio[5] than stocks, bonds, and REITs (Figure 2). Although REITs' absolute returns outperformed by 36 basis points, direct real estate had higher risk-adjusted returns (0.55 vs. 0.40). This is mostly the result of its lower volatility, 11.37%, or 38% and 42% lower than the levels of U.S. equity and REITs, 18.46% and 19.59%, respectively.

Figure 2. Performance, volatility, and risk-adjusted returns

Annualized performance for 20-year period ended December 31, 2016

	U.S. Equity	Non-U.S. Equity	U.S. Fixed Income	Direct Real Estate	REITs
Total returns	7.86%	5.05%	5.29%	**9.31%**	9.67%
Standard deviation	18.46%	21.86%	3.63%	**11.37%**	19.59%
Sharpe Ratio[6]	0.31	0.17	0.43	**0.55**	0.40

Sharpe Ratio is a measure of risk-adjusted returns. Asset classes reflect returns for the following indexes: Russell 3000 (U.S. equity); MSCI ACWI-ex USA IMI (non-U.S. equity); Bloomberg Barclays U.S. Aggregate Bond (U.S. bonds); NCREIF Property Index-Open End Funds (NPI-OE) (direct real estate); NAREIT All Equity REITs (REITs). It is not possible to invest in an index. Performance for indexes does not reflect investment fees or transaction costs. Results may be significantly different for other time periods. Source: Macrobond.

Benefits of including direct real estate in target-date funds

The attractive investment characteristics of direct real estate offer the potential to improve retirement savings outcomes when included in target-date fund allocations. TIAA research found that in simulated scenarios direct real estate improved risk-adjusted returns and outcomes, while also reducing risk. Research included simulations of possible future outcomes and analysis of historical returns, comparing a 5% allocation to direct real estate versus no allocation, using the glidepath of the TIAA-CREF Lifecycle Funds.[6]

TIAA simulations show direct real estate improved asset accumulations and reduced downside risk, based on the median outcome probability.

Simulations show the probability of better outcomes with lower risk

Monte Carlo simulations[7] show that direct real estate increased the probability of better overall outcomes. More importantly, they also show a greater likelihood of reducing downside risk in scenarios where markets perform poorly. Simulation analysis considers a range of 10,000 possible asset accumulation outcomes on the date of retirement—and the probability of those outcomes. Figure 3 shows results for the median—50th percentile—outcome, and for less likely outcomes when markets perform poorly or very well. A 5% allocation to direct real estate increased total savings accumulation by more than $2,500 for the median simulated outcome. Diversification benefits were even greater under poor market performance scenarios (reflecting a probability of negative 1 and negative 2 standard deviations). Simulated downside outcomes improved by nearly $5,000. When equity markets perform very well, however, the outcome was more than $2,500 lower for portfolios with direct real estate. The reason: Direct real estate replaces a portion of equity exposure, which tends to outperform in bull markets. Investors give up some of the potential upside for greater potential benefits—the probability of better overall outcomes and reduced downside risk. Direct real estate also reduced the probability of losses under worst-case scenarios. Figure 4 shows results improved by about one-half percentage point when simulating the worst 12-month return on the date of retirement and 10 years after retirement.

IMPORTANT:
The projections or other information generated by Monte Carlo simulation regarding the likelihood of various investment outcomes are hypothetical in nature. These projections do not reflect actual investment results and are not guarantees of future results. For more information on simulation limitations, see disclosures on page 7.

Figure 3. Simulation of outcome probabilities on the date of retirement

	Markets perform poorly			Markets perform well
Probability	**-2 Standard Deviation**	**-1 Standard Deviation**	**Median (50th percentile)**	**+1 Standard Deviation**
With Real Estate	$187,736	$276,258	$423,749	$686,633
Without Real Estate	$182,739	$271,590	$421,196	$689,158
Difference	**$4,997**	**$4,668**	**$2,553**	**-$2,525**

Simulations of retirement accumulation outcomes are shown for a range of probabilities and assume that outcomes are normally distributed. The *median* outcome represents the 50th percentile in the distribution of simulated outcomes. *-2 standard deviation* and *-1 standard deviation* represent probabilities of less than 3% and about 16%, respectively, when markets are down. *+1 standard deviation* represents a probability of about 16% when markets are up. Source: TIAA Investments.

Figure 4. Stress test showing the worst 12-month return

	At Retirement	10 years After Retirement
With Real Estate	-22.40%	-18.38%
Without Real Estate	-22.92%	-18.90%
Difference	**0.52%**	**0.52%**

Source: TIAA Investments.

Research showed direct real estate improved risk-adjusted returns at various stages along the glidepath.

Direct real estate provided diversification benefits before and after retirement

Historical returns show direct real estate improved risk-adjusted returns and reduced volatility at different stages of the glidepath—whether allocations were dominated by stocks or bonds. TIAA used historical returns starting in 1978 to measure the impact of a 5% direct real estate allocation in the Lifecycle Funds glidepath. Figure 5 shows the differences at four points along the glidepath: 45 years and 25 years before retirement, at retirement, and 10 years after retirement. Absolute returns were slightly *higher* at the two points prior to retirement when direct real estate replaces a portion of fixed-income exposure. Absolute returns were slightly *lower* at the two later points when real estate replaces a portion of equity exposure. Although absolute returns fluctuated, the data demonstrate direct real estate's historical diversification benefits—a record of consistently improving portfolio risk-adjusted returns and reducing volatility over the long term.

Figure 5. Direct real estate improved risk-adjusted returns at four glidepath stages

	45 years to retirement			25 years to retirement			At retirement			10 years after retirement		
	With Real Estate	Without Real Estate	Difference	With Real Estate	Without Real Estate	Difference	With Real Estate	Without Real Estate	Difference	With Real Estate	Without Real Estate	Difference
Average annual return	11.69%	11.65%	0.04%	11.47%	11.43%	0.04%	9.49%	9.67%	-0.18%	9.05%	9.23%	-0.18%
Standard deviation	15.37%	15.40%	**-0.03%**	14.61%	14.64%	**-0.03%**	8.36%	9.11%	**-0.74%**	7.29%	7.98%	**-0.69%**
Sharpe Ratio*	0.728	0.724	**0.004**	0.751	0.746	**0.005**	1.075	1.006	**0.068**	1.173	1.093	**0.080**

* Sharpe Ratio is a measure of risk-adjusted returns.

Performance data are based on quarterly total returns, 1/1/1978–12/31/2016, using allocations of the TIAA-CREF Lifecycle Funds glidepath, rebalanced monthly. Asset classes are represented by the following indexes: Russell 3000 (U.S. equity); MSCI ACWI ex-USA IMI (non-U.S. equity); Bloomberg Barclays U.S. Aggregate Bond (U.S. bonds); NCREIF Property Index-Open End Funds (NPI-OE) (direct real estate). The chart compares performance with and without a 5% allocation to direct real estate. The allocation to direct real estate is sourced from the following indexes: 45 years and 25 years to retirement, 5% from Bloomberg Barclays U.S. Aggregate Bond; at retirement and 10 years after retirement, 3.5% from Russell 3000 and 1.5% from MSCI ACWI ex-USA IMI. It is not possible to invest in an index. Performance for indexes does not reflect investment fees or transaction costs. Results may be significantly different for other time periods. Sources: Haver Analytics, TIAA Investments.

Considerations for selecting target-date funds with direct real estate exposure

- **Daily net asset value (NAV).** Providers must have reliable methodology for establishing a daily value for commercial real estate based on quarterly property assessments.
- **Diversification and quality.** Investments should be diversified across a range of real estate sectors—retail, office, apartments, and industrial—and geographic regions to help manage risk. Different sectors and regions may respond differently to economic changes, helping to smooth returns. Similarly, emphasizing high-quality properties in the strongest markets can help to reduce the impact of cyclical economic downturns.

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- **Liquidity.** Private investments in direct real estate are not publicly traded and relatively illiquid—the sources of its low volatility and low correlation advantages. Direct real estate's less frequent transactions don't necessarily pose a challenge in maintaining target allocations for several reasons. Target-date fund managers can rely on net cash inflows from DC plan participants for rebalancing. Investments in high-quality "core" property markets can be sold if necessary, given strong institutional demand. Moreover, stress-testing[8] based on the market's trough in 2008 during the financial crisis shows that direct real estate allocations could be managed within acceptable limits using net cash flows for monthly rebalancing.
- **Advantages of affiliated real estate investment teams.** Affiliated management can offer a higher level of direct real estate exposure in target-date funds. Close cooperation between in-house real estate experts and target-date fund managers makes it easier to manage liquidity needs. Working closely with fund managers as the only investor, an affiliated real estate manager can reduce the level of REITs and/or cash required for daily liquidity to 5% or less. In contrast, non-affiliated real estate managers maintain up to 25% of the real estate portfolio in REITs and/or cash to manage liquidity.
- **Investment fees.** Real estate managers with sufficient scale can offer direct real estate exposure with annual fees as low as 0.70%, compared with typical fees exceeding 1%.

Outlook for U.S. commercial real estate

Returns in the near term are expected to be moderate, given the real estate cycle's maturity and recent rise in U.S. Treasury yields limiting capital appreciation potential. Prospects for healthy rental income growth are good, considering expectations for stronger economic and employment growth, with limited property supply. The Pension Real Estate Association's 2016 fourth-quarter survey projects 2017 total returns of 6.9%, which remain attractive relative to other asset classes. In addition, rising demand from global institutional investors is expected to provide long-term structural support for high-quality U.S. commercial real estate.

Conclusion

Direct investment in real estate offers the potential to improve risk-adjusted performance and retirement savings outcomes of target-date funds. A record of high returns, low volatility, and low correlations suggests this distinct asset class may provide superior portfolio diversification than public REITs—the dominant form of real estate exposure in target-date funds.

1. Callan Associates, The Callan DC Index, 4th Quarter 2016.
2. Willis Towers Watson, Insider, December 2016, "2015 Asset Allocation in Fortune 1000 Pension Plans." Data based on aggregate asset distribution across pension plans.
3. Cliffwater 2015 Report on State Pension Asset Allocation and Performance, September 8, 2015, Cliffwater LLC.
4. Correlation is a statistical measure indicating how closely together the returns of two asset classes move over time. An asset class is considered a good portfolio diversifier if its correlation to other asset classes in a portfolio is low or negative. Correlations range from -1.0 to 1.0. A correlation of 1.0 indicates the assets' returns move together in unison, e.g., when Asset A increases by 10%, Asset B increases by 10%. Conversely, a correlation of -1.0 indicates the assets move in opposite directions, e.g., when Asset A increases by 10%, Asset B decreases by 10%.
5. Sharpe Ratio, a measure of risk-adjusted returns, represents the following calculation: Annualized return minus the risk-free rate (90-day Treasury Bill), divided by average standard deviation of returns.
6. TIAA-CREF Lifecycle Funds use a "through retirement" glidepath design based on a proprietary asset allocation model.
7. Monte Carlo simulation of outcomes on the date of retirement is based on TIAA's long-term expected returns for stocks, bonds, and real estate. Assumptions: Investor begins working at age 22 with a starting salary of $26,505 and retires at age 66 (the current age of full retirement benefits according to Social Security) with an ending salary of $58,000 (sourced from the US Census Bureau, Current Population Survey Tables for Personal Income, 2015, released September 2016). The individual saves 10.05% of annual income (sourced from the Plan Council of America Annual Survey of Profit Sharing and 401(k), December 2016) (includes employer match). Salary rises with inflation of 2.2% (sourced from the First Quarter 2017 Survey of Professional Forecasters, Federal Reserve Bank of Philadelphia). In retirement, investor regularly withdraws between 25% and 50% of ending salary from the Lifecycle Fund and receives Social Security.
8. Stress-testing was based on the TIAA-CREF Lifecycle Funds glidepath.

LIMITATIONS OF MONTE CARLO SIMULATION:

- Asset class return assumptions may be too high or too low.
- Outcomes may vary from statistical simulations due to incorrect assumptions.
- Asset correlations can vary significantly from assumed estimates.
- Simulated outcomes are based on estimates—not precise calculations.
- Outcomes may not be normally distributed; they may be skewed higher or lower, impacting simulated outcomes.

IMPORTANT: The projections or other information generated by Monte Carlo simulation regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. Simulation results may vary with each use and over time.

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