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NATURAL CAPITAL

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Natural capital as a shock absorber in investment portfolios

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INTRODUCTION

Historic volatility and uncertainty in global equity markets — driven by the escalating trade war and related inflation fears — is leading some investors to re–evaluate portfolio allocations to ensure they are well–positioned to weather the current economic environment. Of primary importance are allocations that can serve as a shock absorber within an investment portfolio, mitigating overall portfolio risk and reducing the impact of market volatility.

Fixed income is often described as a shock absorber in an investment portfolio and our research shows that natural capital may serve a similar role, providing:

- Diversification benefits from a lack of correlation with public equity and fixed income markets;
- Steady returns through periods of high volatility; and
- Capital preservation, especially during drawdown events.

As an asset class, natural capital has developed over the past three plus decades in a way that has expanded the scale and set of opportunities within the institutionally investable universe. Farmland and timberland's institutionally investable universe now stands at an estimated $600+ billion globally.[1]

The performance track records reported by NCREIF for U.S. farmland and timberland have been instrumental in demonstrating the portfolio–level benefits from the asset class, supporting the investment case for natural capital and enabling allocations. And in recent years, growing interest in the climate and nature benefits of natural capital and related environmental markets has further increased appetite for timberland and farmland investments.

Institutional portfolios typically include a mix of traditional and alternative assets, with about 33% to fixed income, 44% to equities, and 17% to alternatives.[2] Alternatives may include private equity, real estate, farmland and timberland. Although optimal portfolio allocation by asset class will vary by institutional investor, there is a common desire for portfolio diversification, stability, and downside risk management. We analyze historical performance data across a range of alternatives and traditional asset classes to evaluate how natural capital may serve these three objectives focusing on periods of high volatility and significant drawdown.

DIVERSIFICATION

The historic low or negative correlation between real assets and traditional asset classes and related portfolio diversification benefits has been well documented. Using data through year–end 2024, we find that this relationship remains firmly intact with private real assets moving independently of both public equity and fixed income markets. In fact, comparing the correlation of farmland and timberland returns to public equity markets, we find a more strongly negative relationship in the years since 2008 and the Global Financial Crisis (GFC). U.S. bonds also remain largely uncorrelated with U.S. public equity markets.

Figure 1: Natural capital's low or negative correlations with traditional asset classes

Long–term correlations, 1991–2024

	Farmland	Timberland	Real estate	U.S. stocks	U.S. bonds	Gold
Farmland	1.00					
Timberland	0.27	1.00				
Real estate	0.42	-0.02	1.00			
U.S. stocks	-0.06	0.11	0.08	1.00		
U.S. bonds	-0.18	0.12	-0.20	0.07	1.00	
Gold	0.08	-0.15	-0.08	-0.11	0.11	1.00

Post–GFC correlations, 2008–2024

	Farmland	Timberland	Real estate	U.S. stocks	U.S. bonds	Gold
Farmland	1.00					
Timberland	0.30	1.00				
Real estate	0.30	0.16	1.00			
U.S. stocks	-0.21	-0.20	0.09	1.00		
U.S. bonds	-0.10	-0.59	-0.30	0.16	1.00	
Gold	-0.56	-0.53	-0.28	0.10	0.57	1.00

SOURCES: Bloomberg; Macrobond; NCREIF; NNC Research. NOTES: Data are based on rolling one–year total returns calculated on a quarterly basis for periods ended 31 Dec 1991 through 31 Dec 2024. Asset classes reflect the following indexes: **U.S. stocks** – Russell 3000 Index; **U.S. bonds** – Bloomberg Barclays U.S. Aggregate Index; **Timberland** – NCREIF Timberland Index; **Farmland** – NCREIF Farmland Index; **Real estate** – NCREIF Property Index; **Gold** – World Gold, New York Close USD.

STABILITY

In addition to portfolio diversification benefits, the stability of natural capital has long been seen as an attractive feature of the asset class, especially compared to public equity markets. The steady return profile comes from the combination of real asset yields, underpinned by biological growth of agricultural crops and trees, fundamental demand drivers for food and wood products, and capital appreciation from the underlying land. The illiquid aspects of private assets may artificially smooth volatility over shorter intervals, however our focus on annual returns matches the frequency of valuations for most institutionally owned U.S. assets. As shown in Figure 2, over the past three plus decades, U.S. stock performance has had about two times more volatility (as measured by standard deviation) compared to timberland and farmland and post–GFC, nearly four times more volatility.

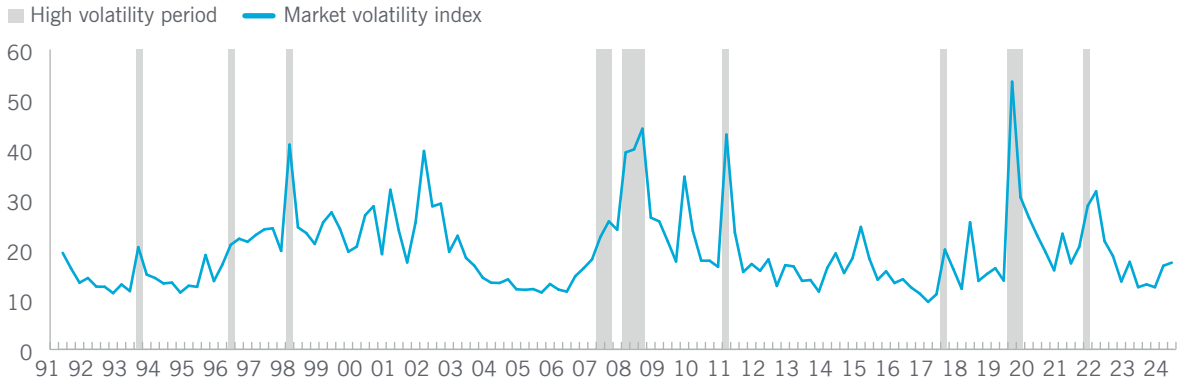
Beyond simply demonstrating natural capital's low volatility on average, we also examine the stability of natural capital returns through market rallies and selloffs and especially in periods of high volatility. As a measure of public equity market volatility, we use the S&P 500 Volatility Index (VIX). Figure 3 shows the VIX over time, with periods of high volatility – defined as those where the percent change in the VIX exceeds one standard deviation of its mean – highlighted in Figure 3.

Figure 2: Comparing average annual returns, volatility of returns and Sharpe ratios

	Farmland	Timberland	Real estate	U.S. stocks	U.S. bonds	Gold
1991–2024						
Average return	0.10	0.09	0.08	0.12	0.05	0.07
Volatility (Std dev.)	0.07	0.09	0.08	0.17	0.05	0.15
Sharpe ratio	1.16	0.72	0.58	0.53	0.42	0.28
2008–2024						
Average return	0.10	0.05	0.06	0.12	0.03	0.07
Volatility (Std dev.)	0.05	0.05	0.10	0.18	0.05	0.15
Sharpe ratio	1.29	0.50	0.32	0.53	0.03	0.32

SOURCES: Bloomberg; Macrobond; NCREIF; NNC Research. NOTES: Sharpe ratio calculated using a risk–free rate equal to the average yield on 1Y Treasuries. See Figure 1 for detail on data.

Figure 3: Public equity market volatility



SOURCES: S&P 500 Volatility Index (VIX) – Macrobond; NNC Research. NOTES: Market volatility data are the quarterly closing values of the VIX for periods ended 31 Dec 1991 through 31 Dec 2024. High volatility periods are those quarters where the percent change in the rolling four–quarter average of the VIX calculated on a quarterly basis exceeds one standard deviation of its mean.

Using these time series data on market volatility, we examine the correlation between the VIX and returns across the same group of alternatives and traditional asset classes. As expected, U.S. stocks are negatively correlated with market volatility, meaning markets tend to perform poorly when volatility increases. In contrast, there is a lack of correlation between natural capital and public equity market volatility. Similarly, real estate, U.S. bonds, and gold are largely uncorrelated with broader market volatility.

Between 1991 and 2024, there were 13 periods we classify as high volatility, shown in Figure 3. Comparing returns across asset classes during those high volatility periods to average overall returns highlights the sensitivity of returns to the most extreme periods of market turbulence. Over this period, U.S. stocks significantly underperformed in periods of high volatility. In contrast, farmland and timberland performance was nearly identical in high volatility periods compared to their average overall, anchored by a highly consistent income component of return from real asset yields. We observe similar relative performance for both real estate and fixed income. Gold significantly outperforms in periods of high volatility compared to its average returns overall (even though it was uncorrelated to the VIX overall), but lacks a stabilizing income component of return as illustrated in Figure 2.

Figure 4: Correlation with Market Volatility Index

	Farmland	Timberland	Real estate	U.S. stocks	U.S. bonds	Gold
1991–2024	0.01	0.01	0.15	-0.50	0.02	0.04
2008–2024	-0.04	0.06	0.14	-0.59	0.00	0.02

SOURCES: Bloomberg; Macrobond; NCREIF; NNC Research. NOTES: Correlation coefficient is calculated using data based on rolling one–year total returns calculated on a quarterly basis for periods ended 31 Dec 1991 through 31 Dec 2024 and VIX data based on the percent change in the rolling four–quarter average of the VIX calculated on a quarterly basis. See Figures 1 and 3 for additional detail on data.

Figure 5: Average returns in periods of high market volatility (%)

	Farmland	Timberland	Real estate	U.S. stocks	U.S. bonds	Gold
1991–2024						
Average return in high volatility	11.0	10.5	7.4	-5.8	4.5	13.3
Average overall	10.5	9.3	7.7	11.9	5.0	6.8
2008–2024						
Average return in high volatility	9.8	4.7	4.5	-11.6	3.2	12.3
Average overall	9.5	5.1	5.8	12.4	2.9	7.5

SOURCES: Bloomberg; Macrobond; NCREIF; NNC Research SOURCES: Bloomberg; Macrobond; NCREIF; NNC Research.

DOWNSIDE RISK MANAGEMENT

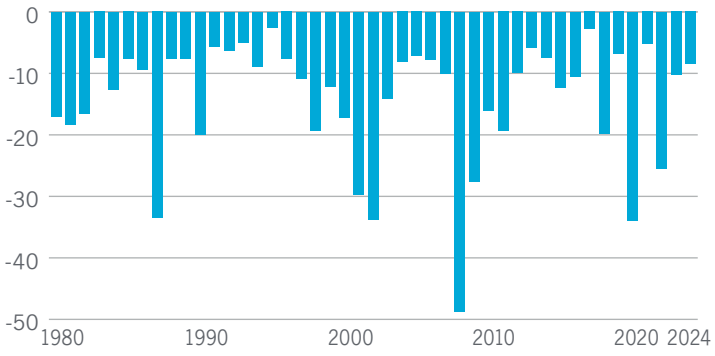
For investors seeking steady returns over time, maximum drawdown is a metric often used to quantify downside risk. Maximum drawdown is calculated as the maximum percentage loss from peak to trough of an Index or portfolio during a specific period of time. We examine the performance of natural capital during drawdown events in public equity markets.

Figure 6 shows the maximum drawdown in U.S. public equity market every year between 1991 and 2024. We find that annual drawdown events of more than 10% are frequent, occurring in more than two out of every three years on average over the 34–year period. The average annual maximum drawdown during this period is 14% (with a standard deviation of 10%).

Exposure to asset classes with steady, positive performance through more significant drawdown events helps to mitigate downside risk in these years and supports capital preservation. We therefore examine average performance in the seven years where we saw major drawdowns in the public equity market that exceeded 20%. As shown in Figure 7, unsurprisingly, U.S. stocks tend to underperform in severe drawdown years, although in some years a severe drawdown can be followed by a dramatic recovery (e.g., 2009). Farmland performed relatively well in severe drawdown years compared to its average return overall — down from 10.3% to 7.3% — and compared to other alternative asset classes. We find that only gold outperforms farmland in severe drawdown years. In fact, gold outperforms its average return overall by more than two times in severe drawdown years.

Because of the illiquidity inherent to private real assets like timberland and farmland, maximum drawdown metrics may not be as useful as they are in public equity markets as measure of downside risk. Nonetheless, using NCREIF market value data for timberland and farmland, it is possible to calculate maximum drawdown in a single year. For the period 1991–2024, the average annual maximum drawdown in both timberland and farmland is estimated at 0.6% (with a standard deviation of 0.9% for timberland and 1.4% for farmland). This suggests very limited downside risk and supports timberland and farmland as sources of capital preservation.

Figure 6: Public equity market maximum drawdown (%)



SOURCES: Bloomberg; Macrobond; NCREIF; NNC Research. NOTES: Maximum percent drawdown p.a. for S&P 500 Index – Macrobond.

Figure 7: Comparing average performance across asset classes in severe drawdown years (%)

	Farmland	Timberland	Real estate	U.S. stocks	U.S. bonds	Gold
Average return in severe drawdown years	7.3	2.5	-0.4	-7.3	4.1	13.7
Average return overall 1991–2024	10.3	9.3	7.5	12.3	5.0	6.7

SOURCES: Bloomberg; Macrobond; NCREIF; NNC Research. NOTES: Severe drawdown years are those where the max percent drawdown p.a. is greater than 20%: 2001, 2002, 2008, 2009, 2020, and 2022. See Figures 1 and 3 for additional detail on data.

WHAT DOES THIS MEAN FOR INVESTORS?

Though fixed income is often described as a shock absorber in an investment portfolio, we find compelling evidence that natural capital may serve a similar role, providing portfolio diversification benefits and steady returns both through periods of high volatility and during drawdown events. While real estate shares some of these characteristics, our analysis suggests that the asset class tends to be more impacted by broader public equity market volatility and drawdown events. Because of natural capital's scale constraints and institutional liquidity requirements, timberland and farmland could never replace fixed income in an institutional portfolio; however, evidence suggests they can provide a natural complement to fixed income in a diversified investment portfolio.

For more information, please visit our website, nuveen.com/naturalcapital.

Endnotes

Sources

1 Timberland's Expanding Investible Universe | Nuveen Natural Capital | Nuveen; NNC Research.

2 2025 Wealth Industry Survey, The Eve of Disruption, Natixis, March 2025. 5% to cash and 1% to other. The survey was conducted in December 2024 and January 2025 and included 520 institutional investors in 20 countries throughout North America, Latin America, the United Kingdom, Continental Europe, Asia and the Middle East.

Risks and other important considerations

Important information on risk

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