

Portfolio Insight

The Role of Efficient Core in a Portfolio

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Introduction

Whether saving for retirement or a future home, investors typically seek strong returns without incurring excessive risk. Traditionally, investors have balanced stocks with bonds to manage risk, creating, for example, a 60/40 portfolio: 60% in equities and 40% in fixed income. While this tends to improve the risk-return profile due to diversification between the two assets, it also limits growth potential as the overall risk taken is reduced. So, the 60/40 portfolio has always been somewhat flawed. Furthermore, in the decades following the introduction of the 60/40, more and more alternative asset classes and diversifiers have been made available to investors. By construction the 60/40 doesn't allow space for those diversifiers, so adding them would force investors to disinvest from equities or fixed income.

Fortunately, the solution to those two main drawbacks of the 60/40 can be found in the academic literature and in particular in Markowitz's Modern Portfolio Theory¹ and Sharpe's Capital Asset Pricing Model². The key is leverage. By leveraging a well-diversified portfolio, such as the 60/40, investors can maintain the benefits of diversification while targeting a level of risk and, therefore, long-term growth, similar to equities. By delivering a leveraged 60/40 exposure, this approach also frees up space for diversifiers and return enhancers. WisdomTree has developed a unique range of [Efficient Core exchange-traded funds](#) (ETFs) that allocate 90% to stocks for growth and 60% to bond futures for balance; in other words, a 60/40 leveraged by 150%. Such a solution enables the rethinking of multi-asset portfolio construction, creating more innovative and smarter portfolios for investors.

In this Portfolio Insight, we present both historical and forward-looking analyses to illustrate how investors can enhance returns, increase diversification and create room for other strategies. Our key findings include:

- + Historical simulations show that substituting part of a portfolio with a leveraged 60/40 exposure, such as 90% equities plus 60% bonds, can add meaningful annualised outperformance compared to traditional allocations while keeping the volatility unchanged.
- + By using Efficient Core, investors 'free up' capital that can be redeployed into diversifiers such as commodities, gold or alternative strategies — all without reducing equity exposure.
- + In both historical and forward-looking analyses, portfolios incorporating Efficient Core solutions typically display higher Sharpe ratios, highlighting improved risk-adjusted returns.
- + Using Efficient Core allows for straightforward improvements on classic models like a standard 60/40 but also others like the all-weather or permanent portfolio.

The WisdomTree Efficient Core framework offers a modernised, capital-efficient route to multi-asset investing that aims to balance the dual objectives of long-term growth and diversification.

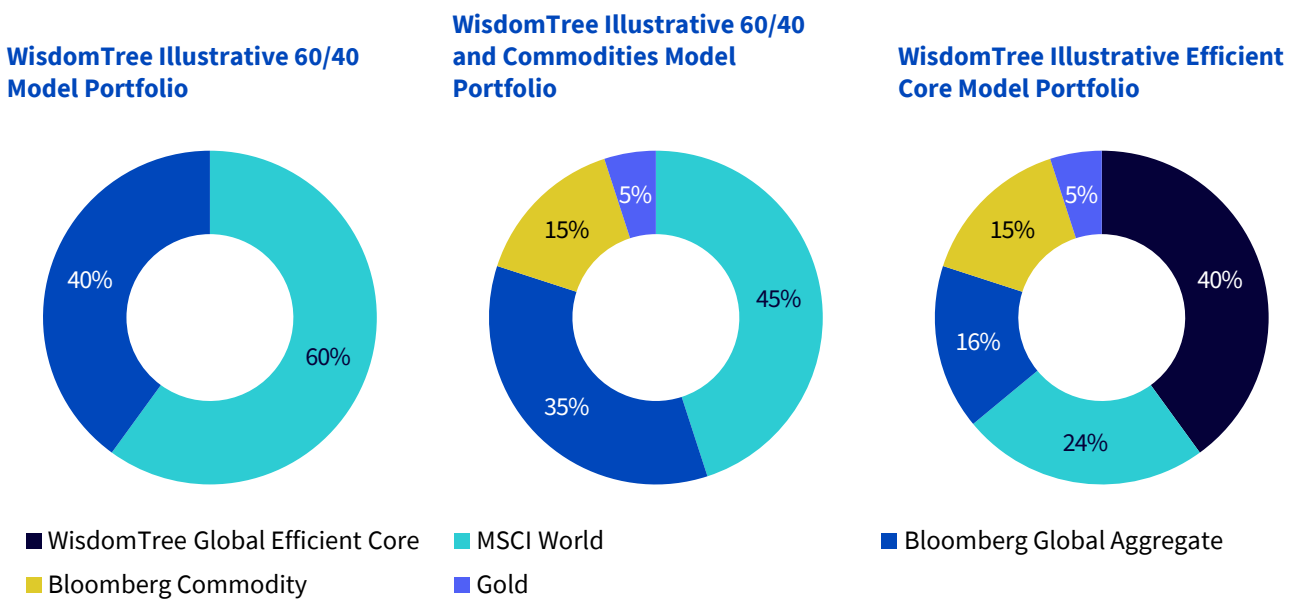
1. Markowitz, H. M. (March 1952). Portfolio Selection. The Journal of Finance, Vol. 7, No. 1, pp. 77-91.

2. Sharpe, William F. 1964. "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk". Journal of Finance. 19:3, pp. 425-442.

Part 1: Replacing the 60/40 – adding diversifiers without divesting from equities

One of the main drawbacks of the 60/40 is the difficulty of integrating diversifiers. Taking the example of an investor who would like to add broad commodities and gold to the portfolio, we show in Figure 1 two variations of the 60/40 portfolio. Without using Efficient Core, an investor would need to reduce their investment in equities and fixed income to include the diversifiers. In the WisdomTree Illustrative 60/40 and Commodities Model Portfolio, the 15% investment in broad commodities replaces 15% of investments in equities, and the 5% investment in gold replaces 5% of investments in fixed income.

Figure 1: Variations on the 60/40 including diversifiers

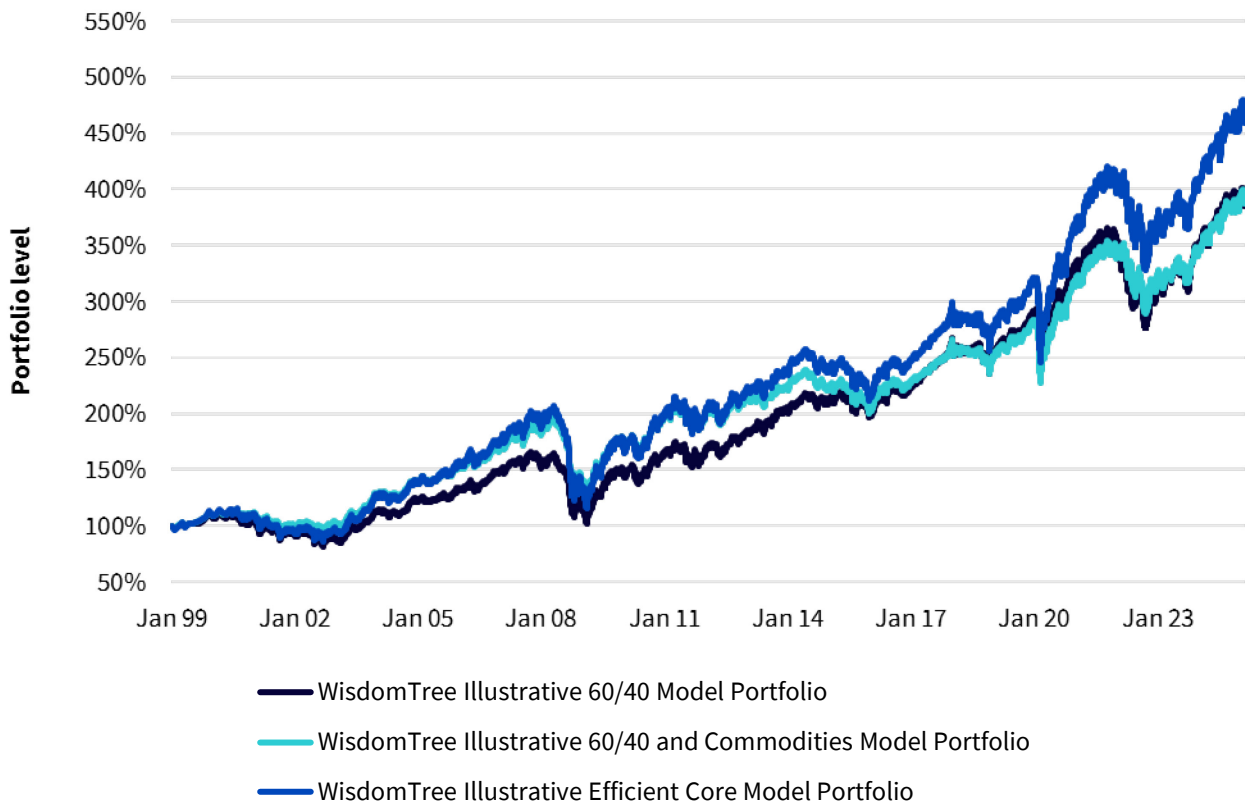


Source: WisdomTree. Illustrative only.

As highlighted in Figure 2, the performance of the WisdomTree Illustrative 60/40 and Commodities Model Portfolio is not significantly improved versus the 60/40 portfolio. The main reason is that the overall risk taken by the portfolio has been further reduced. Therefore, while the portfolio is more efficient with a high Sharpe ratio and lower drawdown thanks to the added diversification, this doesn't translate into higher returns for investors.

In the WisdomTree Illustrative Efficient Core Model Portfolio, investors can utilise the WisdomTree Global Efficient Core: a 60/40 leveraged portfolio providing 90% exposure to global equities and 10% exposure to government bond futures contracts across multiple currencies. The portfolio invests 40% in the Efficient Core portfolio, leading to exposures of 36% and 24% in equity and fixed income respectively. This means that by investing 24% in equities and 16% in fixed income, the investor can construct a 60/40 portfolio. However, they would have done so utilising only 80% of their capital (40+24+16), leaving 20% to invest in commodities and gold.

Figure 2: Performance of different variations on the 60/40 including diversifiers



	WisdomTree Illustrative 60/40 Model Portfolio	WisdomTree Illustrative 60/40 and Commodities Model Portfolio	WisdomTree Illustrative Efficient Core Model Portfolio
Cumulative returns	386.39%	387.76%	459.77%
Annualised returns	5.31%	5.32%	6.01%
Annualised volatility	10.16%	9.18%	11.53%
Sharpe ratio	0.33	0.37	0.35
Max drawdown	-39.0%	-36.9%	-44.2%
Tracking error (vs 60/40)		3.06%	3.06%
Information ratio (vs 60/40)		0.00	0.23

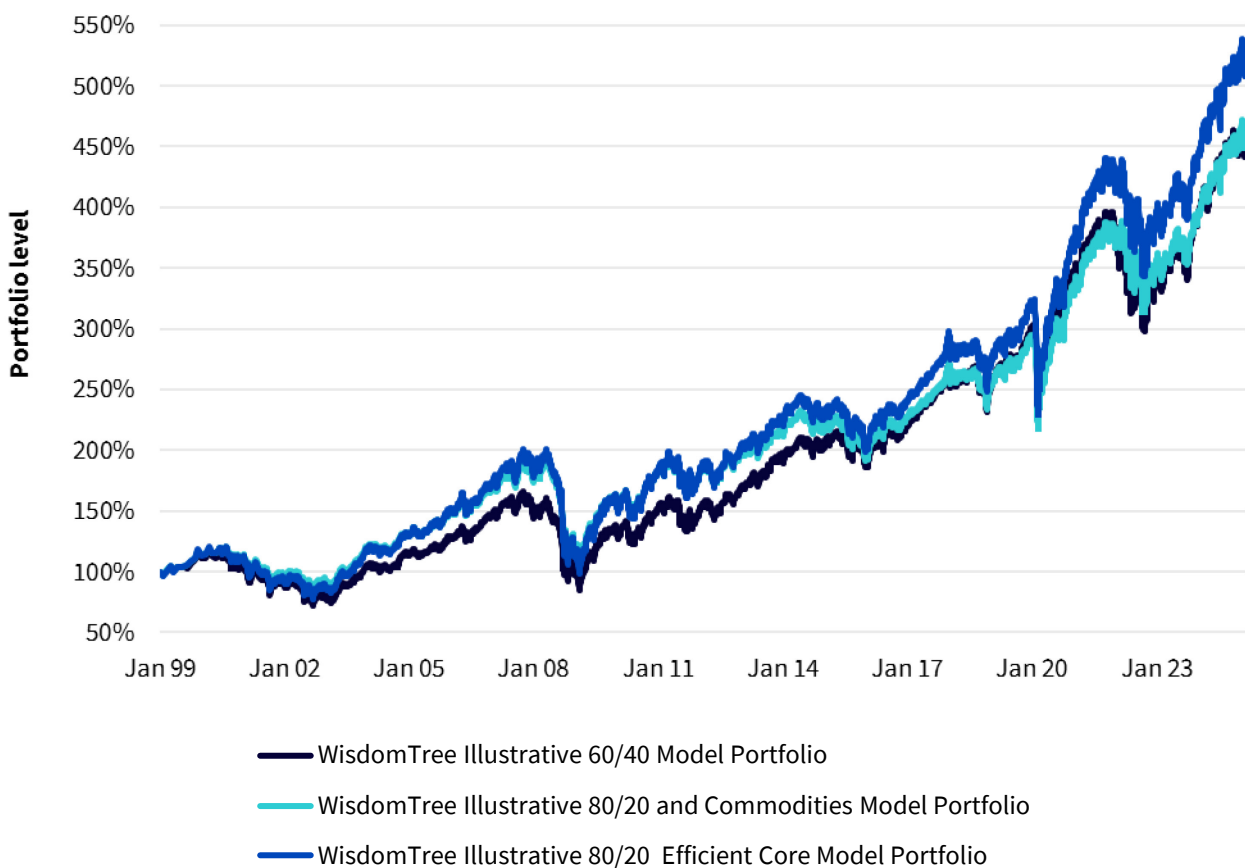
Source: WisdomTree, Bloomberg. From 29 January 1999 to 12 March 2025. In USD. Portfolios are rebalanced quarterly. You cannot invest in an index. **Historical performance is not an indication of future performance, and any investments may go down in value.**

Numerically, the result is very clear. This new portfolio outperformed the WisdomTree Illustrative 60/40 Model Portfolio and the WisdomTree Illustrative 60/40 and Commodities Model Portfolio by 0.7% per year. It would also have delivered a Sharpe ratio which is better than the classic 60/40 portfolio thanks to the added diversification.

It's also worth noting that while efficient core delivers a leveraged 60/40 exposure, it's possible to use it to make different equity/fixed income mixes more efficient. For example, below we modify an 80 equity, 20 fixed income mix:

- + The WisdomTree Illustrative 80/20 and Commodities Model Portfolio invests 65% in equities, 15% in fixed income, 15% in global commodities and 5% in gold.
- + The WisdomTree Illustrative 80/20 Efficient Core Model Portfolio invests 33.3% in WisdomTree Global Efficient Core, 46.67% in equities, 15% in broad commodities and 5% in gold. This delivers a 20% exposure to fixed income ($33.3\% \times 60\%$) and 76.7% in equities ($33.3\% \times 0.9\% + 46.67\%$).

Figure 3: Performance of different variations on the 80/20 including diversifiers



	WisdomTree Illustrative 80/20 Model Portfolio	WisdomTree Illustrative 80/20 and Commodities Model Portfolio	WisdomTree Illustrative 80/20 Efficient Core Model Portfolio
Cumulative returns	443.72%	450.68%	509.26%
Annualised returns	5.87%	5.93%	6.43%
Annualised volatility	13.24%	12.04%	13.97%
Sharpe ratio	0.29	0.33	0.32
Max drawdown	-49.1%	-45.9%	-51.1%
Tracking error (vs 80/20)		3.09%	2.91%
Information ratio (vs 80/20)		0.02	0.19

Source: WisdomTree, Bloomberg. From 29 January 1999 to 12 March 2025. In USD. Portfolios are rebalanced quarterly. **You cannot invest in an index. Historical performance is not an indication of future performance, and any investments may go down in value.**

Figure 3 exhibits similar results as before. The WisdomTree Illustrative 80/20 and Commodities Model Portfolio does not meaningfully outperform the 80/20 Portfolio despite a higher Sharpe ratio. The WisdomTree Illustrative 80/20 Efficient Core Model Portfolio outperforms the 80/20 portfolio by 0.5% per year and delivers a better Sharpe ratio.

Part 2: Improving investors' efficient frontier with Efficient Core

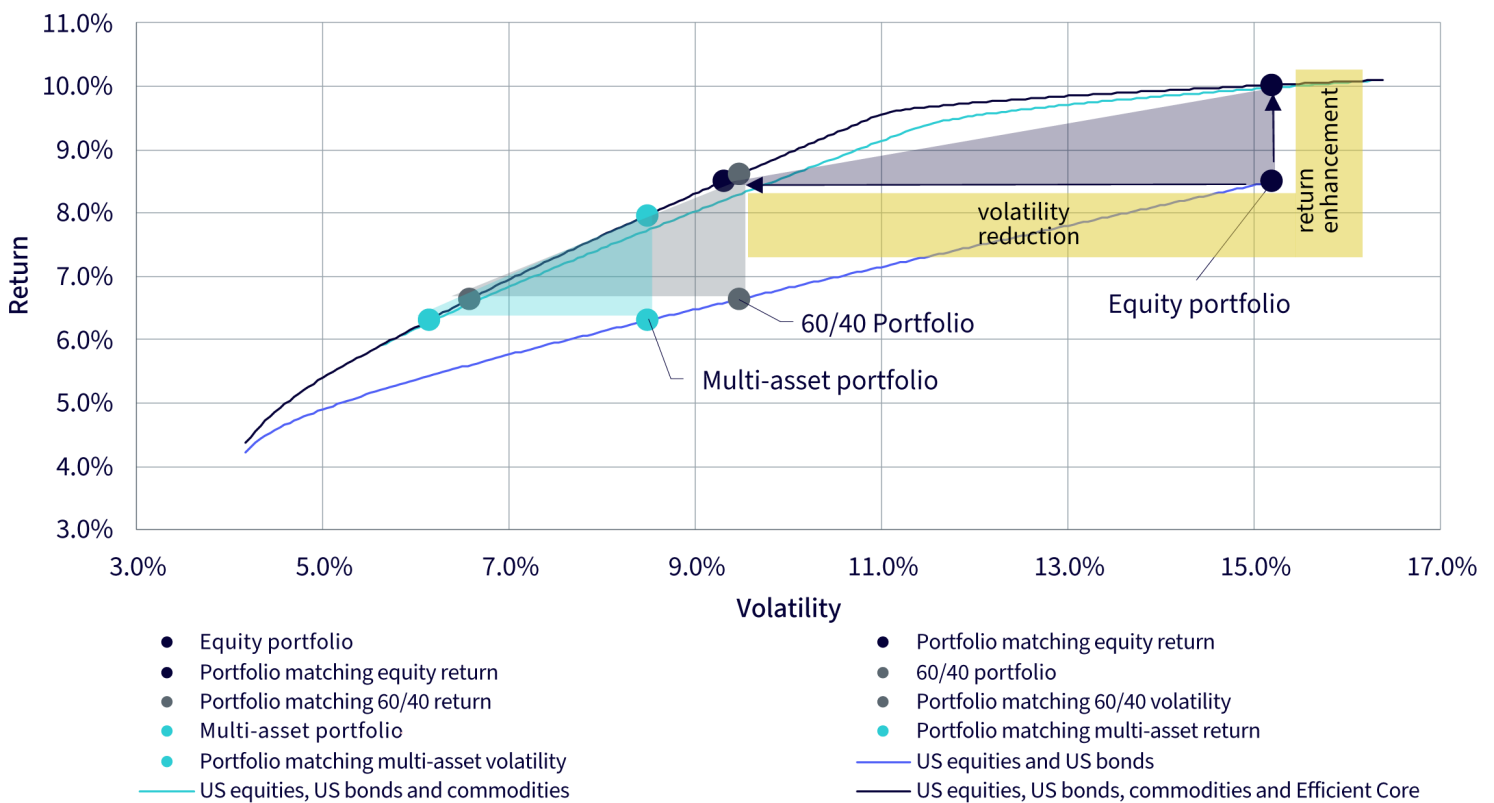
WisdomTree Efficient Core strategies are grounded in theoretical foundations and exemplify how leverage can enhance a portfolio's return for the same level of risk than otherwise offered by a simple tilt to riskier assets. In this chapter, we demonstrate how incorporating Efficient Core into an investment universe can improve investors' efficient frontiers – illustrated both on 26 years of historical data and on forward-looking estimates. We then analyse an all-equity portfolio, a traditional 60/40 portfolio and a multi-asset portfolio (including equities, bonds, commodities, and gold) to illustrate how adding Efficient Core can either reduce risk for the same level of return or increase return for the same level of risk. The considered efficient portfolios constructed using the forward-looking estimates and matching either return or volatility of the three portfolios above are referenced to discuss the cases of smarter portfolio positioning with Efficient Core.

Historical efficient frontiers

In Figure 4 (a), three historical efficient frontiers are constructed based on monthly returns from January 1999 to February 2025. All frontiers assume no short selling. The considered assets are represented by the following instruments: 1) **The US equities** are represented by the S&P 500 NTR Index; 2) **The US bonds** are represented by the Bloomberg US Agg Total Return Index; 3) **Commodities** include allocations to the Bloomberg Commodity Total Return Index and to gold represented by the LBMA Gold Price PM USD; 4) **Efficient Core** represented by the WisdomTree US Efficient Core Index.

The lowest frontier includes only bonds and equities in the universe. The highest return achievable (consistent with the modern portfolio theory) is represented by 100% allocation to equities and their average annualised monthly return during the last 26 years: annualised return of 8.5% for a volatility level of 15.19%. In turn, the min-variance portfolio offers a return of 4.23% and a volatility of 4.17%. The next efficient frontier adds commodities into the mix and represents an improvement of the highest achievable annualised return from 8.50% to 10.10% – the average annualised monthly return of the riskiest (16.37% volatility) asset, which is gold, which has outperformed equities in the last 26 years. Finally, the highest frontier adds Efficient Core to the mix. 100% exposure to Efficient Core improves the annualised return of an all-equity portfolio from 8.50% to 9.09%, while reducing the volatility from 15.19% to 13.63%.

Figure 4: Historical efficient frontiers (a) and the WisdomTree Illustrative Model Portfolios (b)



	Return	Volatility	Sharpe
Equity portfolio	8.50%	15.19%	0.43
Portfolio matching equity return	8.50%	9.31%	0.69
Portfolio matching equity volatility	10.02%	15.19%	0.53
60/40 portfolio	6.64%	9.47%	0.49
Portfolio matching 60/40 return	6.64%	6.58%	0.70
Portfolio matching 60/40 volatility	8.61%	9.47%	0.69
Multi-asset portfolio	6.32%	8.49%	0.50
Portfolio matching multi-asset return	6.32%	6.15%	0.70
Portfolio matching multi-asset volatility	7.97%	8.49%	0.70

Source: WisdomTree, Bloomberg. From 31 December 1998 to 28 February 2025. Efficient frontiers are based on monthly historical returns in USD. **Includes backtested data for Efficient Core until 21 August 2023. You cannot invest in an index. Historical performance is not an indication of future performance, and any investments may go down in value.**

In Figure 4 (a), we consider three portfolios constructed from the assets discussed earlier above: 1) **Equity portfolio**; 2) **60/40 portfolio**; 3) **Multi-asset portfolio** with weights matching the weights of the WisdomTree Illustrative 60/40 and Commodities Model Portfolio discussed in Part 1: 45% equities, 35% bonds, 15% commodities and 5% gold³. We then build six portfolios which represent a match of either return or volatility of those three portfolios. Those six portfolios feature on the highest efficient frontier, and they exhibit **an average allocation to Efficient Core at 31.7%**.

The presented six efficient portfolios are all **improving Sharpe ratios** of the initial three portfolios **by around 40-60%** with the exception of the ‘Portfolio matching equity volatility’ that has only 8% allocated to Efficient Core and 92% allocated to gold⁴. On average, **the annualised return is improved by 1.71%** across three volatility-matching portfolios while **the volatility was on average reduced by 3.7%** across three return-matching portfolios.

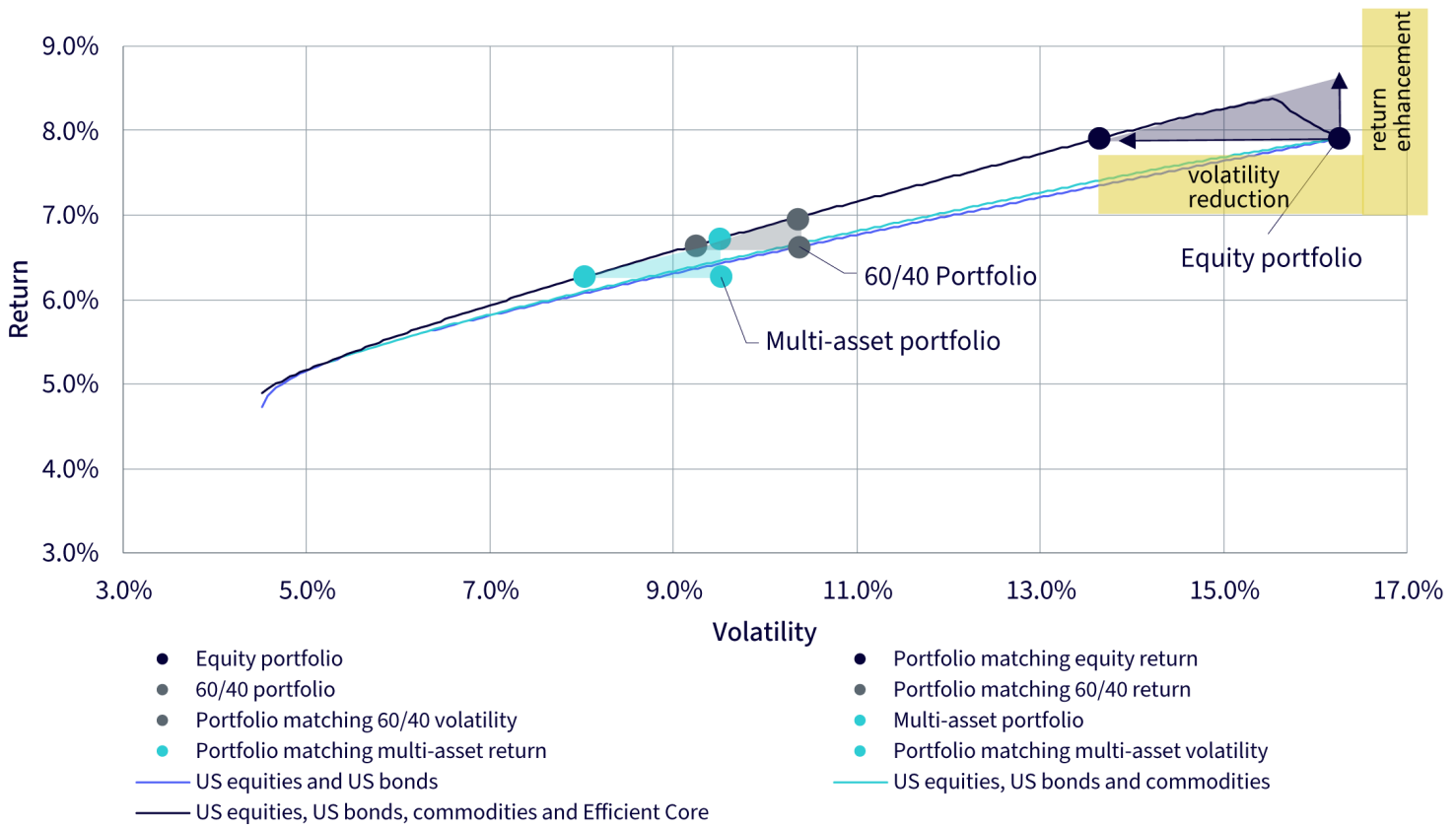
3. In our analysis, this multi-asset portfolio is not located on the efficient frontier and historically has offered only minimal improvement of risk/return ratio in comparison to an efficient portfolio located on the frontier that allocates to equities and bonds only. This is mostly on par with an equity-like level of volatility of commodities, but only a bond-like level of return averaged over the last 26 years.

4. This is explained by the fact that any efficient portfolio with volatility above the level of volatility of Efficient Core itself (13.63%) would have to represent a mix between Efficient Core and the next riskier asset, in this case, gold. Such high allocation to gold for achieving a higher level of volatility explains the much lower improvement of the Sharpe ratio, as gold historically on average has offered lower return per given level of risk than Efficient Core.

Forward-looking efficient frontiers

In Figure 5 (a), three forward-looking efficient frontiers are constructed based on the US dollar assumptions for arithmetic returns, volatility and correlations provided in the ‘2025 Long-Term Capital Market Assumptions’ (lcm) from J.P. Morgan. The report is available [here](#). All frontiers assume short-selling constraints. The considered assets are represented by the following instruments: 1) **The US equities** are represented by lcm for US large cap; 2) **The US bonds** are represented by lcm for US aggregate bonds; 3) **Commodities** are represented by lcm for commodities and gold; 4) **Efficient Core**, where lcm assumptions are calculated using arithmetic return, volatility and correlations of a portfolio allocating 90% to US large cap, 60% to US aggregate bonds funded by 50% cash borrowing.

Figure 5: Forward-looking efficient frontiers (a) and the WisdomTree Illustrative Model Portfolios (b)



	Return	Volatility	Sharpe
Equity portfolio	7.91%	16.26%	0.30
Portfolio matching equity return	7.91%	13.65%	0.35
60/40 portfolio	6.63%	10.37%	0.34
Portfolio matching 60/40 return	6.63%	9.26%	0.38
Portfolio matching 60/40 volatility	6.96%	10.37%	0.37
Multi-asset portfolio	6.27%	9.52%	0.33
Portfolio matching multi-asset return	6.27%	8.03%	0.39
Portfolio matching multi-asset volatility	6.73%	9.52%	0.38

Source: WisdomTree, Bloomberg, J.P. Morgan. Forward-looking efficient frontiers are constructed based on the US dollar assumptions for arithmetic returns, volatility and correlations provided in the '2025 Long-Term Capital Market Assumptions' from J.P. Morgan available [here](#). Efficient Core return, volatility and correlations are computed assuming 90% allocation to US large cap equities, 60% allocation to US aggregate bonds funded by 50% cash borrowing. **You cannot invest in an index. Historical performance is not an indication of future performance, and any investments may go down in value.**

The investment universes of the forward-looking frontiers are consistent with those of the historical frontiers. The highest achievable return in the lowest frontier is the return of US large caps at 7.91% for a level of volatility of 16.26%. The next efficient frontier adds commodities into the mix. However, unlike the historical frontier, the forward-looking frontier with commodities offers only a marginal improvement over the frontier with equities and bonds only. This is explained by a much smaller forward-looking return for gold and a slightly higher volatility in comparison to historical estimates, that is, 5.31% return vs. 10.10% and 16.76% volatility vs. 16.37% respectively. Finally, the highest frontier adds Efficient Core to the mix. The forward-looking estimates for Efficient Core have a slightly lower return and a slightly higher volatility in comparison to those computed from historically simulated returns, that is, 8.39% return vs. 9.09% and 15.56% volatility vs. 13.63%.

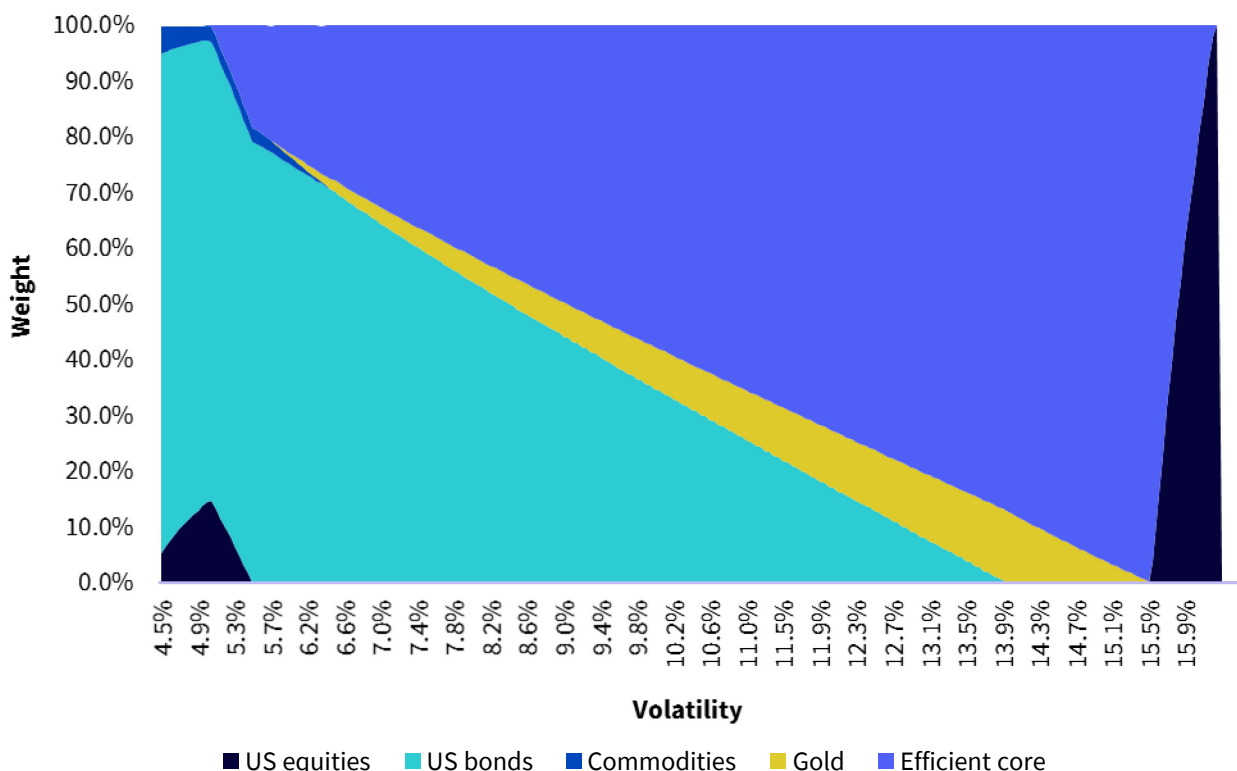
In Figure 5 (a), we construct three portfolios from the assets presented earlier above: 1) **Equity portfolio**; 2) **60/40 portfolio**; 3) **Multi-asset portfolio** with weights matching the weights of the WisdomTree Illustrative 60/40 and Commodities Model Portfolio discussed in Part 1, being 45% equities, 35% bonds, 15% commodities and 5% gold⁵. As was the case for the historical frontiers, we then build portfolios which represent a match of either return or volatility of those three portfolios. In contrast to the historical frontiers, portfolios matching the equity volatility are the same for all forward-looking frontiers, represented by 100% equity exposure⁶. Hence, only five portfolios in total are presented instead of six portfolios based on historical estimates. Those five portfolios feature on the highest efficient frontier and exhibit **an average allocation to Efficient Core at 58.4%**.

The presented five efficient portfolios are all **improving Sharpe ratios** of the initial three portfolios **by around 10-20%**. Although representing a meaningful Sharpe ratio improvement, these figures fall short of exceptionally high improvement achieved in the historical frontier. Such stark contrast can be explained by the ITCMA for gold, for example, much lower expected return in contrast to the historical estimate. In the historical frontier, the volatility and return matching portfolios have average allocation to gold of around 35%. In the forward-looking frontier, the five portfolios have average allocation to gold of around 7.4%. This also explains why the average allocation to Efficient Core is at 58.4% in the forward-looking frontier vs. 31.7% in the historical one. The role of Efficient Core in meaningfully expanding the forward-looking efficient frontier is evident in Figure 6 that shows how the weights of efficient portfolios evolve across the levels of volatility.

5. In our analysis, this multi-asset portfolio is not located on the efficient frontier and historically has offered only minimal improvement of risk/return ratio in comparison to an efficient portfolio located on the frontier that allocates to equities and bonds only. This is mostly on par with an equity-like level of volatility of commodities, but only a bond-like level of return averaged over the last 26 years.

6. This means that any other portfolio for the same level of volatility would offer lower return. An important note is that the efficient frontier does continue beyond the level of volatility of 16.26%, due to higher volatility of gold. But these efficient portfolios are not presented in Figure 5 (a), as they don't offer any improvement of return for extra risk taken due to lower forward-looking estimate of gold's return. Generally, beyond the level of volatility of 15.56% (volatility of 100% Efficient Core), no further improvement of return for extra risk is possible. This is why we see a kink in the highest frontier and its further convergence with the lower frontiers at the point of 100% exposure to equities. See also Figure 6 for weights evolution.

Figure 6: Weights of the efficient portfolios on the forward-looking efficient frontier including Efficient Core



Source: WisdomTree, Bloomberg, J.P. Morgan. Forward-looking efficient frontiers are constructed based on the US dollar assumptions for arithmetic returns, volatility and correlations provided in the ‘2025 Long-Term Capital Market Assumptions’ from J.P. Morgan available [here](#). Efficient Core return, volatility and correlations are computed assuming 90% allocation to US large cap equities, 60% allocation to US aggregate bonds funded by 50% cash borrowing. **You cannot invest in an index. Historical performance is not an indication of future performance, and any investments may go down in value.**

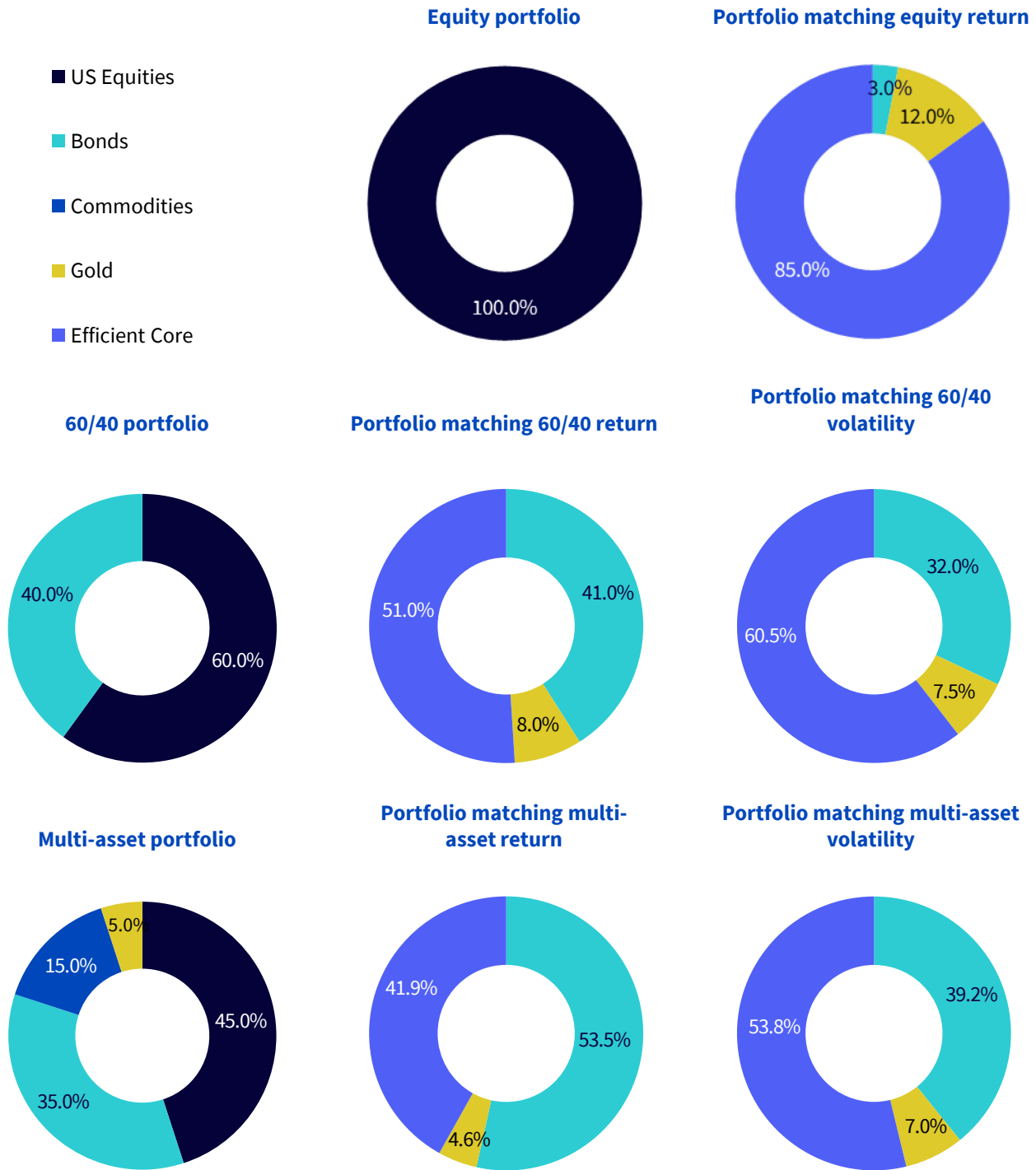
In addition to improving the Sharpe ratios, the two volatility-matching portfolios on the highest efficient frontier **improve annualised return by 0.39%** while the three return-matching portfolios **reduce volatility by around 1.74%**.

Future positioning with Efficient Core

The five return or volatility-matching portfolios considered in Figure 5 (b) can be used to illustrate how investors can use Efficient Core to improve the risk/return profile of their portfolios. Figure 7 presents the corresponding weights of all the portfolios considered in Figure 5 (b). Before looking at the results, we summarise how Efficient Core opens the door to a more intelligent portfolio construction:

- Equity replacement tool:** Efficient Core offers higher return for the same level of risk than an all-equity portfolio.
- Capital efficiency tool:** Efficient Core can be used to free up space in investors’ portfolios for accommodating portfolio diversifiers.

Figure 7: WisdomTree Illustrative Model Portfolios vs. efficient portfolios with matching return or volatility on the forward-looking efficient frontier that includes Efficient Core



Source: WisdomTree, Bloomberg, J.P. Morgan. Forward-looking efficient frontiers are constructed based on the U.S. dollar assumptions for arithmetic returns, volatility and correlations provided in the '2025 Long-Term Capital Market Assumptions' from J.P. Morgan available [here](#). Efficient Core return, volatility and correlations are computed assuming 90% allocation to US large cap equities, 60% allocation to US aggregate bonds funded by 50% cash borrowing. **You cannot invest in an index. Historical performance is not an indication of future performance, and any investments may go down in value.**

In Figure 7, the first portfolio improved is an **all-equity portfolio**. For investors, looking to invest in equities only, Efficient Core (85%) with a small allocation to US bonds (3%) and gold (12%) is expected to offer the same return but with volatility lowered by 2.61%.

For investors that prefer to stick to **the traditional 60/40 approach**, a mix of Efficient Core (51%), US bonds (41%) and gold (8%), is expected to return the same 6.63% as the 60/40 portfolio, but with volatility of 9.20% vs. 10.37% of the 60/40 portfolio. At the same time, investors can have the same risk as the 60/40 portfolio but can improve their return by 0.35% when allocating 60.5% to Efficient Core, 32% to US bonds and 7.5% to gold instead.

Finally, for investors diversifying their equities and bonds with commodities and gold in a **multi-asset approach**, inclusion of Efficient Core into the asset mix also delivers return enhancement and volatility reduction. For example, 41.9% allocation to Efficient Core, 53.5% allocation to US bonds and 4.6% to gold reduces the volatility by 1.49% for the same return provided by the considered multi-asset portfolio. At the same time, upweighting Efficient Core to 53.8%, while down weighting US bonds to 39.2% and increasing allocation to gold to 7% improves return by 0.46% for the level of risk of the presented multi-asset portfolio.

Part 3: Improving famous portfolios with Efficient Core

Investors have long sought the optimal balance between risk and return. Over time, several robust portfolio strategies emerged, aimed at providing stability across different economic conditions. Ray Dalio's All-Weather Portfolio and Harry Browne's Permanent Portfolio stand out as particularly popular and effective examples, known for their resilience and adaptability.

Dalio's All-Weather Portfolio: Resembles a risk-parity portfolio and is designed to perform consistently across various economic scenarios, including inflation, deflation, accelerating growth and slowing growth. Equities typically perform well during periods of economic growth, while long-term bonds offer protection during deflation and recessionary environments. Intermediate-term bonds provide stability during moderate economic fluctuations, commodities generally thrive in inflationary environments while cash serves as a buffer during market volatility.

Browne's Permanent Portfolio: Relies on equal allocations to stocks, long-term government bonds, gold and cash, diversifying effectively across assets that react differently throughout economic cycles. Like the All-Weather Portfolio, it aims to perform well across different environments but stands out for its simplicity and objectively impressive risk-return profile.

As we saw in the previous sections, the Efficient Core strategy enhances portfolio efficiency by combining equities with a leveraged government bond futures overlay. This approach provides a 90% allocation to equities and 60% to bonds within the same capital, improving risk-adjusted returns while preserving liquidity for diversifiers. By integrating fixed income without reducing equity exposure, Efficient Core offers a higher Sharpe ratio, lower drawdowns, and greater capital efficiency, making it a powerful alternative to traditional core equity portfolios.

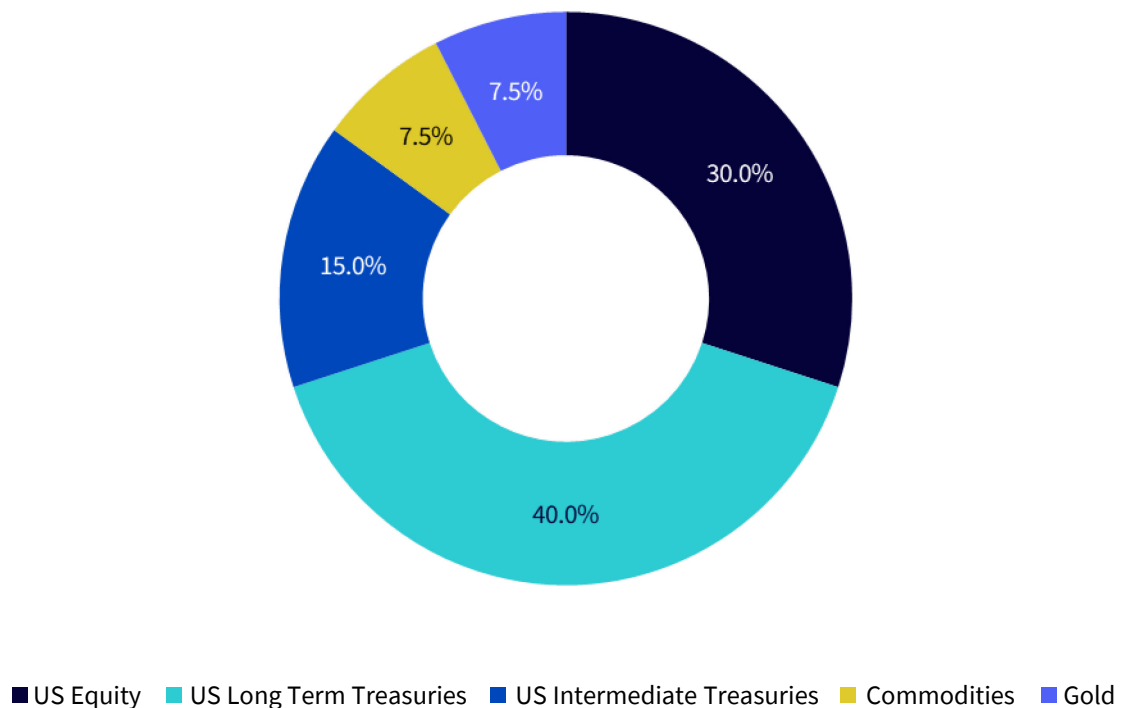
But can Efficient Core be used to enhance these two legendary pillars of portfolio management?

Integrating NTSX into the All-Weather Portfolio

In Figure 8 we can see the actual composition of the All-Weather Portfolio⁷.

We first try to replicate the All-Weather Portfolio⁷ by using WisdomTree US Efficient Core (see the second column of Figure 9). We start by substituting the equity position in the All-Weather Portfolio with WisdomTree US Efficient Core. With this, investors effectively achieve a 27% equity exposure (30% * 90%). To maintain the original 30% allocation to equities, an additional 3% is allocated directly to the S&P 500. Since WisdomTree US Efficient Core also includes a 15% exposure to intermediate-term Treasuries, investors can reduce this amount from their existing bond allocation. This adjustment frees up approximately 12% of capital, which can be allocated to T-bills.

Figure 8: The All-Weather Portfolio



Source: WisdomTree. Weights of the All-Weather Portfolio.

7. Throughout this section, each asset class is represented by its corresponding benchmark index as follows: ‘US Equity’ by the S&P 500, ‘US Long Term Treasuries’ by the Bloomberg U.S. Treasury: 20+ Y, ‘US Intermediate Treasuries’ by the Bloomberg Intermediate Treasury up to 2003-03-01 and from the Bloomberg U.S. Treasury 3-10 Y after that, ‘Commodities’ by the DBIQ Optimum Yield Diversified Commodities, ‘Gold’ by the LBMA Gold Price PM USD, ‘Cash’ by the Bloomberg U.S. T. Bills 1-3 M, and ‘Managed Future’ by SGI CTA Managed Futures back to 2003-03-01 and by SG CTA Index before that.

Figure 9: Variations of the All-Weather Portfolio using US Efficient Core

	All-weather	All-weather with NTSX	Delta vs All-weather	All-weather with NTSX + Diversifier	Delta vs All-weather NTSX	All-weather with NTSX Leveraged	Delta vs All-weather NTSX
US Equity	30.0%	3.0%	-27.0%	3.0%		3.4%	+0.4%
US Long Term Treasuries	40.0%	40.0%		40.0%		45.5%	+5.5%
US Intermediate Treasuries	15.0%		-15.0%				
Commodities	7.5%	7.5%		7.5%		8.5%	+1.0%
Gold	7.5%	7.5%		7.5%		8.5%	+1.0%
US Efficient Core		30.0%	+30.0%	30.0%		34.1%	+4.1%
Cash		12.0%	+12.0%		-12.0%		-12.0%
Managed futures				12.0%	+12.0%		

Source: WisdomTree. The table shows different variations of the All-Weather Portfolio by introducing US Efficient Core.

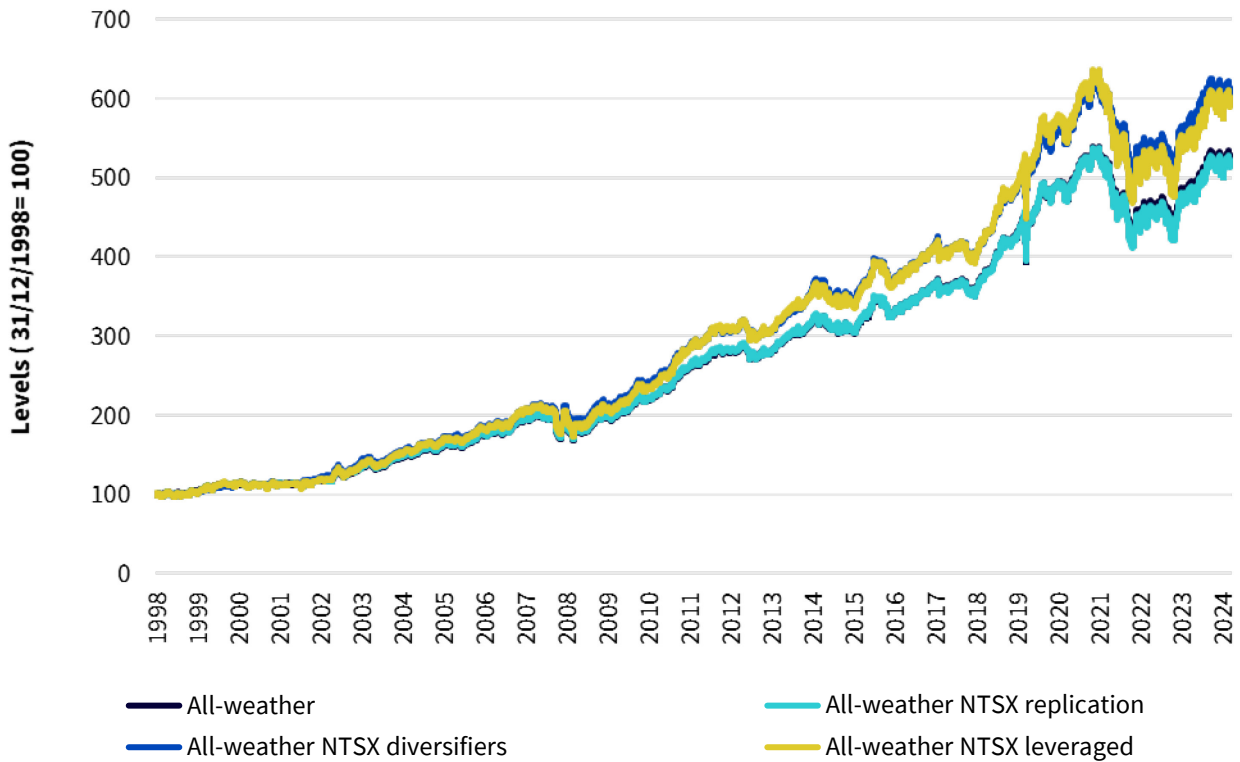
The dark blue line and the teal line in Figure 10 indicate that this Efficient Core-enhanced version of the All-Weather Portfolio closely mirrors the original portfolio's performance. Minor discrepancies primarily arise from small differences in the fixed income leg durations but, overall, the replication remains precise for all practical purposes.

However, one major effect of integrating US Efficient Core in the portfolio is that this opens further opportunities for investors. The approximately 12% freed-up capital can be strategically deployed in two main ways.

- + **NTSX diversifiers:** First, investors might enhance diversification by incorporating additional asset classes or alternative strategies that typically have low correlations with traditional asset classes. In this case, we substitute the cash with a common trend-following index, namely the SG Managed Futures index.
- + **NTSX leveraged:** Alternatively, investors might consider proportionally redistributing the freed capital across the existing asset classes.

The effects are the ones that we see in the blue and gold lines in Figure 10.

Figures 10 and 11: Historical performance and statistics of the All-Weather Portfolio using US Efficient Core



Metric	All-Weather	All-Weather NTSX replication	All-Weather NTSX diversifiers	All-Weather NTSX leveraged
Cumulative return	434.0%	427.8%	521.2%	509.9%
Annualised return	6.6%	6.6%	7.2%	7.2%
Volatility	7.4%	7.6%	7.9%	8.7%
Sharpe	0.61	0.59	0.66	0.59
Max drawdown	-22.8%	-23.6%	-20.8%	-26.6%

Source: WisdomTree, Bloomberg. Data from 1 January 1999 to 25 March 2025. **You cannot invest in an index. Historical performance is not an indication of future performance, and any investments may go down in value.**

We can see that:

- + Both the options have a very similar performance: both add up to 0.6% p.a. return to the All-Weather Portfolio.
- + In the first option (All-Weather NTSX diversifiers), volatility goes only slightly up (by 0.3% compared to the 'replicating' portfolio) and max drawdown improves. On the other hand, in the second option (All-Weather NTSX leveraged), the return increase costs more in terms of volatility and maximum drawdown.
- + The Sharpe ratio increases significantly in option one and stays stable in the case of option two.

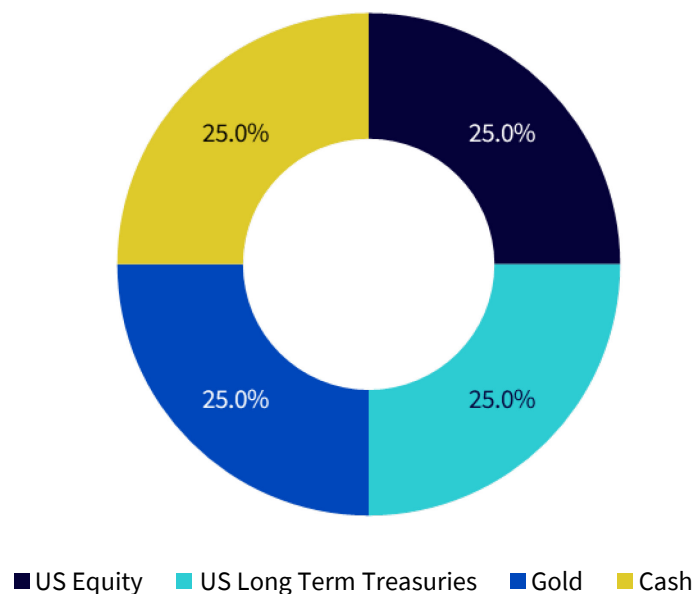
Integrating US Efficient Core into the Permanent Portfolio

Figure 12: The Permanent Portfolio

In this paragraph we try to replicate the same experiment we carried out in the previous paragraph, but we do it instead with the Permanent Portfolio (see its composition in Figure 12).

Like before, we first replicate the Permanent Portfolio by integrating WisdomTree US Efficient Core and we subsequently redeploy the freed-up cash by:

- + Adding a diversifier.
- + Add proportionally the existing asset classes.



Source: WisdomTree. Weights of the Permanent Portfolio.

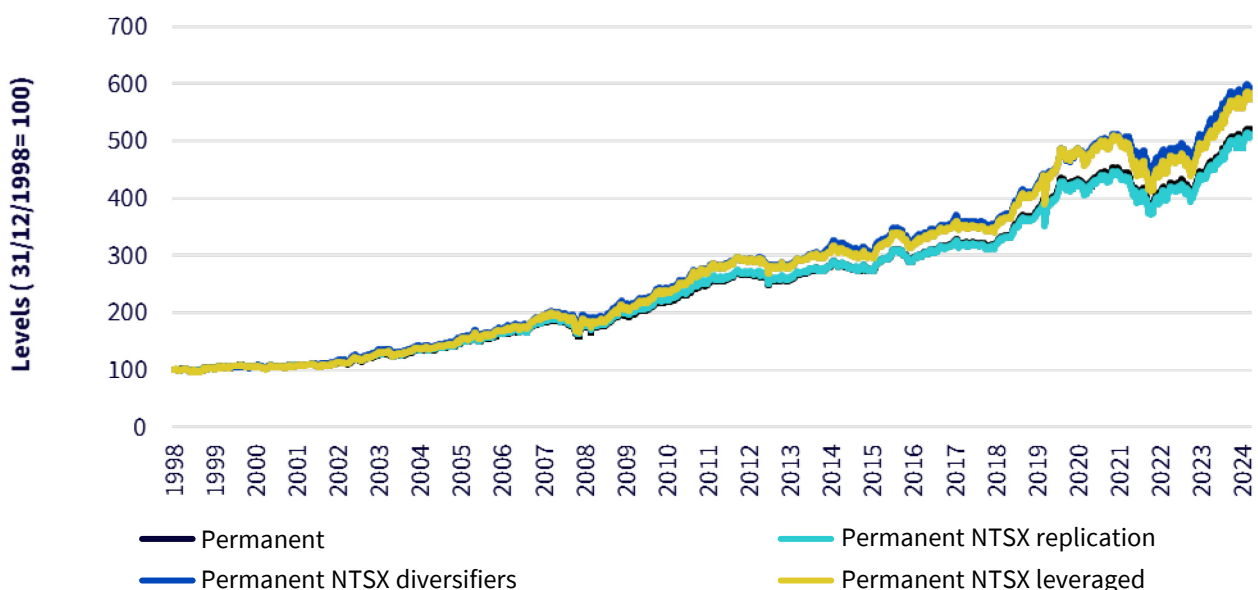
Figure 13: Variations of the Permanent Portfolio using US Efficient Core

	Per- manent	Per- manent with NTSX	Delta vs Per- manent	Per- manent with NTSX + Diversi- fier	Delta vs Per- manent NTSX	Per- manent with NTSX Leve- raged	Delta vs Per- manent NTSX
US Equity	25.0%	2.0%	-23.0%	2.0%		2.2%	+0.2%
US Long Term Treasuries	25.0%	18.5%	-6.5%	18.5%		20.8%	+2.3%
Gold	25.0%	25.0%		25.0%		28.1%	+3.1%
US Efficient Core		25.0%	+25.0%	25.0%		28.1%	+3.1%
Cash	25.0%	29.5%	+4.5%	18.5%	-11.0%	20.8%	-8.7%
Managed futures				11.0%	+11.0%		

Source: WisdomTree. The table shows different variations of the Permanent Portfolio by introducing NTSX.

As in the previous example, we can see that adding a valid diversifier improves the portfolio in terms of performance and in terms of the risk-adjusted profile, while spreading the cash proportionally to the existing asset classes only adds in terms of performance but keeps the risk-return profile unaltered.

Figures 14 and 15: Historical performance and statistics of the Permanent Portfolio using US Efficient Core



Metric	Permanent	Permanent NTSX replication	Permanent NTSX diversifiers	Permanent NTSX leveraged
Cumulative return	418.0%	412.2%	494.7%	483.5%
Annualised return	6.5%	6.4%	7.0%	7.0%
Volatility	6.6%	6.5%	6.8%	7.4%
Sharpe	0.67	0.67	0.74	0.67
Max drawdown	-17.3%	-17.2%	-14.6%	-19.2%

Source: WisdomTree, Bloomberg. Data from 1 January 1999 to 25 March 2025. **You cannot invest in an index. Historical performance is not an indication of future performance, and any investments may go down in value.**

Conclusion

In a market landscape marked by shifting macro dynamics, leveraging the core of a portfolio can offer a powerful solution for those seeking to enhance returns without sacrificing diversification. By judiciously combining equities and bond futures, Efficient Core strategies deliver equity-like growth potential while freeing capital for diversifiers and risk management tools. The analyses presented here demonstrates that, when employed with prudent safeguards, these approaches could elevate Sharpe ratios, moderate drawdowns, and create new allocation possibilities. As portfolios become more complex, capital efficiency emerges as a vital edge — one that helps meet investors’ ever-evolving objectives in an increasingly demanding environment.

Part 4: Implementation solutions

WisdomTree has developed a unique range of Efficient Core ETFs that allocate 90% to stocks for growth and 60% to bond futures for balance. It has the familiarity of the classic 60/40 but with the potential for equity-like returns.

WisdomTree US Efficient Core UCITS ETF

- + The ETF aims to deliver a 90% exposure to large cap US equities and 60% to US Treasury bond futures in order to improve the risk-adjusted returns of a traditional 60/40.

90% US large cap equities	60% US Treasury future contracts	10% Cash collateral
<p>An ESG diversified basket of US large capitalisation companies.</p> <ul style="list-style-type: none"> + Large cap companies + ESG filtered + Liquidity adjusted + Single stock cap at 10% 	<p>A diversified basket of US Treasury futures contracts with maturities ranging from 2 to 30 years.</p> <ul style="list-style-type: none"> + 5 Treasury futures contracts from 2 to 30-year maturity + Equally weighted + Quarterly rolled 	<p>Roughly 10% exposure in cash, which serves as collateral for the US Treasury future contracts.</p> <ul style="list-style-type: none"> + Returns US secured overnight financing rate

Rebalanced on a quarterly basis on the last business day of February, May, August and November. If equity or bond exposures deviate by more than 5% between rebalancing dates, the index will rebalance back to target weights.

WisdomTree Global Efficient Core UCITS ETF

The ETF aims to deliver a 90% exposure to large cap global developed equities and 60% to a basket of global government bond futures in order to improve the risk-adjusted returns of a traditional 60/40.

90% Global developed large cap equities	60% Government bond future contracts	10% Cash collateral
<p>An ESG diversified basket of global developed large capitalisation companies.</p> <ul style="list-style-type: none"> + 1500 large cap companies + ESG filtered + Liquidity adjusted + Single stock cap at 10% 	<p>A diversified basket of government bond futures contracts, across 4 currencies (USD, GBP, JPY and EUR) with maturities ranging from 2 to 30 years.</p> <ul style="list-style-type: none"> + 3 Treasury future contracts, 3 EUR/1 GBP/1 JPY government bond future contracts + Currency weight matches the weight in equity + Quarterly rolled 	<p>Roughly 10% exposure in cash, which serves as collateral for the government bond future contracts.</p> <ul style="list-style-type: none"> + Returns overnight rates for USD, EUR, GBP and JPY

Rebalanced on a quarterly basis on the last business day of February, May, August and November.

If equity or bond exposures deviate by more than 5% between rebalancing dates, the index will rebalance back to target weights.

WisdomTree US Efficient Core UCITS ETF

Ticker	Exchange	ISIN	Bloomberg code	Listing currency	Base currency	TER%
NTSX	LSE	IE000KF370H3	NTSX LN	USD	USD	0.20
WTEF	LSE	IE000KF370H3	WTEF LN	GBx	USD	0.20
NTSX	Borsa Italiana	IE000KF370H3	NTSX IM	EUR	USD	0.20
WTEF	XETRA	IE000KF370H3	WTEF GY	EUR	USD	0.20

WisdomTree Global Efficient Core UCITS ETF

Ticker	Exchange	ISIN	Bloomberg Code	Listing Currency	Base Currency	TER%
NTSG	LSE	IE00077IIPQ8	NTSG LN	USD	USD	0.25
WGEC	LSE	IE00077IIPQ8	WGEC LN	GBx	USD	0.25
NTSG	Borsa Italiana	IE00077IIPQ8	NTSG IM	EUR	USD	0.25
NTSG	XETRA	IE00077IIPQ8	NTSG GY	EUR	USD	0.25

TER: Total expense ratio

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