



Portfolio Insight

The Role of Broad Commodities in a Portfolio

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Introduction

In 2022 the 60/40 equity-bond portfolio suffered one of its worst years in history, with both assets posting large losses. Commodities, on the other hand, posted large gains. We are not arguing that every year commodities will outperform other assets, but we believe that they behave differently to other assets and add significant diversification to a strategic asset allocation. This is why, at WisdomTree, we believe that commodities should be considered an essential component of a portfolio.

Portfolio diversification is one of the first rules of investing and broad commodities—a large basket of commodities spanning across metals, agriculture, energy—are an ideal way to add variety to a traditional portfolio and should be considered as a strategic allocation, not just tactical.

In this Portfolio Insight, we:

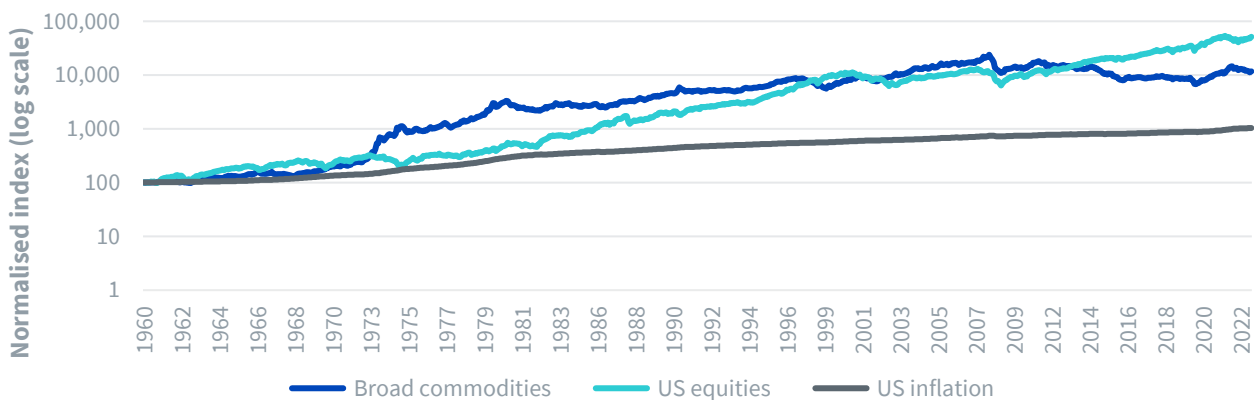
1. Explore the main traits of commodities that make them suitable for a strategic allocation and portfolio diversification.
2. Present a framework to answer, ‘what is the optimal weight an investor should allocate to a broad commodity portfolio?’

Part 1: 5 key broad commodity traits

1. Positive risk premia

Commodities offer a positive risk premia: they offer a return greater than the risk-free rate (which we can proxy with the inflation rate). Many investors who just look at spot commodity prices over the long-term are fooled into thinking commodities don't offer a risk premium because, in real terms, commodity prices since 1850 have been broadly flat (see [The Case for Investing in Broad Commodities](#), Figure 1). However, when looking at rolling commodity futures strategies, such as The Bloomberg Commodity Index, we can see that commodities have clearly outperformed US inflation since 1960 (the start of the index), by a significant margin (see Figure 1 below). A rolling futures strategy incorporates a collateral and roll yield in addition to the spot price.

Figure 1: Rolling futures broad commodity strategies outperform inflation

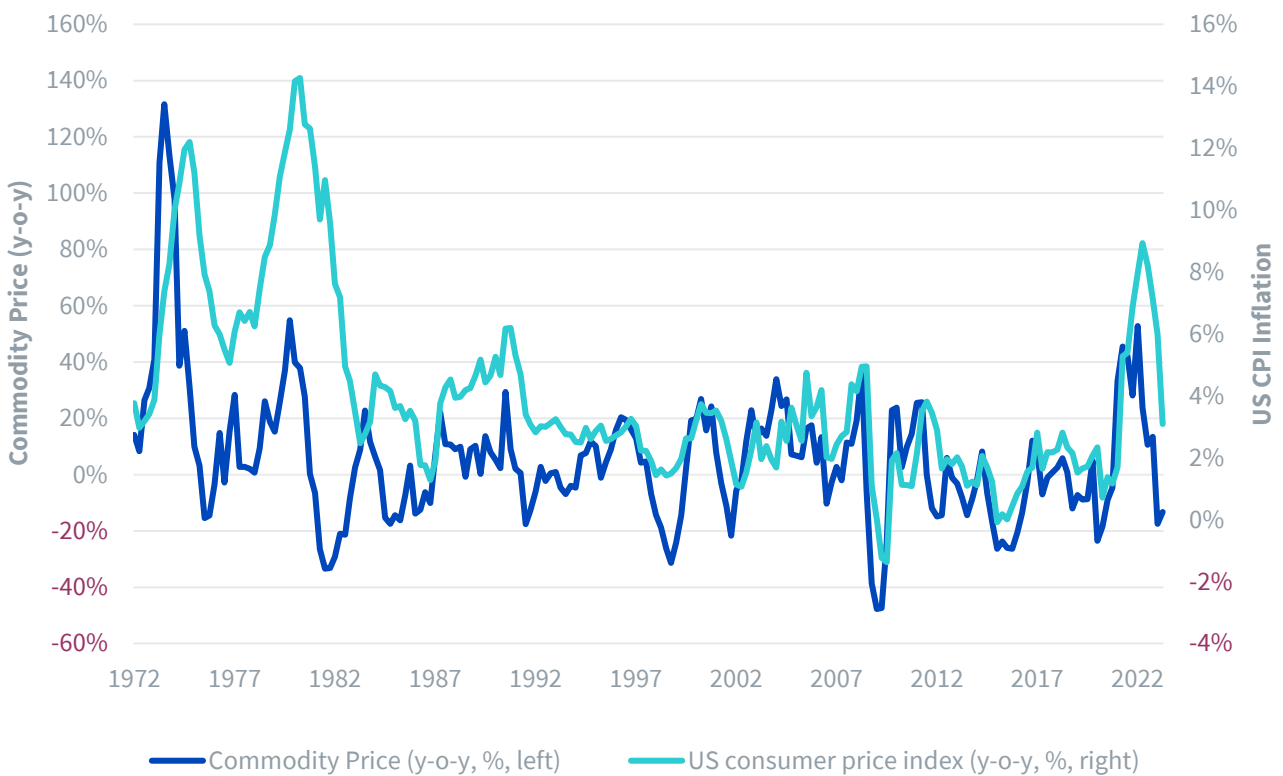


Source: WisdomTree, Bloomberg. From January 1960 to June 2023. Asset descriptions are provided at the end of this report. **Historical performance is not an indication of future performance and any investments may go down in value.**

2. Inflation hedge

Inflation is a menace. It erodes nominal asset gains. It can be highly unpredictable and drives central bankers to take away the punchbowl just as the party gets started¹. Fortunately, commodities are a great hedge for inflation. Figure 2 highlights that commodity prices tend to move in the same direction as the Consumer Price Index (CPI) consumption basket used for inflation calculations. And they can move by significantly larger margins. For example, in the 1970s when US inflation was rising in the 10s of percentage points, commodity prices were moving in the 100s of percentage points.

Figure 2: Commodity price vs US inflation

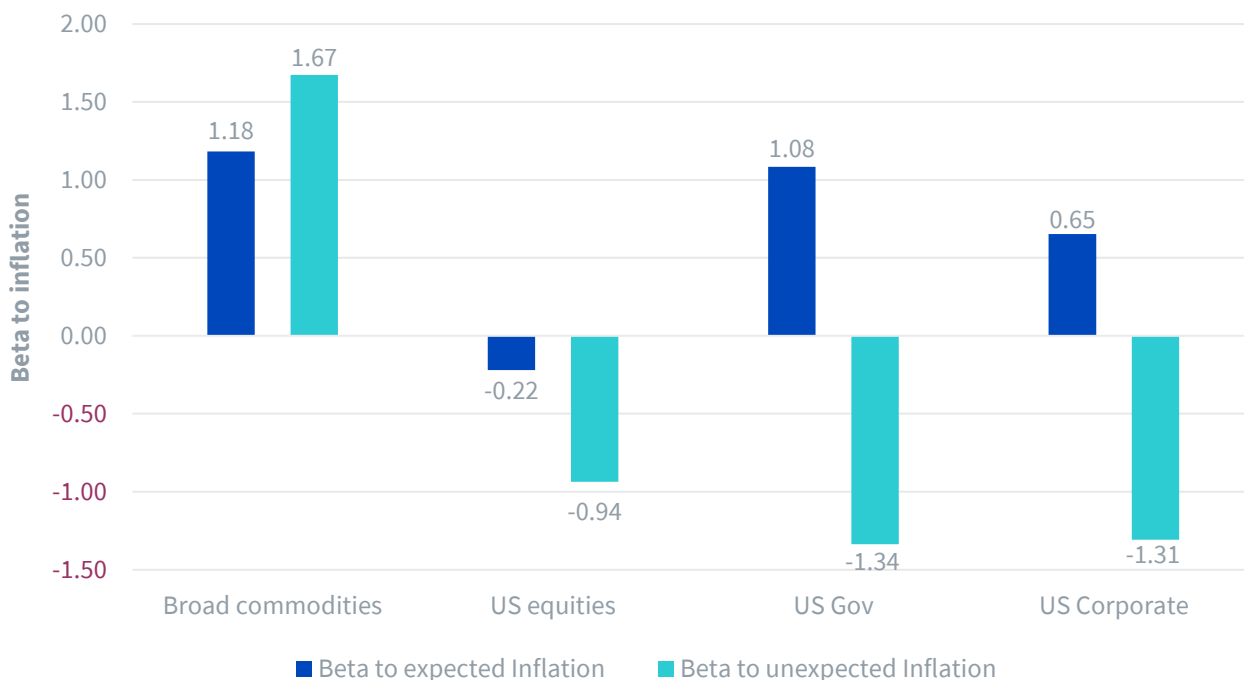


Source: WisdomTree, Bloomberg. From Q1 1972 to Q2 2023. Calculations are based on year-on-year returns in USD based on quarterly data. Commodity Price is Bloomberg Commodity Total Return. Asset descriptions are provided at the end of this report. **Historical performance is not an indication of future performance and any investments may go down in value.**

Looking at the data from a quantitative lens, we can see that commodities are more sensitive to inflation than other assets (Figure 3). The beta (that is, how much the asset price moves for every one percent move in CPI) is greater than 1 for commodities. Moreover, the beta to unexpected inflation is even higher for commodities. In contrast, the beta to unexpected inflation for US equities, US corporate bonds, and even US government bonds is negative.

1. October 1955, Fed (Federal Reserve) Chair William McChesney Martin, Jr. delivered a speech to the New York Group of the Investment Bankers Association of America in which he used the following metaphor to describe the role of the central bank: “The Federal Reserve... is in the position of the chaperone who has ordered the punch bowl removed just when the party was really warming up” indicating that the central bank’s job is to cool the economy just when economic activity is heating up.

Figure 3: Asset sensitivity to expected and unexpected inflation



Source: WisdomTree, Bloomberg, S&P. From January 1960 to June 2023 (Broad commodities and US equities), Jan 1973 to June 2023 (US Gov and US Corporate). Calculations are based on monthly returns in USD. Asset descriptions are provided at the end of this report. We define expected inflation as the T-Bill rate (which should be equal to inflation over the long-term) and unexpected inflation as the actual inflation rate less the T-Bill rate. **Historical performance is not an indication of future performance and any investments may go down in value.**

3. Low correlation with other assets

Although commodities and equities are both cyclical, their markets are somewhat out of sync from each other. Thus, correlations between commodities and equities are low – below 0.5 for US, Global and European markets (see Figure 4 below). There are special commodities, like gold, which have a correlation below 0.1 with these markets.

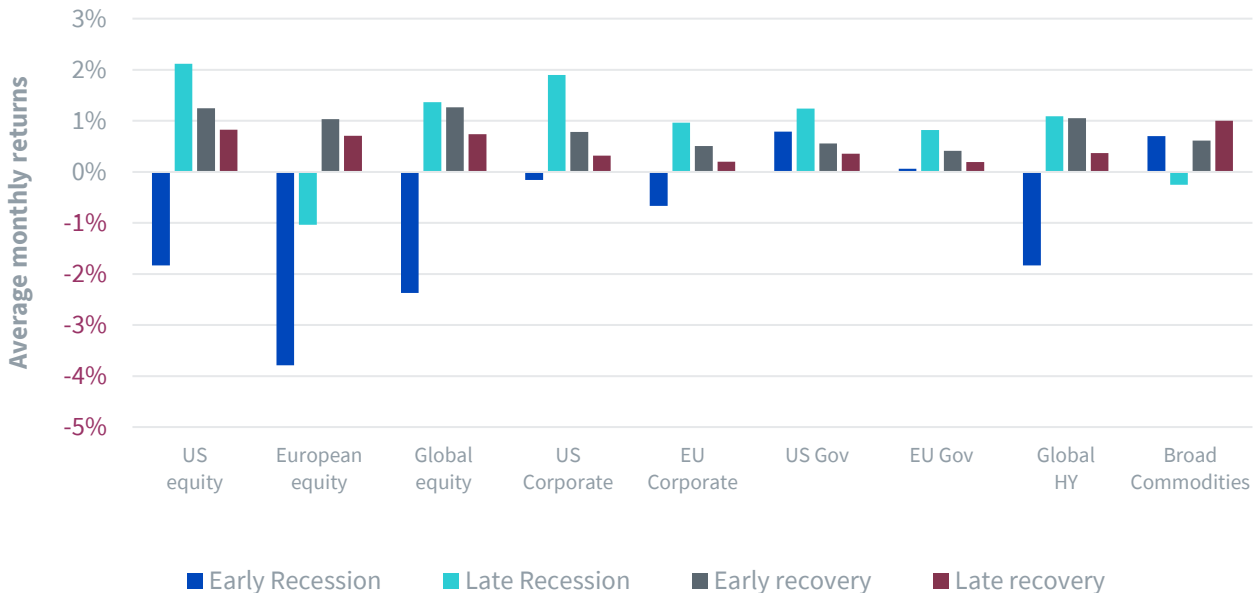
Figure 4: Correlation matrix

| | US equity | Global equity | European equity | Global HY | US Corporate | EU Corporate | EU Gov | US Gov | California Carbon | European Carbon | Broad Commodities | Gold |
|-------------------|-----------|---------------|-----------------|-----------|--------------|--------------|--------|--------|-------------------|-----------------|-------------------|-------|
| US equity | 1.00 | 0.97 | 0.82 | 0.69 | 0.33 | 0.37 | 0.03 | -0.18 | 0.24 | 0.32 | 0.39 | 0.02 |
| Global equity | 0.97 | 1.00 | 0.90 | 0.74 | 0.39 | 0.40 | 0.02 | -0.17 | 0.23 | 0.36 | 0.47 | 0.09 |
| European equity | 0.82 | 0.90 | 1.00 | 0.67 | 0.34 | 0.34 | 0.00 | -0.14 | 0.17 | 0.39 | 0.42 | 0.08 |
| Global HY | 0.69 | 0.74 | 0.67 | 1.00 | 0.63 | 0.60 | 0.13 | -0.03 | 0.26 | 0.28 | 0.44 | 0.19 |
| US Corporate | 0.33 | 0.39 | 0.34 | 0.63 | 1.00 | 0.80 | 0.60 | 0.64 | 0.19 | 0.18 | 0.21 | 0.30 |
| EU Corporate | 0.37 | 0.40 | 0.34 | 0.60 | 0.80 | 1.00 | 0.73 | 0.39 | 0.13 | 0.13 | 0.19 | 0.15 |
| EU Gov | 0.03 | 0.02 | 0.00 | 0.13 | 0.60 | 0.73 | 1.00 | 0.68 | -0.07 | -0.08 | -0.12 | 0.13 |
| US Gov | -0.18 | -0.17 | -0.14 | -0.03 | 0.64 | 0.39 | 0.68 | 1.00 | -0.09 | -0.06 | -0.12 | 0.28 |
| California Carbon | 0.24 | 0.23 | 0.17 | 0.26 | 0.19 | 0.13 | -0.07 | -0.09 | 1.00 | 0.14 | 0.15 | -0.02 |
| European Carbon | 0.32 | 0.36 | 0.39 | 0.28 | 0.18 | 0.13 | -0.08 | -0.06 | 0.14 | 1.00 | 0.31 | 0.06 |
| Broad Commodities | 0.39 | 0.47 | 0.42 | 0.44 | 0.21 | 0.19 | -0.12 | -0.12 | 0.15 | 0.31 | 1.00 | 0.37 |
| Gold | 0.02 | 0.09 | 0.08 | 0.19 | 0.30 | 0.15 | 0.13 | 0.28 | -0.02 | 0.06 | 0.37 | 1.00 |

Source: WisdomTree, Bloomberg. Dates: from January 1990 to June 2023. European equity and Global HY start from January 1999, EU Corporate and EU Gov start from June 1998. **Historical performance is not an indication of future performance and any investments may go down in value.**

While equities tend to perform the best in early recoveries and late recessions (that is, just before the economy makes a turn for the better), commodities tend to perform best in late recoveries and early recessions (Figure 5). Their asynchronous behaviour makes them surprisingly good companions.

Figure 5: Asset performance in different phases of economic cycle, with broad commodities



Source: WisdomTree, Bloomberg, National Bureau of Economic Research. January 1960 to June 2023. ‘Early’ is defined as the first half of an economic phase. ‘Late’ is defined as the second half of an economic phase. To account for different lengths of recessions and recoveries, monthly returns have been time weighted. Asset descriptions are provided at the end of this report. **Historical performance is not an indication of future performance and any investments may go down in value.**

4. Geopolitical hedge

Geopolitical tensions often impact the trade flow of commodities. Geopolitical shocks thus often present a commodity supply shock and commodity prices can rally off these. Investors seeking hedges against geopolitical shocks can, therefore, look to commodities.

The Ukraine war that started on 25 February 2022, triggered a 27% rally in oil prices, 16% rally in grain prices, 4% gain in gold in prices and 16% rally in broad commodity prices within one month of the event².

The US bombing of Libya in 1986, Operation Desert Shield (Gulf War) in 1990, and the beginning of the Iraq war in 2003 also drove oil prices up by 37%, 21% and 11% respectively after the start of the event. Although the broad basket of commodities rose by less, the basket rose on each occasion as a result of the oil price gains³.

While geopolitical risks may not keep affected commodity prices permanently higher, they soften the blow of sharp rises in input costs that can blunt company margins and hurt equity performance.

2. Source: Bloomberg.

3. Source: Bloomberg.

5. Positive skew

While some may point to slightly higher observed annualised volatility as a factor that can indicate that commodities are marginally riskier than equities, risk can be measured in several dimensions. Looking at commodities through alternative risk lenses (Figure 6), we can see that the asset may offer a more attractive risk profile, especially when concerned with the downside protection.

The returns of both commodities and equities deviate from a normal distribution (a perfect normal distribution would exhibit a skew of zero and a kurtosis of 3). But they deviate in different ways. The returns of equities are negatively skewed, meaning that the distribution has more weight on the left tail (that is, the negative side of the distribution). In contrast, commodities are positively skewed, meaning that the distribution has more weight in the right tail (that is, the positive side of the distribution). In other words, large positive returns tend to be more common for commodities than large negative returns when it is the contrary for equities.

Commodities' returns also exhibit higher kurtosis indicating even fatter tails, meaning a greater chance of more extreme return observations, probably on the positive side thanks to the positive skewness.

Figure 6: Commodity and equity risk metrics

| | Broad commodities | US equities |
|-------------------------------------|-------------------|-------------|
| Annualised volatility | 15.9% | 14.9% |
| Skewness | 0.85 | -0.43 |
| Kurtosis | 6.77 | 1.67 |
| 1 Month VaR 98% | -8.0% | -8.7% |
| #months with performance below -5% | 63 | 65 |
| #months with performance above +10% | 16 | 12 |

Source: Source: WisdomTree, Bloomberg. January 1960 to June 2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

Those distribution differences can be observed anecdotally. We can, for example, calculate the Value at Risk (VaR) at 98% of equities and commodities by ranking their monthly returns from worst to best over the historical period and looking at the monthly return that separates the best 98% of the monthly returns of the worst 2% monthly returns. The historical one-month Value at Risk at 98% of equities is -8.7% which means that, between January 1960 and June 2023, in 2% of the months, equities lost more than -8.7%. Commodities' Value at Risk is -8.0%. So, 0.7% better than equities. Historically, equities have been riskier with deeper losses which could come from the negative skew of equities. On the other side of the distribution, commodities have benefitted from 16 months with a performance above +10%, while equities benefitted from only 12.

Part 2: Identifying optimal broad commodity weights

As we demonstrated in Figure 39, Chapter IV of [The Case for Investing in Broad Commodities](#), adding broad commodities to a portfolio can push out the efficient frontier in a Markowitz-style mean-variance analysis, that is, for a given level of risk, an investor can increase expected returns by adding broad commodities to their traditional 60-40 equity bond portfolio. We also posited that optimal weights would be in the region of 10-20%.

In this section, we present an alternative framework to answer the same question: what is the optimal weight an investor should allocate to a broad commodity portfolio? We arrive at a slightly higher amount with this approach.

The procedure is as follows: we randomly select 120 months (equivalent to 10 years of data) with replacement from the monthly return time series for equity, bonds, and broad commodities⁴. This simulation represents an investor's hypothetical situation, considering 10 years of investment within the past 50 years. We repeat this process 20,000 times.

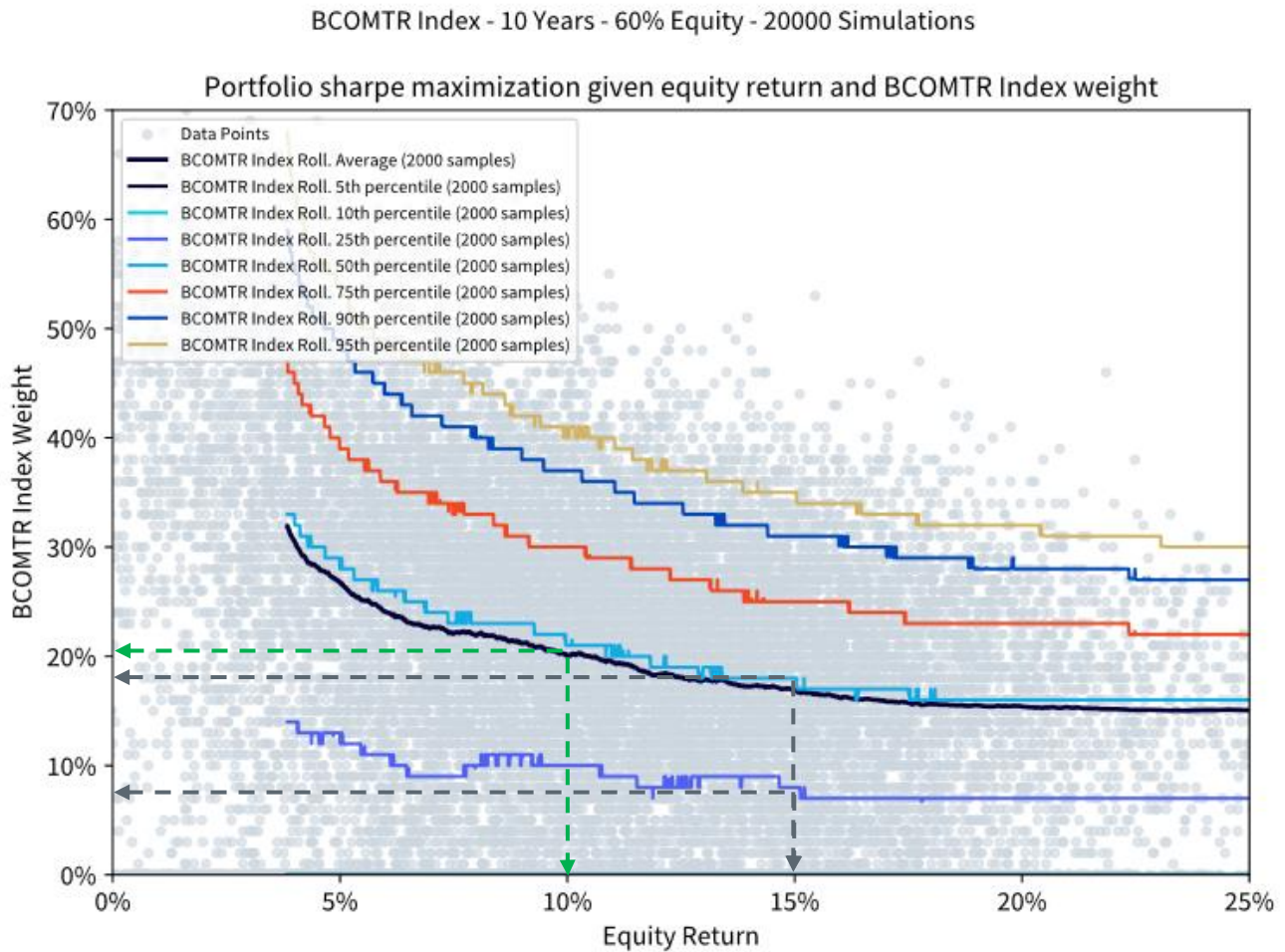
For each hypothetical realisation, we obtain three time series: one each for commodities, equity, and bonds. We maintain a fixed proportion between equity and bonds, following the well-known 60/40 split. Subsequently, we calculate the optimal weight an investor should assign to broad commodities to maximise the Sharpe Ratio⁵ of their portfolio in that specific hypothetical investment. These optimal weightings are represented as grey dots in Figure 7.

What is bootstrapping? It is a Monte Carlo simulation approach that uses existing historical data instead of generating random data. It is a technique that uses random sampling from historical returns series with replacement. It is similar to a Monte Carlo simulation, but the main difference lies in how the different series of returns used in the calculations are generated: Monte Carlo generates random data series for a specific probability distribution given its generic moments (average returns, volatility...), while the bootstrap creates random data series by resampling with replacement from the historical series of returns. In other words, bootstrapping creates new series of returns by reordering existing historical series. This makes the bootstrap samples inherit the same distribution as the original data, allowing estimation of the sampling distribution of various statistics.

4. The bond time series is the Bloomberg US Treasury Total Return Index (LUATTRUU Index), the equity time series is the S&P 500 Total Return (SPX Index) and the broad commodities time series is the Bloomberg Commodity Total Return Index (BCOMTR Index).

5. In Part 2, the Sharpe Ratio is calculated as the ratio between the annualised performance and the annualised volatility over a defined period.

Figure 7: Sharpe Ratio maximisation with bootstrapping



Source: WisdomTree, Bloomberg, S&P. From January 1973 to June 2023. Calculations are based on monthly returns in USD. Asset descriptions are provided at the end of this report. Each grey point represents the equity return and the commodity allocation for which every realisation is maximised. The coloured lines represent various rolling percentiles, where the rolling window is made of 2000 simulations, that is, 10% of the total simulations. **Historical performance is not an indication of future performance and any investments may go down in value.**

Each dot corresponds to a draw from our returns distribution, with the dots' y-axis representing the commodities weight that maximised the Sharpe Ratio for that particular realisation and the x-axis denoting the performance of the equities for that realisation, providing insight into the relative luck or unluckiness of selecting those 10 years from the available 50.

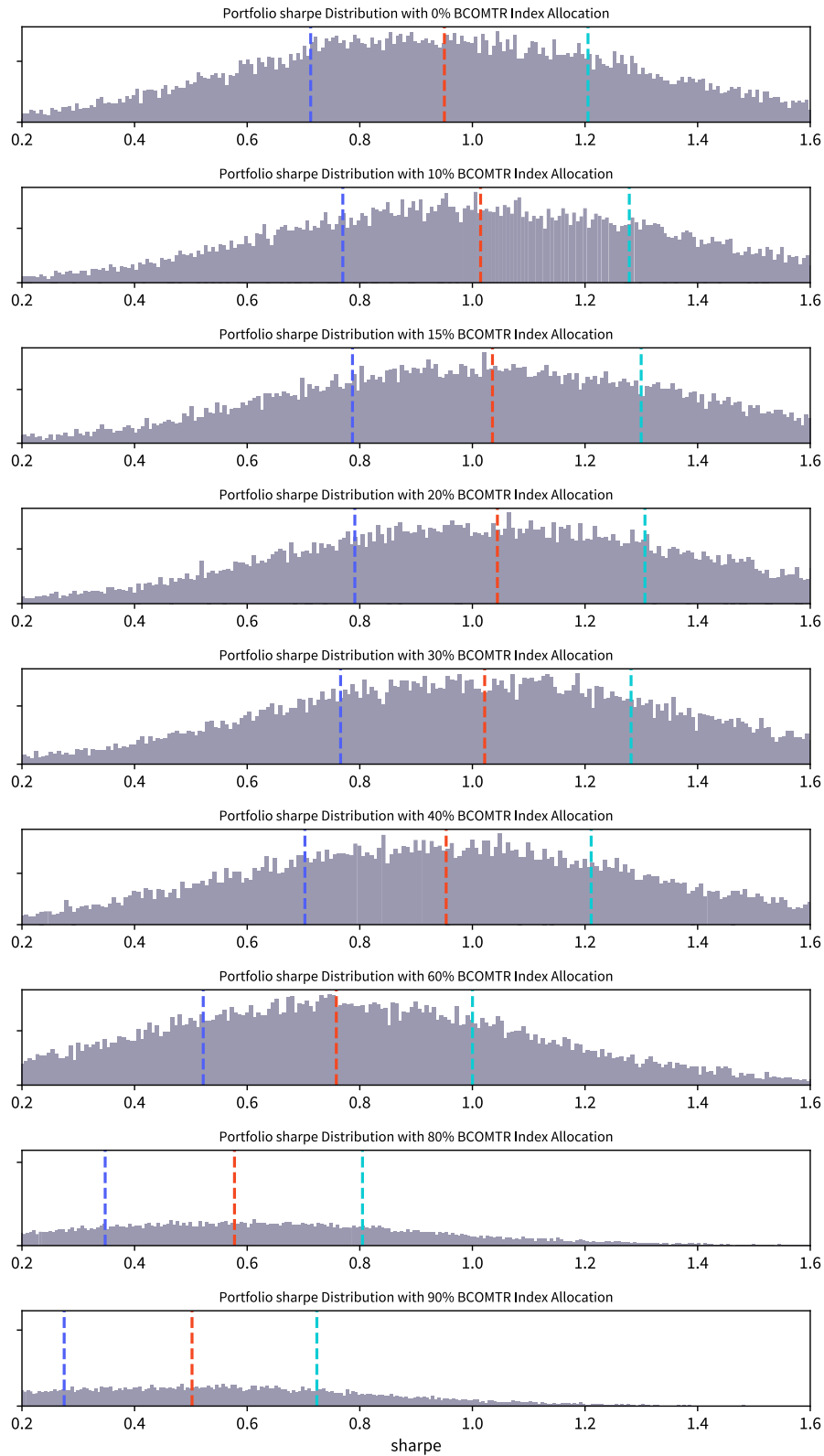
The coloured lines on the graph represent percentiles. Let's focus on the light blue line, which represents the 50th percentile, (the median). For approximately a 10% equity return (or, more precisely, for realisations with an annualised equity performance of around 10%), half of the time an investor would have maximised their Sharpe Ratio by allocating over 21% of their portfolio to commodities, while the other half of the time they would have maximised it with a lower commodity weight (see the dashed green arrows).

If the investor had been luckier and drawn a realisation corresponding to around 15% annualised equity performance, the median exposure needed to maximise the Sharpe Ratio would have been lower, approximately 18% (see the dashed black arrows). However, even in this fortunate scenario, the investor would still require a commodities allocation of more than 8% to have a relatively high probability (roughly 75%, as indicated by the bottom dashed black horizontal arrow crossing the iris line, which represents the 25th percentile) of maximising their Sharpe Ratio.

In summary, the graph conveys the following message: as equity returns decrease, the likelihood that the portfolio with the best Sharpe Ratio includes more broad commodities increases. On the other hand, for higher equity returns, an investor would have likely achieved the maximum Sharpe Ratio with a lower commodities weight, although some allocation to commodities would still be beneficial.

The challenge, of course, lies in the fact that investors typically have little insight into future equity returns over the next 10 years. As a result, it is often easier to approach the question from a slightly different perspective: given a certain allocation to commodities, how would my portfolio have performed? Figure 8 aims to address this question.

Figure 8: Sharpe Ratio distribution given commodities allocation



Source: WisdomTree, Bloomberg, S&P. From January 1973 to June 2023. Calculations are based on monthly returns in USD. Each histogram represents the Sharpe Ratio distribution for a given broad commodities allocation. The purple, orange and teal lines represent the 25th, 50th (median) and 75th percentile respectively. **Historical performance is not an indication of future performance and any investments may go down in value.**

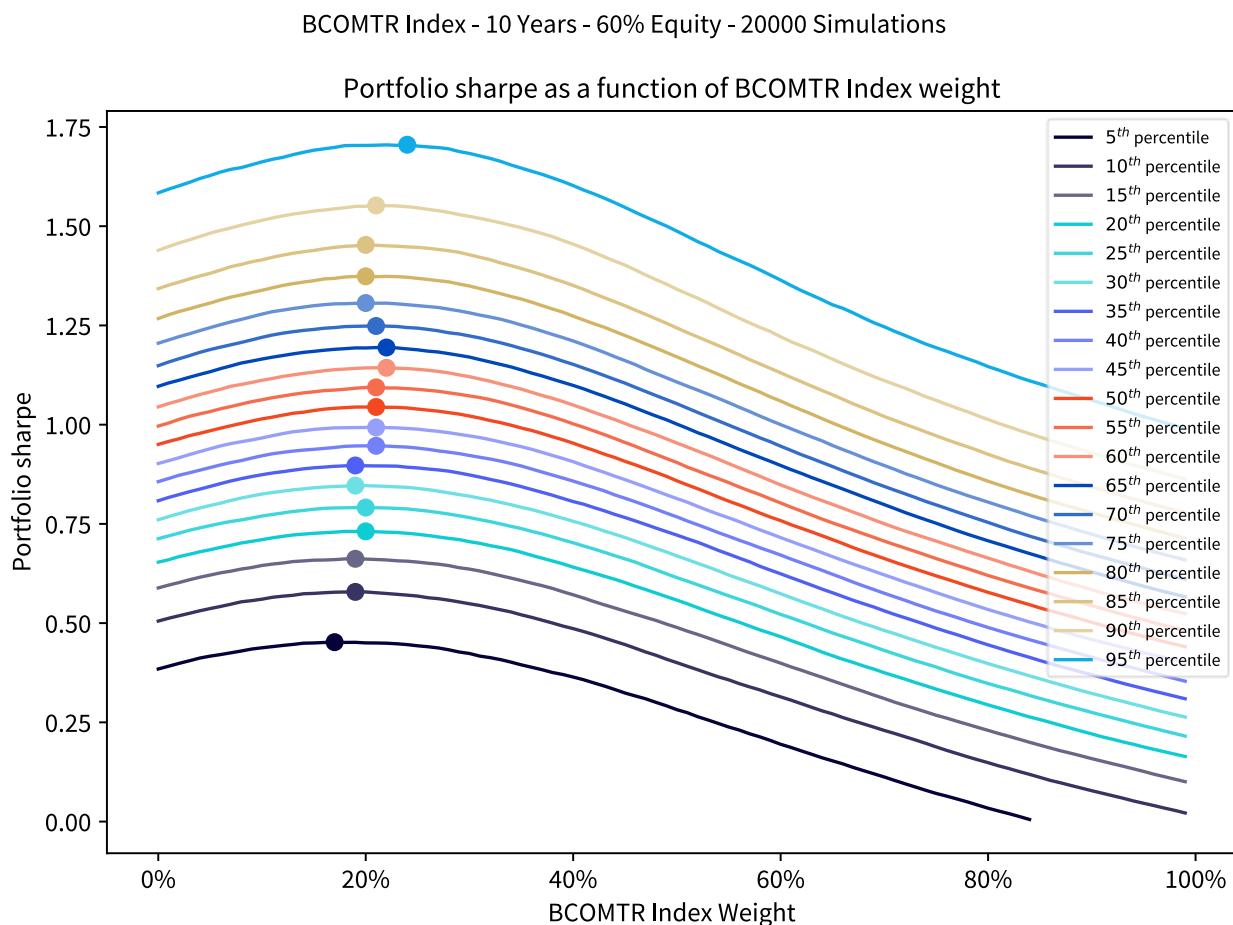
Starting from the top with a 0% commodities allocation, the 25th percentile would have yielded a Sharpe Ratio of approximately 0.7 (indicated by the purple dashed line). To clarify, sorting all the 20,000 simulated Sharpe Ratios obtained when investing in a 60/40 portfolio (with no commodities) and selecting the 5000th worst (25% of 20,000) would result in a Sharpe Ratio of 0.7.

Now, let's explore what happens when gradually increasing the allocation in commodities. The 5000th worst Sharpe Ratio would improve, reaching a peak at around an 20% commodities allocation (with a Sharpe Ratio reading of ~0.79). Beyond that point, the Sharpe Ratio 25th percentile starts to diminish.

The previous example focused on the 5000th worst Sharpe Ratio, but it's interesting to observe what happens when choosing different percentiles. For instance, considering the median (50th percentile, represented by the orange dashed line) or the 75th percentile (teal dashed line) leads to similar behaviour as observed with the 25th percentile. Increasing the commodities allocation enhances the Sharpe Ratio for the chosen percentile up to a certain point.

Summarising these findings in a single chart, we arrive at Figure 9, which illustrates how all these percentiles behave as we increase the allocation to commodities. Notably, for every percentile, the Sharpe Ratio is maximised at approximately the same commodities allocation, which falls between 17% and 24%.

Figure 9: Sharpe Ratio maximisation with bootstrapping



Source: WisdomTree, Bloomberg, S&P. From January 1973 to June 2023. Calculations are based on monthly returns in USD. Asset descriptions are provided at the end of this report. Each line depicts the Sharpe Ratio percentile as the Commodity weight varies. The dots on each line represent its maximum. **Historical performance is not an indication of future performance and any investments may go down in value.**

Overall, through this bootstrapping analysis and using data for the last 60 years, we observe that, for investment periods of 10 years, the optimal weight to allocate to broad commodities in order to maximise the Sharpe Ratio would have been between 17 to 24%.

Implementation solutions

WisdomTree has a comprehensive range of broad commodity UCITS exchange-traded funds (ETFs) that can help diversify a traditional portfolio and cater for different investor needs and objectives.

WisdomTree Broad Commodities UCITS ETF

The WisdomTree Broad Commodities UCITS ETF closely tracks the benchmark Bloomberg Commodity Index (BCOM) but, unlike other BCOM-trackers, it uses an innovative replication method which includes direct exposure to spot prices for the precious metals portion of the index rather than synthetic. The direct exposure to physical precious metals allows the ETF to reduce roll cost on the precious metals portion of the BCOM index, potentially improving performance versus full swap-based replication, while maintaining a low tracking error versus the benchmark.

+ USD Accumulating: [WisdomTree Broad Commodities UCITS ETF - USD Acc](#) (IE00BKY4W127)

WisdomTree Enhanced Commodity UCITS ETF

The WisdomTree Enhanced Commodity UCITS ETF is a core commodity alternative to the Bloomberg Commodity Index (BCOM). It invests in the same commodities and rebalances yearly to the same weights as the BCOM, but seeks to systematically enhance the risk return profile by using the shape of individual commodity futures curves to optimise returns. The algorithm in the methodology finds the point on the futures curve where the roll yield (the yield from transitioning from a shorter dated contract to a longer dated one) is maximised. This can be a substantial source of return. The strategy also tends to have a much lower level of volatility compared to the benchmark, BCOM.

+ USD Accumulating: [WisdomTree Enhanced Commodity UCITS ETF - USD Acc](#) (IE00BYMLZY74)

+ USD Distributing: [WisdomTree Enhanced Commodity UCITS ETF - USD](#) (IE00BZ1GHD37)

+ EUR Hedged Accumulating: [WisdomTree Enhanced Commodity UCITS ETF - EUR Hedged Acc](#) (IE00BG88WG77)

+ GBP Hedged Accumulating: [WisdomTree Enhanced Commodity UCITS ETF - GBP Hedged Acc](#) (IE00BG88WH84)

+ CHF Hedged Accumulating: [WisdomTree Enhanced Commodity UCITS ETF - CHF Hedged Acc](#) (IE00BG88WL21)

WisdomTree Enhanced Commodity ex-Agriculture UCITS ETF

The WisdomTree Enhanced Commodity ex-Agriculture UCITS ETF provides broad commodity ex-agriculture and livestock exposure, while also aiming to systematically enhance the risk-return profile by selecting optimal maturities along the futures curves to improve carry and broaden the commodity set by including platinum and palladium. The strategy is designed for investors who don't want to have exposure to the agricultural markets.

+ USD Accumulating: [WisdomTree Enhanced Commodity ex-Agriculture UCITS ETF - USD Acc](#) (IE00BDVPNS35)

+ EUR Hedged Accumulating: [WisdomTree Enhanced Commodity ex-Agriculture UCITS ETF - EUR Hedged Acc](#) (IE00BDVPNV63)

| | The Smart Benchmark | The Enhanced Strategy | The ex-agg Enhanced Strategy |
|---------------------------|--|---|--|
| Product Name | WisdomTree Broad Commodities UCITS ETF | WisdomTree Enhanced Commodity UCITS ETF | WisdomTree Enhanced Commodity ex-Agriculture UCITS ETF |
| Investment Approach | Smart BCOM Replication | BCOM enhanced with Dynamic roll | Dynamic roll on ex agriculture commodity |
| Tracking Error | Low | Medium | Medium |
| Tracking Difference | Low | High | High |
| Weighting Mechanism | Rebalance to BCOM weights every January | Rebalance to BCOM weights every January | Rebalanced to Target Weights quarterly |
| Futures Rolling Mechanism | Front-month futures contract rolled every two months. Physical precious Metals | Dynamic Roll methodology | Dynamic Roll methodology |
| MER | 19bps | 35bps | 35bps |

Source: WisdomTree. MER refers to the Management Expense Ratio

Asset descriptions

| Asset | Index | Bloomberg code |
|-------------------|---|-----------------------|
| US equity | S&P 500 Total Return Index | SPXT Index |
| European equity | EURO STOXX 50 Net Return EUR | SX5T Index |
| Global equity | MSCI World Net Total Return USD Index | NDDUWI Index |
| US Corporate | Bloomberg U.S. Corporate Investment Grade | LUACTRUU Index |
| EU Corporate | Bloomberg Euro-Aggregate: Corporates | LECPTRUH Index |
| US Gov | Bloomberg US Government Bond | LUAGTRUU Index |
| EU Gov | Bloomberg Euro Government | H02001US Index |
| Global HY | Bloomberg Global High Yield | LG30TRUH Index |
| Broad Commodities | Bloomberg Commodity Total Return | BCOMTR Index |

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WisdomTree Enhanced Commodity UCITS ETF

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