

The power of private real assets

Private real assets — including farmland, timberland, infrastructure and commercial real estate — have demonstrated low or negative correlations to stocks and bonds, offering compelling diversification backed by over 30 years of performance data.

Key takeaways¹

- Across all four asset categories, private real assets delivered comparable or superior returns to traditional investments with significantly lower volatility, as evidenced by higher Sharpe ratios.
- With revenues and values tied to rising commodity prices, lease escalations, and long-term appreciation of physical assets, private real assets serve as a meaningful hedge against inflation.
- We believe even modest, constrained allocations to private real assets can help improve risk-adjusted returns for both conservative and aggressive portfolios.
- Private real assets outperformed publicly traded alternatives such as REITs and commodity stocks on a risk-adjusted basis, while also helping reduce volatility when held alongside public real asset exposure.
- While illiquidity and high barriers to entry present real implementation challenges, partnering with experienced asset managers with specialized expertise and global scale can help investors access these benefits effectively.



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Private real assets can be a powerful tool for investors and play a role in tackling periods of market volatility and inflationary environments.

Our latest research demonstrates private real assets' enduring potential to deliver uncorrelated returns, making them a key element for diversifying portfolio risk.

In addition to portfolio diversification benefits, real assets can also play a role in tackling some of the big issues investors currently face, such as increasing volatility and inflationary environments.

Rising energy and food prices, coupled with geopolitical tensions, are fueling inflation pressures, leaving investors grappling with a sustained high-rate environment and continued economic uncertainty. Real assets can potentially help given they offer a combination of inflation-hedging and stability. Our analysis shows how adding them to a traditional portfolio can reduce volatility while achieving compelling returns.¹

Recognizing evolving portfolio needs and continued growth of real assets amongst investors, we have built upon our previous analysis² to include real estate, farmland, timberland and a new infrastructure index.

Our findings demonstrate the potential for all four categories of private real asset classes to deliver uncorrelated returns and diversification benefits.¹

We also consider how investors allocate to real assets in practice. These insights feature in an interview with Marc deBree, head of real estate and alternative assets at TIAA, in which we explore the TIAA General Account's experience with private real asset investments.

How real assets can benefit traditional portfolios¹

Results of our analysis support the long-term investment thesis that real assets have potential to improve the performance of traditional portfolios in multiple ways:

Diversification: Real assets have shown to be powerful diversifiers, with low or negative correlations to traditional stocks and bonds — and to each other (Figure 1). Private investments rarely move in lockstep with traditional assets or commodities in part because they are relatively illiquid; they are not traded in public markets.³

Inflation hedging: Real assets have provided a strong hedge against inflation as demonstrated by long-term returns that have far outpaced the inflation rate. Many commodities, such as foodstuffs and raw materials, are components of inflation measures, such as the Consumer Price Index (CPI), and as prices rise so do the revenues and cash yields for real assets producing these commodities. Over time, rising commodity prices increase the profitability of timberland and farmland, causing land values to rise and providing a long-term hedge against inflation. Similarly, real estate hedges inflation through annual lease escalations, and the rising value of buildings and land in desirable locations. Some infrastructure assets may also have payments linked to price levels. More broadly, the necessity-based nature of these assets

often means they play a defensive role in portfolios during challenging economic environments.

Higher risk-adjusted returns: For the past 30 years, real assets have provided similar or higher returns than stocks with much lower volatility, resulting in higher risk-adjusted returns, or Sharpe Ratios (Figure 2). Despite higher volatility, real assets generally provided similar or higher risk-adjusted returns than U.S. and global bonds.

Liability-matching characteristics: Real assets have potential to provide bond-like current income from contractual lease obligations and revenues from selling commodities. Long-term capital appreciation from rising land values may also help meet future liabilities.

Figure 1: Correlations of real assets, stocks and bonds (1991 – 2025)

Real assets had low correlations to other asset classes — and to each other

Market Indexes	Stocks		Bonds		Private real assets				Public real assets			
	U.S.	Non-U.S.	U.S.	Global	Real estate	Farmland	Timberland	Infra	U.S. REITs	Agriculture	Public timber	Public Infra
U.S. stocks	1.00											
Non-U.S. stocks	0.79	1.00										
U.S. bonds	0.07	-0.09	1.00									
Global bonds	0.17	0.17	0.81	1.00								
Private real estate	0.07	0.07	-0.20	-0.21	1.00							
Private farmland	-0.07	0.09	-0.17	-0.13	0.43	1.00						
Private timberland	0.11	0.12	0.12	0.11	-0.01	0.28	1.00					
Private Infra	0.14	0.12	0.15	0.19	0.38	0.27	0.19	1.00				
U.S. REITs	0.57	0.52	0.22	0.19	0.15	0.01	0.01	0.33	1.00			
Agriculture commodities	0.24	0.27	-0.05	0.17	0.20	0.01	0.11	0.18	0.26	1.00		
Public timber	0.67	0.73	-0.04	0.13	0.00	-0.09	-0.01	0.02	0.60	0.23	1.00	
Public infra	0.73	0.88	0.05	0.29	0.35	0.13	0.15	0.30	0.74	0.32	0.69	1.00

Data are based on rolling one-year total gross returns, calculated on a quarterly basis for periods ended 31 Dec 1991 through 31 Dec 2025 unless otherwise stated. **Asset classes reflect the following indexes:** U.S. stocks: Russell 3000 Index; non-U.S. stocks: MSCI ACWI ex USA Index; U.S. bonds: Bloomberg Barclays U.S. Aggregate Index; global investment-grade bonds: Bloomberg Barclays Global Aggregate Index; privately held U.S. commercial real estate: NCREIF Real Estate Index; privately held U.S. farmland: NCREIF Farmland Index; privately held U.S. timberland: NCREIF Timberland Index; publicly traded U.S. real estate investment trusts (REITs): FTSE Nareit U.S. Real Estate Index; agricultural commodities: S&P GSCI Agriculture Index; public timber: a Timber proxy index created by Nuveen that combines S&P Global Timber and Forestry Index (2004 – 2025) with the returns of companies representing 4% or more of the index between 1991 and 2003; private infrastructure: EDHEC Infrastructure & Private Assets Research Institute (from 31 Mar 2001). Based on data sourced from Scientific Infra & Private Assets (apps.sipametrics.com) Copyright © 2026 Scientific Infra & Private Assets. All rights reserved; public infrastructure: S&P Global Infrastructure Index (data from 31 March 2002).

Sources: NCREIF; Bloomberg; EDHEC Infrastructure & Private Assets Research Institute; Nuveen, LLC.

Past performance is no guarantee of future results. It is not possible to invest directly in an index.

Important differences in the sizes of investable markets

Significant differences in the sizes of investable markets across real assets have important implications for investors. The NCREIF indexes used as proxies for U.S. markets represent only a fraction of the total investable markets for farmland and timberland, which are far less institutionalized than commercial real estate and infrastructure. We relied on U.S. market indexes due to the absence of indexes representing markets for non-U.S. farmland, timberland and real estate. Total assets included in the NCREIF indexes represent \$16.2 billion for farmland, \$31.1 billion for timberland and \$905.9 billion for real estate, as of 31 Dec 2025.

In contrast, we estimate the overall size of the U.S. farmland market alone is about \$420-500 billion and \$600-700 billion globally.⁴ The NCREIF Farmland Index represents only the assets owned by institutions — the majority of assets are held by individual farmers in a highly fragmented market with high barriers to entry. Differences in historical returns among real assets categories may partly reflect different levels of market development, contributing to higher returns for the less developed. The global opportunity set for real estate also exceeds its

NCREIF index market capitalization, with MSCI estimating the value of professionally managed real estate at \$12.4 trillion as of 31 December 2024.

Estimating the size of the investable infrastructure market is also difficult. The data set used in our analysis estimates the total market capitalization is \$497.7 billion. However, this only reflects committed capital, which arguably underestimates the size of the current investment opportunity. The World Bank, for example, calculated that the pipeline of projects in emerging and developing economies to be around \$1.2 trillion in investable infrastructure projects across sustainable infrastructure. Additionally, historical risk-return data for infrastructure is less readily available than for other private real assets. We use time series data from EDHEC Infrastructure & Private Assets Research Institute and S&P which begin in 2001 and 2002, respectively (see notes for Figure 1). In contrast, the data sets for the other asset classes in the analysis date back to 31 December 1991.

Due to differences in the sizes of investable markets, we have therefore chosen to constrain allocations to real assets in several of the modeled scenarios to reflect real-world capacity constraints and liquidity concerns facing investors.

Figure 2: Performance of private real assets, stocks and bonds

Private real assets had higher risk-adjusted returns versus other asset classes

Market indexes	STOCKS		BONDS		PRIVATE REAL ASSETS				PUBLIC REAL ASSETS			
	U.S.	Non-U.S.	U.S.	Global	Real estate	Farmland	Timberland	Infra	U.S. REITs	Agriculture	Public timber	Public Infra
Mean (%)	12.1	8.0	5.0	4.6	7.6	10.1	9.2	11.6	11.5	0.5	8.8	11.2
Standard deviation (%)	17.2	18.6	5.2	6.7	8.3	6.8	9.0	10.7	19.9	19.4	22.3	17.6
Sharpe ratio	0.54	0.28	0.42	0.27	0.58	1.08	0.71	0.82	0.44	-0.12	0.27	0.48

Data are based on rolling one-year total returns, calculated on a quarterly basis for periods ended 31 Mar 1992 through 31 Dec 2025. See Figure 1 notes for the indexes representing asset classes.
Sources: NCREIF; Bloomberg; EDHEC Infrastructure & Private Assets Research Institute; Nuveen, LLC.
Past performance is no guarantee of future results. It is not possible to invest directly in an index.

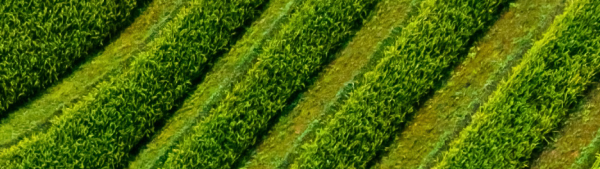
Structuring a portfolio of real assets

While the case for real assets is compelling, they raise difficult implementation questions: How should investors structure a portfolio of real assets? How might allocations change for different investor risk and return preferences?

No single optimal allocation fits all risk profiles. Allocations should reflect individual investment objectives, risk tolerance and liquidity needs. We used mean-variance optimization analysis to show the potential impact of real assets on a range of portfolios representing different risk profiles and constraints. Portfolios shown in this analysis are designed to provide an analytical framework and illustrations and should not be considered investment recommendations. The analysis is based on the following scenarios:

- Adding real assets individually — and as a group — to a portfolio of stocks and bonds.
- Comparing real assets with publicly traded commodity stocks, infrastructure stocks and REITs when added to a portfolio of stocks and bonds.
- Structuring a real assets portfolio for different investment objectives
- Constraining real assets allocations within practical limits in conservative and aggressive portfolios.

Our analysis supports the long-term investment thesis that real assets have the potential to improve the performance of traditional portfolios.



Observations from mean- variance optimization analysis

How do private real assets impact the risk and return attributes of a traditional stock-bond portfolio?

We highlight four key observations from the mean-variance optimization model demonstrating private real assets' potential to improve risk-adjusted return compared to a traditional investment portfolio. We also feature modeling results that show farmland, timberland, real estate, and infrastructure each contribute positively to achieve the highest Sharpe ratio.

Observation 1:

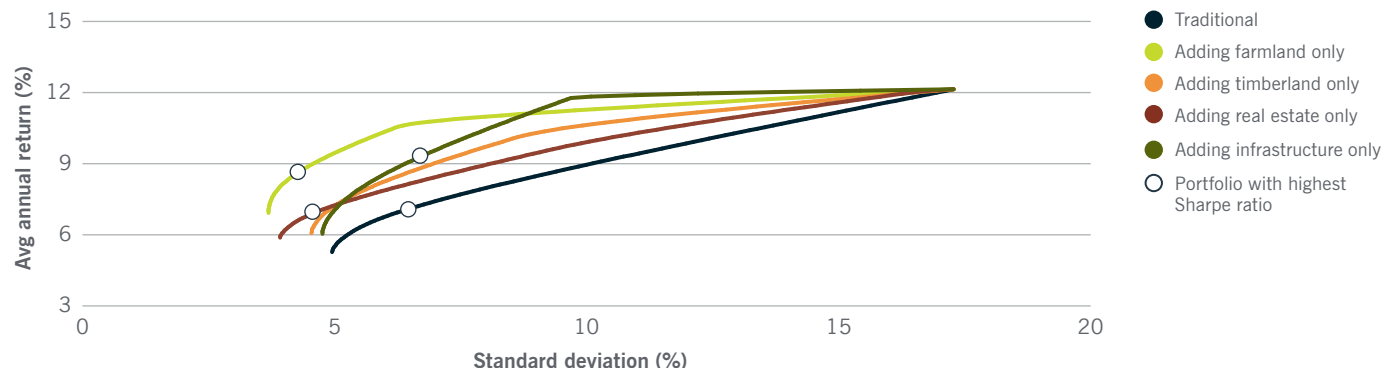
Real assets improved the risk-adjusted returns of a portfolio of traditional stocks and bonds

In Figure 3, the efficient frontiers show the positive impact of adding farmland, timberland, real estate and infrastructure individually to a stock/bond portfolio. In the table, we also show the impact of combining all four categories. In this example with all categories, we constrained real assets by 20%, divided evenly at 5% in each.

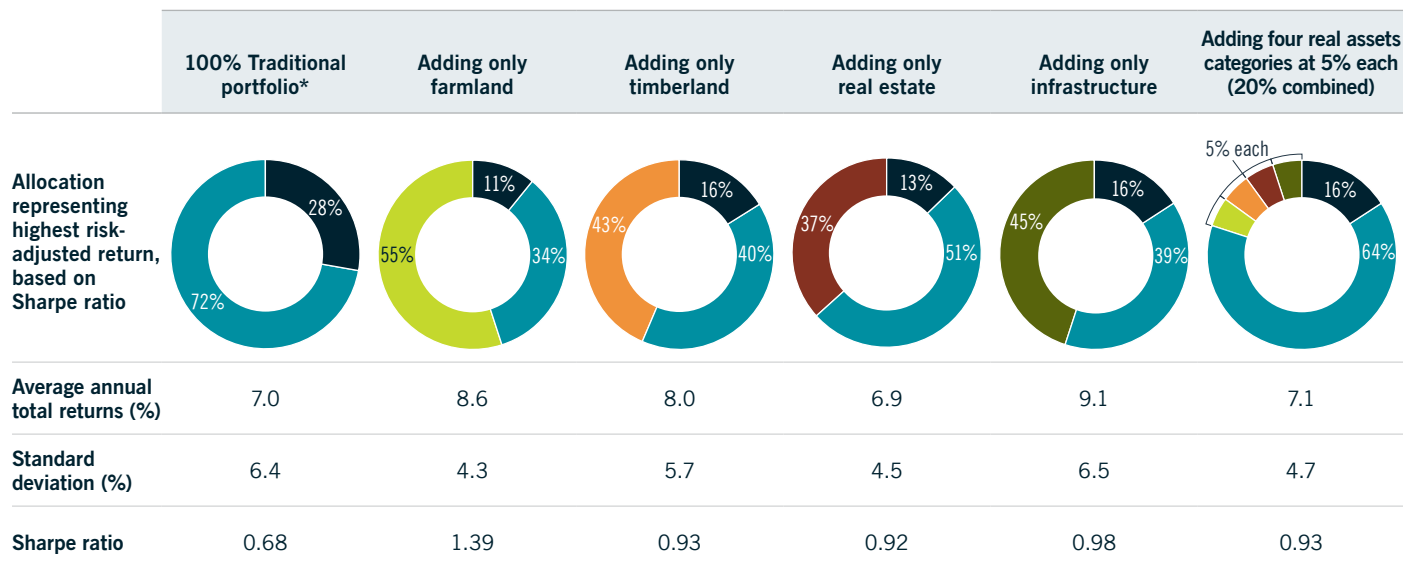
Results

Each category of real assets increased returns, with similar or lower levels of risk, resulting in higher Sharpe ratios. Farmland had the greatest impact on the Sharpe ratio and received the largest allocation in an unconstrained portfolio at 55%. Infrastructure at 45% had the second biggest impact on risk-adjusted returns, followed by timberland at 43% and real estate at 37%. Diversifying a stock/bond portfolio with a 5% allocation to each of the four real assets increased annual returns by 10 basis points and reduced risk by 170 basis points, producing a higher Sharpe ratio.

Overall, results support the case for diversifying traditional portfolios with multiple categories of real assets even when constrained within realistic limits. The constraints reflect supply limitations, the relative illiquidity of real assets, their relatively high transaction costs, and the limited history contained in the analysis.

Figure 3: Real assets' performance impact — individually and combined (1991 – 2025)*Real assets increased risk-adjusted returns of traditional portfolios**Comparing returns, standard deviations and Sharpe ratios (1991 – 2025)*

● Stocks ● Bonds ● Farmland ● Timberland ● Private commercial real estate ● Infrastructure



*Allocations for the traditional stock/bond portfolio are a result of the mean variance optimization exercise.

Data are based on rolling one-year total returns, calculated on a quarterly basis for periods ended 31 Mar 1991 through 31 Dec 2025. **Asset classes reflect the following indexes:** U.S. stocks: Russell 3000 Index; non-U.S. stocks: MSCI ACWI ex USA Index; U.S. bonds: Bloomberg Barclays U.S. Aggregate Index; global investment-grade bonds: Bloomberg Barclays Global Aggregate Index; privately held U.S. commercial real estate: NCREIF Real Estate Index; privately held U.S. farmland: NCREIF Farmland Index; privately held U.S. timberland: NCREIF Timberland Index; publicly traded U.S. real estate investment trusts (REITs): FTSE Nareit U.S. Real Estate Index; public agricultural commodities: S&P GSCI Agriculture Index; public timber: a Timber proxy index created by Nuveen that combines S&P Global Timber and Forestry Index (2004 – 2025) with the returns of companies representing 4% or more of the index between 1991 and 2003; private infrastructure: EDHEC Infrastructure & Private Assets Research Institute (from 31 Mar 2001). Based on data sourced from Scientific Infra & Private Assets (apps.sipametrics.com) Copyright © 2026 Scientific Infra & Private Assets. All rights reserved; public infrastructure: S&P Global Infrastructure Index (data from 31 March 2002).

Sources: NCREIF; Bloomberg; EDHEC Infrastructure & Private Assets Research Institute; Nuveen, LLC.

Mean-variance optimization based on historical returns is intended for illustration purposes only and should not be considered investment recommendations

Hypothetical performance/characteristics is shown for illustrative and informational/educational purposes only. This hypothetical information presented is not in regards to any portfolio or investment advisory services available through Nuveen, LLC or any of its investment specialists. Actual results may vary. **Past performance is no guarantee of future results. It is not possible to invest directly in an index.**

Sources: NCREIF; Bloomberg; EDHEC Infrastructure & Private Assets Research Institute; Nuveen, LLC.

Observation 2:

Private real assets provided higher returns with lower volatility than publicly traded commodities and real estate stocks

We compared private real assets with publicly traded commodity stocks and publicly traded REITs to assess diversification benefits against the illiquidity of private assets. Since many investors already have exposure to REITs and commodities, such as metals or oil and gas, we also compared the impact of combining private real assets with public stocks. This analysis used fixed allocations and constrained alternatives to 20% of the portfolio, consistent with realistic limits.

Figure 4 compares three portfolios consisting of a fixed 80% in stocks and bonds in a 60/40 ratio, and 20% in alternative assets. Portfolio 1 adds four categories of private

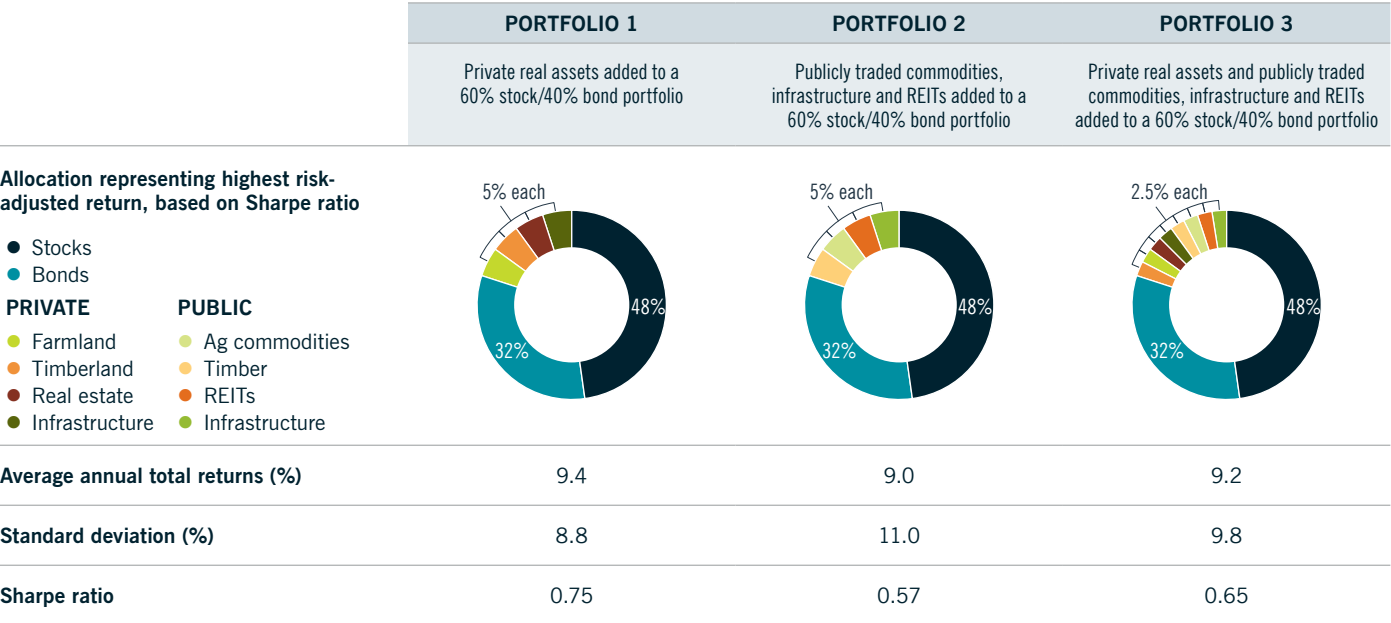
real assets, divided evenly at 5% each. Portfolio 2 adds four categories of publicly traded commodities, infrastructure and REITs, divided evenly at 5% each. Portfolio 3 combines private and public assets, split evenly at 2.5% each.

Results

Private real assets increased portfolio returns and reduced volatility, resulting in a higher Sharpe ratio, versus publicly traded commodity and infrastructure stocks, and REITs. This can be seen by comparing the performance of Portfolio 1 and Portfolio 2 in Figure 4.

Private real assets helped to diversify the volatility risk of publicly traded commodities, infrastructure and REITs. This can be seen by comparing the performance of Portfolio 2 and Portfolio 3 in Figure 4. The combination of private and public real assets in Portfolio 3 increased returns by 20 basis points and reduced volatility by 120 basis points, resulting in a higher Sharpe ratio, compared to Portfolio 2.

Figure 4: Comparing real assets vs. public commodities, infrastructure, and REITs in stock and bond portfolio (1991 – 2025)



Observation 3:

Constraining real assets within practical limits still improved performance

How much real assets exposure is reasonable for investors? As a point of reference, institutional portfolio allocations are estimated at 5% to 10%, with endowments ranging up to about 15%. Additionally, investors are increasing their exposure to alternatives in efforts to increase current income and risk-adjusted returns, dampen volatility, and meet specific needs, such as inflation protection.

Mean-variance optimization outputs may suggest extreme allocations to individual asset classes based on returns for the period used as input. But for most institutions, allocations exceeding 20% to individual real assets categories would be unrealistic. Most portfolios would lack sufficient liquidity to meet near-term spending obligations, and investors would also have difficulty accessing enough farmland and timberland. Moreover, questions about the

limitations and relatively limited history of index data would argue against such large holdings in real assets.

There is no single optimal allocation to real assets. It will differ based on the investor's specific risk profile. The next analysis considers two model portfolios representing a conservative allocation of 20% stock and 80% bonds and an aggressive allocation of 80% stock and 20% bonds. We limit the combined real assets allocation to 10% (2.5% per category) in the conservative portfolio and 20% (5% per category) in the aggressive portfolio.

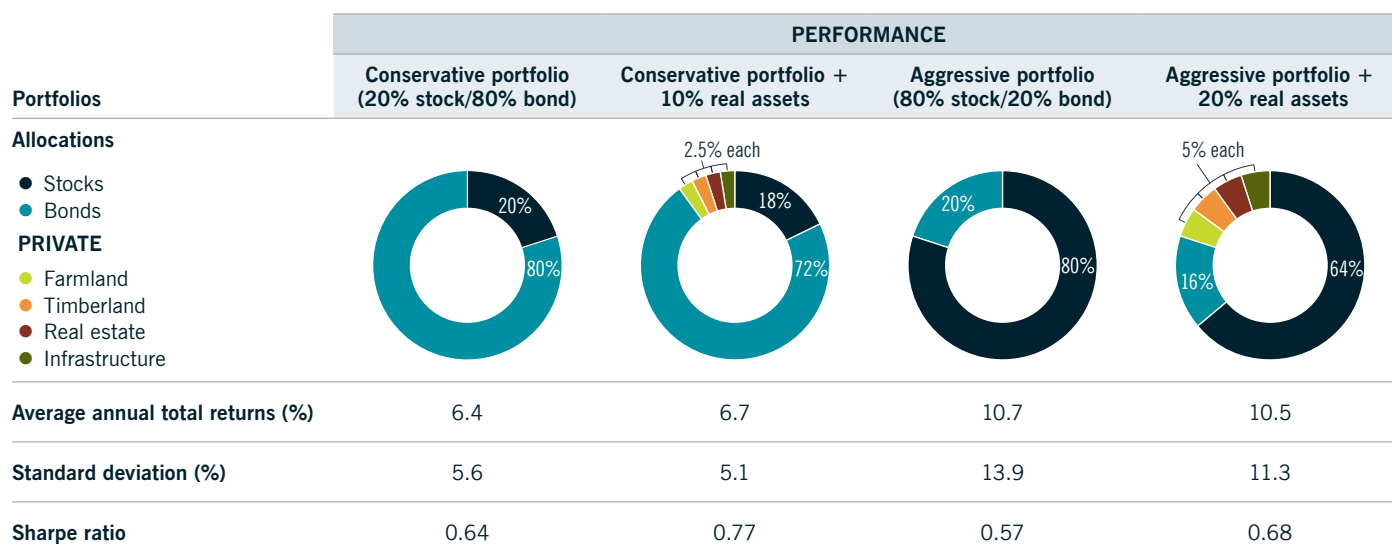
Results

Despite the allocation limits, real assets reduced volatility compared to only stock-bond portfolios — resulting in higher risk-adjusted returns (Figure 5).

Overall, results show that, based on historical performance, investors could improve portfolio risk-adjusted returns with allocations that were fractions of the unconstrained allocations, but realistic for institutional investors.

Figure 5: Limiting real assets exposure to 10% and 20% of traditional portfolios (1991– 2025)

Despite limits, real assets improved performance of conservative and aggressive portfolios



Data are based on rolling one-year total returns, calculated on a quarterly basis for periods ended 31 Mar 1991 through 31 Dec 2025. Asset classes reflect the following indexes: U.S. stocks: Russell 3000 Index; non-U.S. stocks: MSCI ACWI ex USA Index; U.S. bonds: Bloomberg Barclays U.S. Aggregate Index; global investment-grade bonds: Bloomberg Barclays Global Aggregate Index; privately held U.S. commercial real estate: NCREIF Real Estate Index; privately held U.S. farmland: NCREIF Farmland Index; privately held U.S. timberland: NCREIF Timberland Index; publicly traded U.S. real estate investment trusts (REITs): FTSE Nareit U.S. Real Estate Index; public agricultural commodities: S&P GSCI Agriculture Index; public timber: a Timber proxy index created by Nuveen that combines S&P Global Timber and Forestry Index (2004 - 2025) with the returns of companies representing 4% or more of the index between 1991 and 2003; private infrastructure: EDHEC Infrastructure & Private Assets Research Institute (from 31 Mar 2001). Based on data sourced from Scientific Infra & Private Assets (apps.sipametrics.com) Copyright © 2026 Scientific Infra & Private Assets. All rights reserved; public infrastructure: S&P Global Infrastructure Index (data from 31 March 2002).

Hypothetical composite performance is shown for illustrative and informational purposes only and does not reflect returns that any investor actually attained. There is no guarantee that the hypothetical composite performance will be achieved in the future or that an investment in the strategy will not result in losses. **Past performance is no guarantee of future results. It is not possible to invest directly in an index.** Sources: NCREIF; Bloomberg; EDHEC Infrastructure & Private Assets Research Institute; Nuveen, LLC

Observation 4:

There is a positive role for all four asset classes in a private real assets-only portfolio constrained to reflect the real-world opportunity set.

The next analysis shows how different asset categories work together in a portfolio consisting only of private real assets. We examined how the structure can change based on different investment objectives. An efficient frontier using farmland, timberland, real estate and infrastructure allowed comparison of three portfolios producing the highest efficiency, lowest risk and highest return (Figure 6).

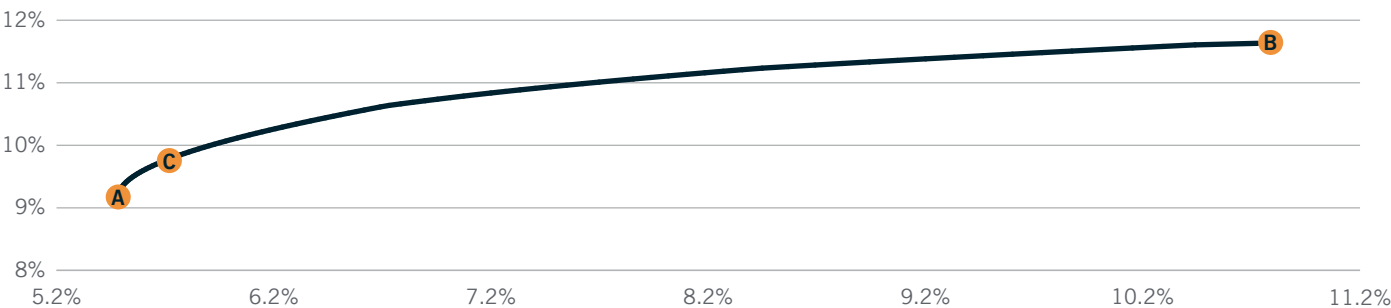
Recognizing differences in the sizes of investable markets, we constrained allocations to 25% for both farmland and timberland to better reflect the opportunity set, scale and liquidity concerns of investors.

Results

The Sharpe ratio-maximizing portfolio, comprised real estate at 23%, farmland and timberland each at 25%, and infrastructure at 27%. The lowest-risk portfolio increased real estate exposure to 37%, maintained farmland and timberland at 25% and reduced exposure to infrastructure to 13%. The highest-return portfolio was the portfolio with 100% exposure to infrastructure. All three real assets portfolios produced a meaningful increase in risk-adjusted returns compared to all traditional stock/bond portfolios.

Figure 6: Structuring a portfolio of farmland, timberland, infrastructure and real estate (1991 – 2025)

100% private real assets portfolios



Portfolios of the efficient frontier	A: Minimum risk portfolio	B: Maximum return portfolio	C: Highest Sharpe ratio portfolio
Allocations			
Average annual total returns (%)	9.2	11.6	9.8
Standard deviation (%)	5.5	10.7	5.7
Sharpe ratio	1.17	0.82	1.23

Data are based on rolling one-year total returns, calculated on a quarterly basis for periods ended 31 Mar 1991 through 31 Dec 2025. Asset classes reflect the following indexes: U.S. stocks: Russell 3000 Index; non-U.S. stocks: MSCI ACWI ex USA Index; U.S. bonds: Bloomberg Barclays U.S. Aggregate Index; global investment-grade bonds: Bloomberg Barclays Global Aggregate Index; privately held U.S. commercial real estate: NCREIF Real Estate Index; privately held U.S. farmland: NCREIF Farmland Index; privately held U.S. timberland: NCREIF Timberland Index; publicly traded U.S. real estate investment trusts (REITs): FTSE Nareit U.S. Real Estate Index; public agricultural commodities: S&P GSCI Agriculture Index; public timber: a Timber proxy index created by Nuveen that combines S&P Global Timber and Forestry Index (2004 - 2025) with the returns of companies representing 4% or more of the index between 1991 and 2003; private infrastructure: EDHEC Infrastructure & Private Assets Research Institute (from 31 Mar 2001). Based on data sourced from Scientific Infra & Private Assets (apps.sipametrics.com) Copyright © 2026 Scientific Infra & Private Assets. All rights reserved; public infrastructure: S&P Global Infrastructure Index (data from 31 March 2002).

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Sources: NCREIF; Bloomberg; EDHEC Infrastructure & Private Assets Research Institute; Nuveen, LLC.

Investment implications and conclusions

This analysis shows private real assets offer compelling potential to enhance risk-adjusted returns. As long-term investments, their benefits have potential to provide some compensation for their relative illiquidity. They can combine bond-like income from asset leases or contracted cash flows, and equity-like returns from long-term appreciation in asset values. These features can help support asset-liability matching, with potential for improved long-term portfolio returns to meet future obligations, and lower volatility of returns to meet current liabilities.

Our analysis offers a framework for understanding the potential benefits from adding private real assets to investment portfolios:

- Adding private exposure to any single category — farmland, timberland, infrastructure or commercial real estate — increased portfolio returns and reduced risk, resulting in higher Sharpe ratios.
- Private real assets offered greater risk-adjusted returns compared with publicly traded commodity and infrastructure stocks and REITs. In combination, private real assets helped to diversify the volatility of publicly traded commodities and infrastructure stocks and REITs, resulting in higher portfolio risk-adjusted returns.
- Portfolios comprising only private real assets with allocations reflecting real-world constraints also produced better risk-adjusted returns than the traditional stock and bond portfolio.

Overall, we believe results support the case for diversifying traditional portfolios with multiple categories of real assets within realistic limits. A combined allocation of only 10%, evenly divided among the four categories of real assets, improved portfolio risk-adjusted returns compared with the conservative stock and bond portfolio.

These results should be considered broadly illustrative — not specific investment recommendations. As noted previously, data limitations — relatively short time series, self-reporting, and a “smoothing” effect from periodic appraisals — are likely to understate actual volatility of private real assets returns. Traditional mean-variance optimization has well-known drawbacks that are not tied to a specific asset class, including the assumption that returns are normally distributed and reliance on historical returns that cannot predict future results. While these limitations are important to acknowledge, they do not undermine the potential for real assets benefits to persist in the future. First, long-term capital appreciation depends on inexorable global trends — population growth and urbanization — that drive steadily rising demand and diminishing supplies of food, wood products and high-quality commercial real estate. Second, real assets’ low correlations and capacity to diversify risk are primarily a function of their being private, relatively illiquid, and not subject to public markets and speculative trading.

Investors seeking the potential benefits of these alternative asset classes could identify asset managers with specialized expertise, strategic partners, global scale and a track record of investment success.

Challenges of investing in private real assets

High barriers to entry make it difficult for many investors to undertake direct investments in private real assets, particularly farmland and timberland. Gaining access and managing complex risks require proven capabilities to address three major hurdles:

- **Lack of transparency.** Sophisticated due diligence capabilities are essential to access opportunities and analyze the potential profitability and cash-flow profile of assets in diverse regions around the globe.
- **Capital requirements.** Deep financial reserves may be necessary to achieve scale and diversification. Diversified fund offerings may help to address challenges related to capital requirements.
- **Operational risks.** Investing in real assets comes with unique operational risks. Farmland and timberland involve a range of operational risks that include weather, pest damage, marketing perishable crops and complying with local regulations. Expertise in local markets and access to a network of local operators can allow investors to transfer operational risk and gain steady income through leasing contracts. Operating infrastructure assets also carries additional risks as highlighted in the Q&A on page 13. Commercial real estate requires investment scale for diversification and large staff to acquire and oversee holdings.

Addressing these challenges

Investors seeking the potential benefits of these alternative asset classes could identify asset managers with specialized expertise, strategic partners, global scale and a track record of investment success. In the following section we hear first-hand how TIAA is addressing these challenges in their own private real assets portfolio.

Private real assets: an insurer's experience

Marc deBree, head of real estate and alternative assets at TIAA, discusses how and why the TIAA General Account invests in private real assets, and the challenges and solutions these assets pose regarding portfolio construction, responsible investing and more.

Q: Why did the General Account begin investing in private real assets?

The TIAA General Account became a consistent equity holder of commercial real estate assets in the 1990s, having been investing in commercial mortgages as far back as the 1930s. As we became more comfortable as a real estate equity investor, we looked for additional equity opportunities in other real assets.

Our first timberland investment was in 1998, driven by portfolio diversification goals, the promise of a good return and the opportunity to develop a business that could attract third-party capital. Our first farmland investment was in 2007, and our first infrastructure investment was the following year. In each case it was an opportunity to add an asset class that helped diversify our alternatives exposure and continue to build a portfolio that aligned well with our long-dated liabilities and our risk/return requirements. Over the last 30 years, we've been successful in growing a diverse, global, private real assets portfolio that now makes up about 7% of total AUM (closer to 18% if you include commercial mortgages).

Q: What are the benefits of adding real assets to an institutional portfolio?

The chief advantage is diversification of the drivers of portfolio return, and as a result, a reduction in downside volatility. While real assets can experience cycles where values fall, over the long run a diversified real assets strategy provides improved stability to our portfolio and gives us another tool that aims to generate excess returns for our participants.

I'll add that real assets are also a great tool for accessing long-term global trends that we want to be investing into: a growing global population that needs food, fiber and energy; the increasing need for affordable and modern housing that meets the needs of today's families; continued development

of infrastructure that helps move an increasingly mobile society and supports the energy infrastructure needed to power our economies. These are long-term investment tailwinds that real assets do a great job of accessing.

Q: What guidance can you give other institutional investors considering allocating to these private real assets?

The capital preservation and inflation-hedging components of real assets along with their ability to diversify your income streams are very real, but to have a successful experience, you really have to appreciate that this is a very different class of investments from traditional stocks and bonds. They are operationally complicated, illiquid, and best approached as a long-term investment tool. For those with mostly traditional public stock and bond portfolios, the lack of timely and robust data sources for monitoring value and performance in real assets can be a meaningful culture shift within an organization. Optimizing a real assets portfolio can take years of acquisition and disposition activity, but I think the journey and the risks are worth it and I'd urge any long-term, institutional investor to explore how these types of assets can enhance the performance they want to be delivering to their clients.

Q: How does the paper's analysis reflect the GA's thinking about its private real assets exposure?

The research supports our view that adding private real assets to our portfolio improves diversification, adds inflation hedging tools, and enhances overall risk-return metrics over the long-term. We find this type of mean-variance modeling to be very useful for supporting our on-going allocations to alternatives.

Q: How do you expect real assets to perform in the current environment of rising rates and inflation?

I think they'll do great. Real assets tend to perform well during extended periods of steady, slightly higher inflation, and today's interest rate environment signals that that's exactly where we are. These types of market conditions are

where the inflation-hedging aspect of real assets becomes important for portfolio resiliency.

In 2022, when rates went up so quickly, real assets (especially commercial real estate) struggled because they couldn't re-price as quickly as fixed income or public equity investments. The result was often an increasing gap between buyer and seller expectations of value which then slowed transaction markets and negatively impacted asset valuation metrics. The increased cost of debt also strained investments' operational models in many cases. Today, though, we're in a steadier interest rate environment and real asset valuations have now incorporated the higher cost of capital. They now stand to benefit from the inflation-driven appreciation component that makes up part of the return they can deliver.

Of course, there are so many other drivers of return with these types of assets (weather patterns, consumer demand, local economic factors, geopolitical tensions) that the actual go-forward return can't be projected on just the interest rate environment. Still, an environment of stable, heightened interest rates tied to slightly higher inflation is not a bad thing for real asset performance.

Q: What additional risks do you have with private real assets?

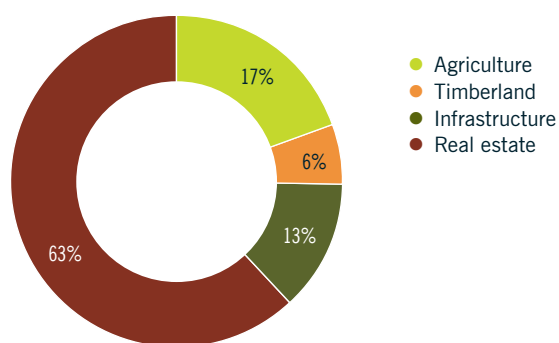
Illiquidity risk really can't be overstated. You cannot simply sell out of these types of investments in an hour or a day or a week. So, investors with private real assets have to be focused on understanding their cash needs. Additionally, because these are physical assets that people interact with on a daily basis (a farm, a shopping center, a toll road), the reputational risk that can come from different social perspectives on how they should be managed is heightened. Finally, these can be complicated investments that introduce additional legal and structuring risks, counterparty risk and concentration risks that you might be able to more easily avoid or mitigate within a more traditional portfolio.

Partnering with an experienced asset manager can make a big difference in helping mitigate all these risks, though. They understand the challenges and how to manage them. A robust and engaged risk management team is also important and is a critical component of our real asset management framework.

Q: How do you look at real assets from a climate perspective?

Climate change is real and though the timing remains uncertain, the world will have to move towards a low carbon economy to mitigate some of the negative implications of the changes. If constructed with a focus on climate and carbon impacts, a diverse real assets portfolio can be a powerful portfolio tool for managing financial risks associated with this transition. Farmland's lower carbon intensity, timberland's ability to sequester carbon, and the real estate and infrastructure roles in building out more energy efficient systems and properties are all important for an investor who wants to improve portfolio resiliency as climate change plays out.

Figure 7: Allocations to real assets in the TIAA General Account (as of 31 Dec 2025)



\$316.3 B

General Account
total assets under
management

\$21.3 B

Private real assets
investments in the
General Account

\$48.0 B

Total statutory
capital

Source: TIAA; figures may not sum to 100 due to rounding.

About Nuveen

Nuveen is a global investment leader, managing \$1.4T in public and private assets⁵ for clients around the world and on behalf of TIAA, our parent company and one of the world's largest institutional investors.

With broad expertise across income and alternatives, we invest in the growth of businesses, real estate, infrastructure and natural capital, providing clients with the reliability, access and foresight unique to our 125+ year heritage.

Our prevailing perspective on the future drives our ambition to innovate and adapt our business to the changing needs of investors — all to pursue lasting performance for our clients, our communities and our global economy.

For more information, please visit nuveen.com.

Endnotes

- 1 See figures 1 – 6.
- 2 The Power of Private Real Assets, Nuveen, January 2023
- 3 Pricing data for private investments is reported less frequently than for publicly listing investments and often after the time of transaction.
- 4 Nuveen Research, 2020, How Westchester identifies and evaluates farmland suitable for institutional investment
- 5 As of 31 Mar 2026. Nuveen assets under management (AUM) is inclusive of underlying investment specialists.

Sources

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All information has been obtained from sources believed to be reliable, but its accuracy is not guaranteed. There is no representation or warranty as to the current accuracy, reliability or completeness of, nor liability for, decisions based on such information and it should not be relied on as such. For term definitions and index descriptions, please access the glossary on nuveen.com. **Please note, it is not possible to invest directly in an index.**

A word on risk

This material is presented for informational purposes only and may change in response to changing economic and market conditions. This material is not intended to be a recommendation or investment advice, does not constitute a solicitation to buy or sell securities, and is not provided in a fiduciary capacity. The information provided does not take into account the specific objectives or circumstances of any particular investor, or suggest any specific course of action. Financial professionals should independently evaluate the risks associated with products or services and exercise independent judgment with respect to their clients. Certain products and services may not be available to all entities or persons. **Past performance is not indicative of future results.**

Economic and market forecasts are subject to uncertainty and may change based on varying market conditions, political and economic developments. As an asset class, real assets are less developed, more illiquid, and less transparent compared to traditional asset classes. Investments will be subject to risks generally associated with the ownership of real estate-related assets and foreign investing, including changes in economic conditions, currency values, environmental risks, the cost of and ability to obtain insurance, and risks related to leasing of properties.

Real Asset investments may be subject to environmental and political risks and currency volatility.

The TIAA General Account is an insurance company account and does not present an investment return, and is not available to investors.

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