Portfolio Insight

The Role of Bitcoin in a Portfolio

June 2024

WisdomTree®

Introduction

From its creation in 2008 to today, bitcoin has faced scepticism regarding its long-term viability. However, 15 years on, the technology has been tested many times. It went through multiple existential crises, and yet, it's still around; the number of users is increasing, as are the number of use cases. 2024 is a big milestone regarding the institutionalisation of bitcoin, with regulated investment vehicles now available worldwide and in the biggest markets. As we have been writing since 2022, digital assets have become a new asset class, and it's becoming increasingly hard for multi-asset managers to ignore it.

The current debate around crypto investment is quickly shifting from whether it makes sense to allocate to crypto in multi-asset portfolios, to how much that allocation should be. This edition of Portfolio Insights aims to assess what the optimal answer could be using multiple quantitative techniques, knowing from the start that the answer will vary depending on the specific situation of each investor. Overall, we find that:

1. Even though the volatility and drawdown of bitcoin or crypto in general is elevated on a single asset basis when added in a small quantity to a multi-asset portfolio, the relative risk (volatility or drawdown) created is quite minor and has been historically very richly rewarded.

2. Even conservative investors with small risk tolerance could benefit from a small (1%) allocation to bitcoin as the added volatility and relative drawdown remain very small.

3. Looking forward, even assuming conservative behaviour for cryptocurrencies[1], the most optimal multi-asset portfolios would include bitcoin. The optimal allocation for a balanced portfolio would hover around 5%.

4. Despite its high volatility and thanks to its low correlation, a 1.5% allocation to bitcoin would only represent 3% of the risk in a balanced portfolio that includes equities, fixed income, and a small proportion of commodities.

Part 1 - Bitcoin optimal allocation: a relative risk approach

In our previous research, [Bitcoin in multi-asset portfolios,](#) we highlighted four important results for institutional investors regarding the addition of cryptocurrencies to a 60/40 portfolio:

+ Digital assets represent between 1% and 2% of the market portfolio (depending on when one looks). Multi-asset allocations that don't invest in cryptocurrencies are effectively underweight the asset class and are betting against it.

+ Bitcoin exhibits high growth potential compared to other asset classes, having been the best

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1   Conservative behaviour for cryptocurrencies: positive return but well below what we experienced historically, similar volatility and correlation.

asset in nine of the last 12 years, and remains uncorrelated. It is, therefore, a very strong candidate for a multi-asset allocation.

+ Even a small allocation in a portfolio can enhance returns quite significantly with a limited increase in overall risk, granting the portfolio a better risk/return profile. The Information Ratio of such an addition borders on 1, which is extremely attractive.

+ The increase in volatility and drawdowns created by adding bitcoin to a portfolio remains very contained thanks to the diversification and regular rebalancing. Adding 1% to a 60/40 portfolio would have added 0.07% of volatility historically[2].

Estimating the impact of a small allocation to bitcoin in a portfolio using the bootstrapping technique

What is bootstrapping? It is a simulation approach that uses existing historical data to forecast future outcomes instead of generating random data from the observed historical distribution. 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.

To extend our analysis comparing an investment in a balanced 60/40 portfolio and an investment in the same portfolio but with a small allocation to bitcoin, we use bootstrapping techniques that allow us to simulate realistic three-year investment periods from the existing performance history of bitcoin. The process is as follows: we randomly select 36 months (equivalent to three years of data) *with* replacement from the monthly return time series for equity, bonds, and bitcoin.

For each hypothetical realisation, we obtain three simulated time series: one each for bitcoin, equity, and bonds. Using these three series, we can create simulated series for different portfolios:

+ a fixed proportion between equity and bonds, following the well-known 60/40 split, rebalanced every 6 months.

+ portfolios investing 99% of its assets in the 60/40 portfolio defined above and 1% in bitcoin but using varying rebalance frequencies to rebalance back to its 1% weight - every one, three or six months.

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2   Bloomberg, WisdomTree. From 31 December 2013 to 31 December 2023. In USD. Based on daily returns.

Figure 1 shows the relative return, standard deviation, and maximum drawdown for portfolios with one, three and six-month rebalancing frequencies. For standard deviation, a number greater than zero means that the portfolio with bitcoin experienced a higher volatility compared to the balanced portfolio. Conversely, for maximum drawdown, a number greater than zero means that the portfolio with bitcoin experienced a better (lower) maximum drawdown.

Figure 1: Distribution of results using bootstrapping technique
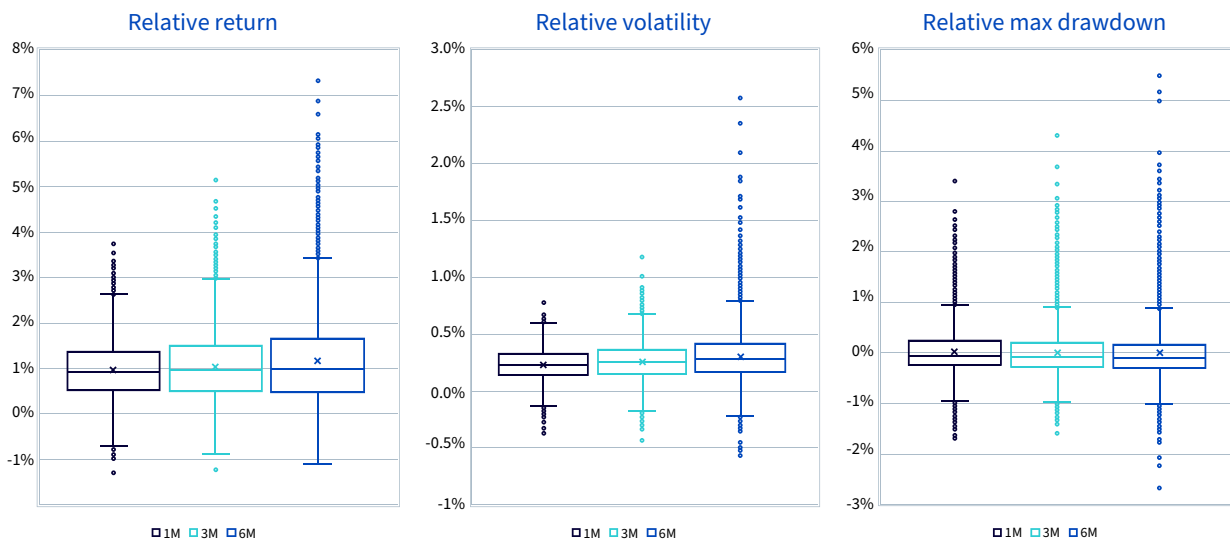
Source: WisdomTree, Bloomberg, S&P. From January 2014 to May 2024. Calculations are based on monthly returns in USD.
Historical performance is not an indication of future performance and any investments may go down in value.

Looking at the charts, we can draw the following conclusions:

+ **Return**: adding a 1% allocation to bitcoin in a balanced portfolio improves the overall performance. The median performance improvement is not affected by the rebalancing frequency, but the less frequently the portfolio is rebalanced, the higher the extra performance is in the 'luckier' draws.

+ **Volatility**: adding a 1% allocation to bitcoin in a balanced portfolio increases the overall volatility of the portfolio. This is no surprise but as discussed in other papers, the increase is on average minimal. The average volatility increase is indeed pretty stable across rebalancing frequencies (the median is between 25 and 28 bps[3]), but the lower the rebalancing frequency, the higher relative volatility dispersion.

+ **Maximum drawdown**: regarding maximum drawdown, the results are surprising, as we would have expected a significantly worse outcome, but that is not the case. The median relative drawdown is very close to zero for the one-month rebalancing and it is slightly negative for the six months rebalancing. The distribution is also positively skewed, meaning that the mean is higher than the median. Furthermore, a large proportion of the simulations

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3   Basis points.

show an improved drawdown in the portfolios with bitcoin, highlighting further the strength of the diversification power of a bitcoin allocation.

Determining bitcoin allocation using relative risk

Let's now dig deeper into **maximum drawdown**. Instead on focusing on a 1% allocation, we now decide to test different bitcoin allocation levels, from 1% to 9% (with quarterly rebalance). For each level of bitcoin allocation, we have a relative maximum drawdown distribution. Figure 2 shows the distribution changes as we increase the bitcoin weight. The more the bitcoin allocation increases, the more the distribution shifts to the left (worse maximum drawdown) and the more the left tail thickens. In other words, the greater the bitcoin allocation, the higher the risk of having a significant relative maximum drawdown versus the starting balanced portfolio.

Figure 2: Relative drawdown distribution of multi-asset portfolios with varying levels of investment in bitcoin
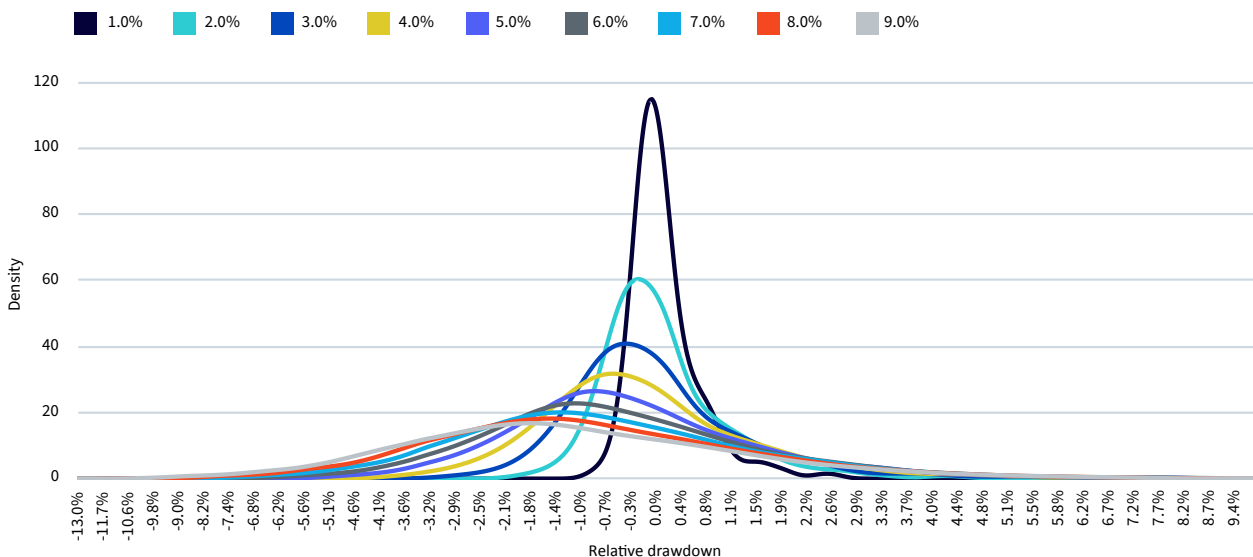
Source: WisdomTree, Bloomberg, S&P. From January 2014 to May 2024. Calculations are based on monthly returns in USD.
Historical performance is not an indication of future performance and any investments may go down in value.

This link between the crypto allocation and relative drawdown risk gives us the first answer on defining an optimal allocation to crypto. Risk-sensitive investors can use relative risk to pinpoint the correct allocation to crypto for them. In Figure 3, the x-axis indicates the allocation to bitcoin, and the histograms show the relative value at risk at different levels of confidence for the investment compared to the standard 60/40 portfolio.

Taking the example of a 5% bitcoin investment, in 99% of the cases the investor would have experienced a relative maximum drawdown better than -4.4%, and in 1% of the cases they would have experienced a relative maximum drawdown worse than -4.4% (the blue bar). Choosing a less conservative quantile, for example 95%, this relative drawdown threshold drops to -3.1% (dark blue bar).

Figure 3: Using relative drawdown to calibrate the allocation to bitcoin
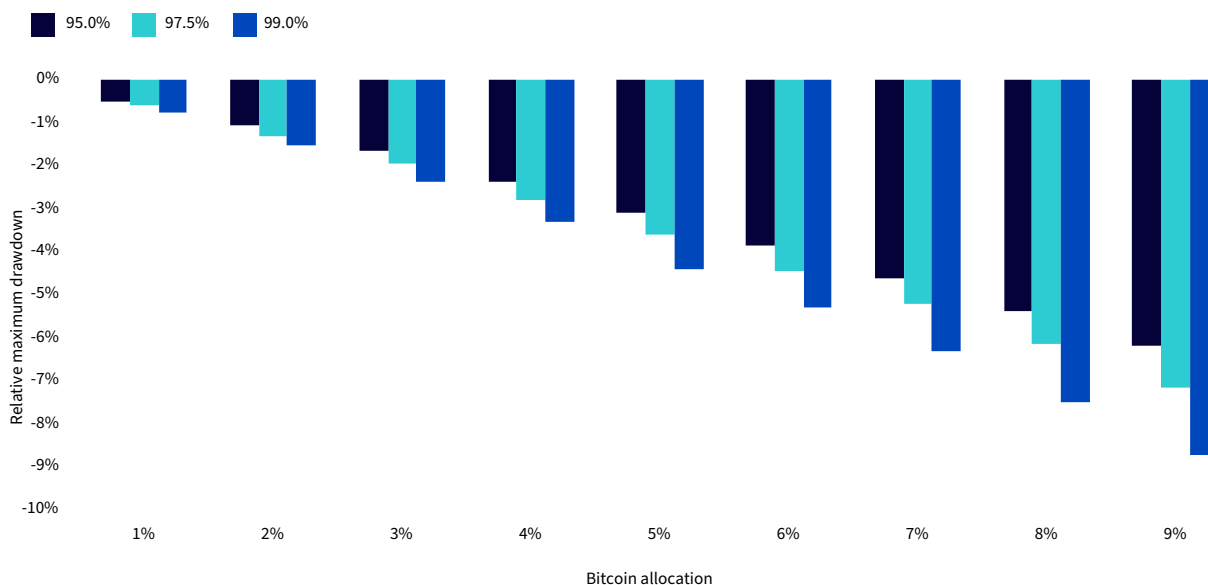
Source: WisdomTree, Bloomberg, S&P. From January 2014 to May 2024. Calculations are based on monthly returns in USD.
Historical performance is not an indication of future performance and any investments may go down in value.

Using this technique, an investor can determine their preferred crypto allocation from the risk they are willing to take. For instance, consider a conservative investor who is comfortable with a maximum 1% relative drawdown (compared to a traditional 60/40 portfolio) with a 99% confidence level. From the chart, they can conclude that allocating between 1% and 2% to bitcoin would be most suitable.

Part 2 - Bitcoin optimal allocation: using the Markowitz mean-variance framework

A historical perspective

The mean-variance optimisation framework, as proposed by H. Markowitz, is a hallmark of asset allocation. In this section, we use this familiar technique to assess the optimal allocation to cryptocurrencies, first from a historical perspective. We look to determine which portfolio would have been the most efficient (yielding the best performance) for a series risk levels. To this purpose, we use the following basket of assets[4]:

+ Bloomberg Short Treasury Total Return Index

+ Bloomberg US Aggregate Total Return Index

+ MSCI ACWI Net Total Return Index

+ **CME CF bitcoin reference rate**

4   Tickers: **LT12TRUU Index, LBUSTRUU Index, NDUEACWF Index and BRR Index.**

All the assets are denominated in US dollars. As before, we start the analysis from 2014. In the optimisation, we implement certain constraints, not allowing shorting nor leverage. The results of the optimisation in Figure 4 below indicate the following:

+ Even for very low levels of target volatility, a small bitcoin optimal allocation emerges.

+ The allocation converges to around 20% weight for the riskiest portfolios.

Over the period, the stellar performance of bitcoin and the very low correlation to other assets has been more than enough to compensate for its historically high annualised volatility (66% over the period).

Figure 4: Historical asset allocation of efficient portfolios by portfolio volatility
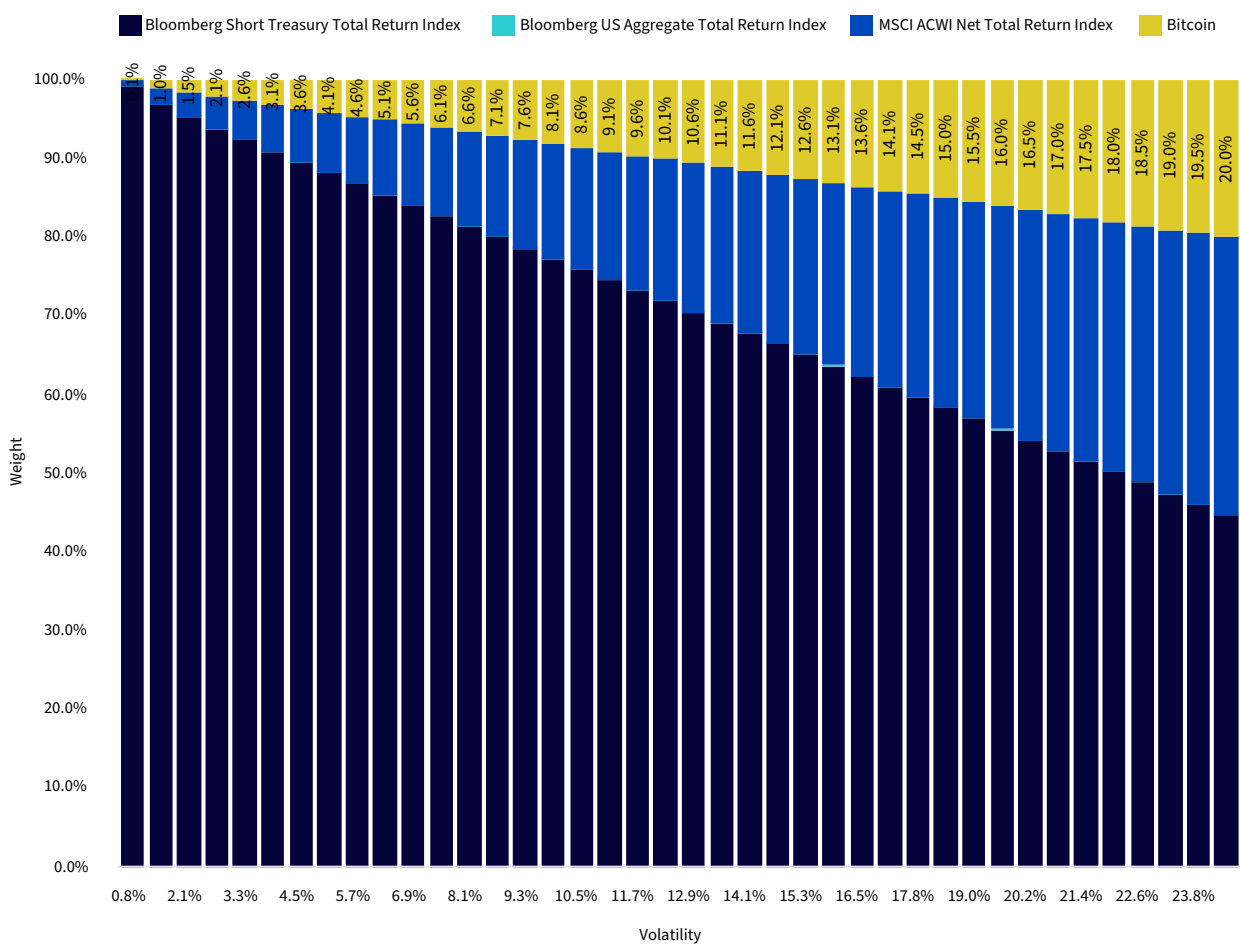
Source: WisdomTree, Bloomberg, S&P. From January 2014 to May 2024. Calculations are based on monthly returns in USD.
Historical performance is not an indication of future performance and any investments may go down in value.

Of course, 20% of crypto in a portfolio is quite aggressive. According to the mean-variance framework, it has been the optimal allocation for the last 10 years, but it may not be the best allocation for the next 10 years. A well-known drawback of mean-variance optimisation is that it's

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very sensitive to inputs and can result in an under-diversified portfolio[5]. In this case, with returns of 75% per year, crypto obviously gets preferred treatment in the optimisation. In its current phase of adoption and growth, 75% returns remain highly possible (bitcoin returned 157% in 2023), however from the point of view of a long-term strategic asset allocation, it is clearly a bit ambitious.

Optimisation using forward scenarios

This is why we decided to run the new mean-variance optimisations with a forward-looking perspective instead of historical using three realistic scenarios for bitcoin. In this way, we embedded some view of the future into the optimiser and avoided relying too heavily on historical performances. To do this, we referred to the JP Morgan Long-Term Capital Market Assumptions (28th annual edition, 2024). The return assumptions for all the assets except bitcoin can be found in the appendix. The assets used for the analysis are the same as the previous section. For bitcoin, we define the three scenarios as follows:

+ **Good scenario**: bitcoin's return is assumed to be equal to the US Large Cap Equity estimated return + 20% per annum — this remains significantly below historical returns and below the 2023 performance by a wide margin. The volatility is assumed to be 20% lower than bitcoin's historical volatility.

+ **Mid scenario**: bitcoin's return is assumed to be equal to the US Large Cap Equity estimated return + 12.5%. The volatility is 10% lower than bitcoin's historical volatility and the correlation with the other assets is increased by 10%.

+ **Bad scenario**: bitcoin's return is assumed to be equal to the US Large Cap Equity estimated return +7.5%. The volatility is equal to bitcoin's historical volatility and the correlation with the other assets is increased by 20%.

Figures from 5 to 7 collect the mean-variance optimisations in the three scenarios. We can note that:

+ In both the good and mid scenario, bitcoin receives a non-negligible weight even in low volatility portfolios. For example, in the mid scenario, the optimal portfolio with a 5.5% volatility would allocate 1.5% to bitcoin.

+ Bitcoin allocation is present in all portfolios with more than 5% volatility, even in the bad scenario, where crypto returns only 7.5% more than equities per annum.

+ For an aggressive multi-asset portfolio (~10% volatility) allocations range from ~ 1% to ~9% depending on the scenario.

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5   See as a reference: *Putting Markowitz theory to work* (1981, Jobson and Korkie) or *Portfolio Optimization in Practice* (1992, Jorion).

Figure 5, 6 and 7: Asset allocation of efficient portfolios by portfolio volatility in three forward-looking scenarios
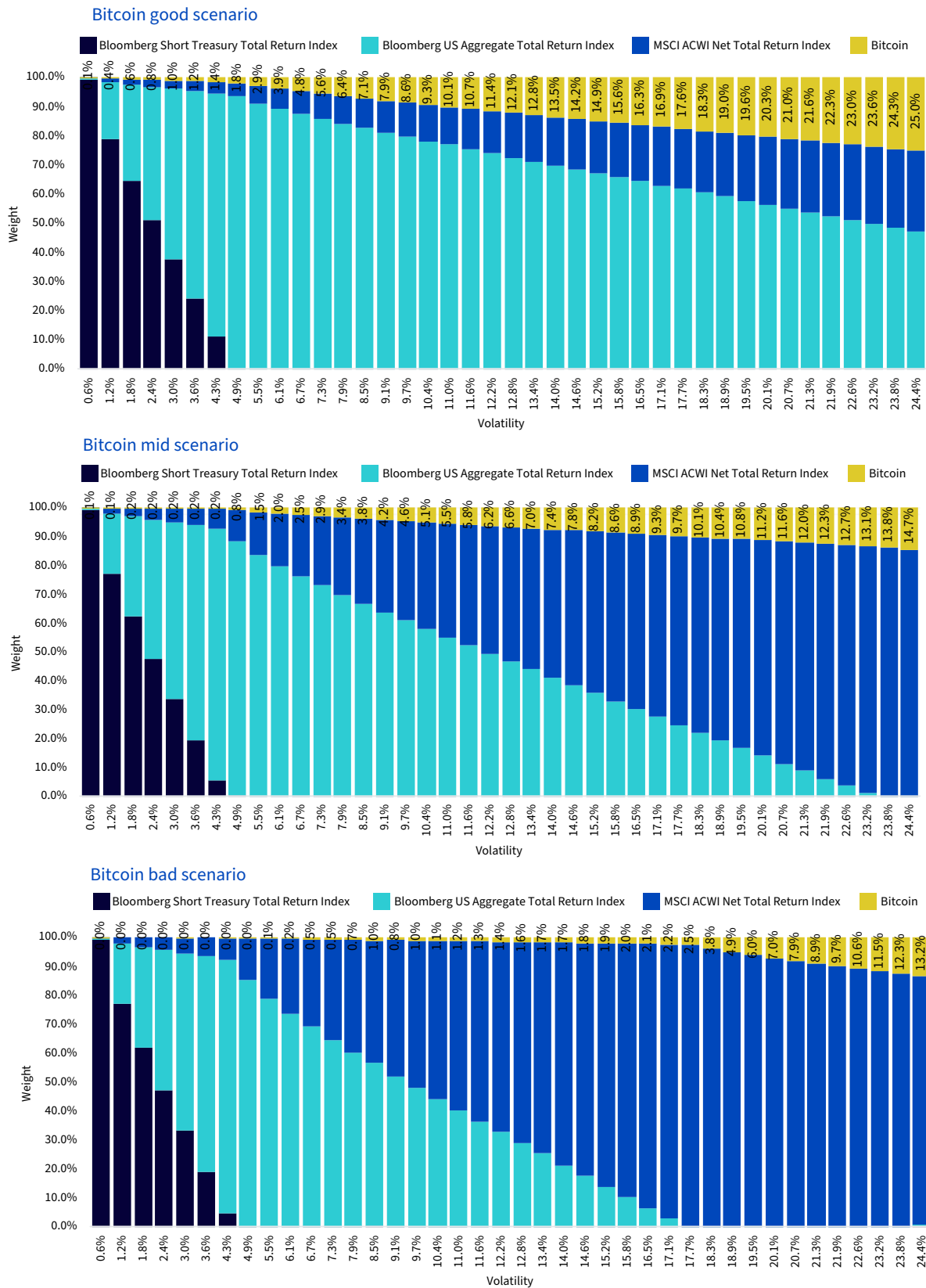
Bitcoin good scenario

Bitcoin mid scenario

Bitcoin bad scenario

Source: WisdomTree, JP Morgan. Calculations are based on monthly returns in USD. **Historical performance is not an indication of future performance and any investments may go down in value.**

Weight sensitivity subject to expected forward returns

Another approach to bitcoin allocation within a mean-variance framework is to analyse how the optimal bitcoin weight changes with varying expected returns. This analysis can also be applied by varying correlations or volatilities, but focusing on return is particularly relevant, as it provides a more direct basis for investors to adjust their allocations based on their own forecasts.

Figure 8 illustrates the optimal bitcoin weight for a balanced portfolio (target volatility of 10%) as its return varies, assuming the mid scenario correlations and volatilities hold from the previous paragraph.

If an investor anticipates bitcoin returning 15% more than the MSCI ACWI over the next 10 years (still significantly less than its historical average), the optimal bitcoin allocation in a balanced portfolio would be 5.8%. If a 7.5% excess return is considered more realistic, a 1.7% allocation would be more appropriate.

Figure 8: Optimal weight as a function of bitcoin expected annualised relative returns over the next 10 years
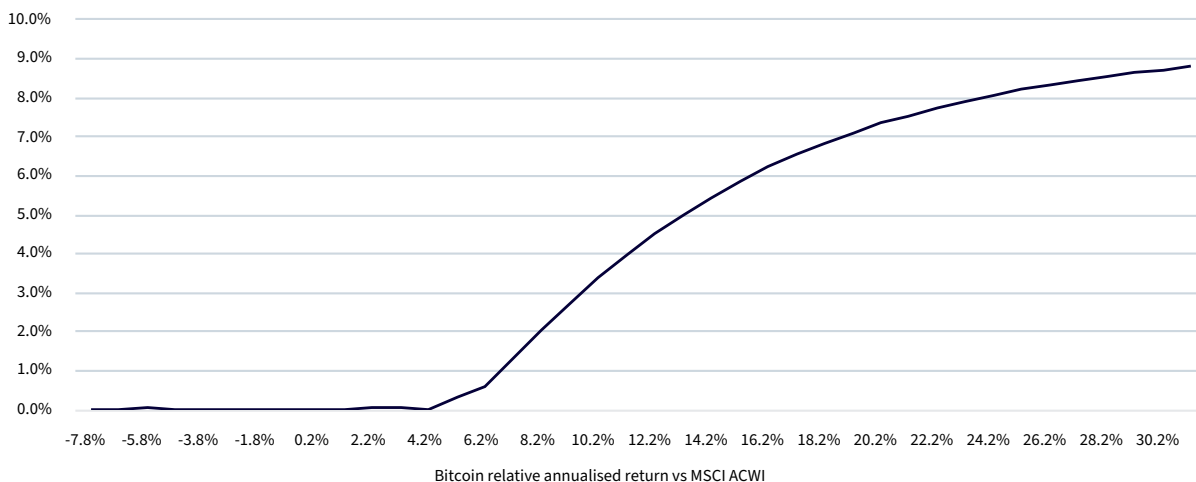
Bitcoin relative annualised return vs MSCI ACWI

Source: WisdomTree, JP Morgan. Calculations are based on monthly returns in USD. **Historical performance is not an indication of future performance and any investments may go down in value.**

Part 3 - Bitcoin optimal allocation: using risk contributions

Determining a bitcoin allocation using target risk methods

The two methods discussed previously all depend, one way or another, on returns expectations. With this third framework, we wanted to dispense from those so decided to look at target-risk portfolios. This allocation methodology is deeply rooted in the principle of diversification.

An individual asset's contribution to the portfolio's volatility can be ascertained by considering

the proportion of its unique volatility in conjunction with the covariance effect of that asset. The asset's risk contribution in a two-asset portfolio can be calculated as:

$$\text{Asset 1 Risk Contribution} = (w_1^2\sigma_1^2 + w_1w_2Cov_{12}) / \sigma^2(p)$$

Where w_1 is the weight of that asset in the portfolio, σ_1 is its volatility, Cov_{12} is the covariance between the two assets and $\sigma(p)$ is the volatility of the portfolio itself.

Examining the traditional 60/40 portfolio over the past decade reveals that a 60% allocation to equities typically translates to over 90% of the risk—or volatility—stemming from equities, given the historically low volatility of bonds. Multi-asset managers are always seeking to diversify portfolios, and commodities are very often one of the first diversifiers to be selected. So, for the sake of the analysis, we start with a benchmark that allocates its risk in a 90/5/5 split from equity, fixed income, and commodities. Such a split would have resulted historically in an allocation of approximately 50% to equities, 42% to fixed income, and 8% to commodities.

Figure 9: Portfolio construction via risk budgeting - 90% equities, 5% fixed income, 5% commodities
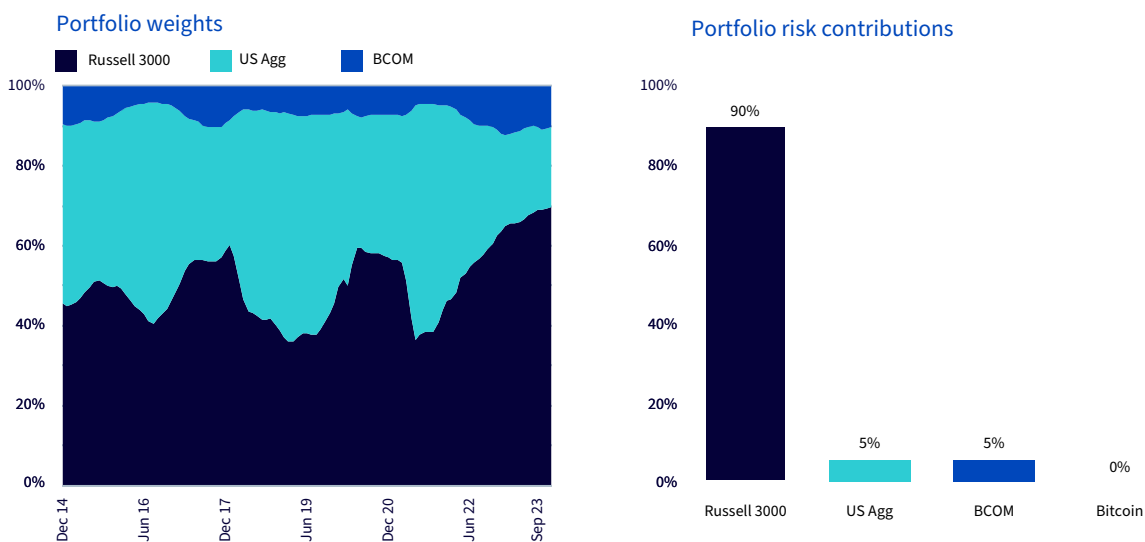
Statistics	1Y	3Y	5Y	SI	2015	2016	2017	2018	2019	2020	2021	2022	2023
Annualised return	12.3%	4.1%	9.2%	6.8%	-1.2%	10.8%	12.8%	-5.0%	13.6%	18.6%	14.9%	-12.7%	12.3%
Max drawdown	-8.3%	-19.1%	-19.4%	-19.4%	-7.5%	-5.1%	-1.4%	-8.2%	-1.7%	-19.4%	-3.4%	-18.7%	-8.3%
Sharpe ratio	0.59	0.16	0.61	0.56	-0.19	2.27	5.35	-1.02	2.63	1.09	2.76	-0.88	0.59
Volatility	12.2%	12.3%	12.0%	9.7%	6.8%	4.6%	2.2%	6.8%	4.3%	16.5%	5.4%	16.3%	12.2%

Source: WisdomTree, Bloomberg. From January 2014 through December 2023. The portfolio represents the benchmark 'TRC 90/5/5/0' portfolio where 'TRC' denotes 'Target Risk Contribution', and the portfolio consists of 90% risk allocated to equities, 5% to bonds, 5% to commodities, and 0% to bitcoin. US Agg represents Bloomberg US Aggregate Bond Index and BCOM represents Bloomberg Broad Commodities Index. **Historical performance is not an indication of future performance and any investments may go down in value.**

Bitcoin, as discussed earlier, is a very strong diversifier, potentially even more so than commodities. In light of this, we consider reallocating a portion of the portfolio risk budget from commodities to bitcoin.

We examine four target risk portfolios incorporating bitcoin, each diverting 1% from the commodity risk budget to bitcoin. The subsequent risk allocations are depicted in charts to follow, with 'TRC' denoting Target Risk Contribution, and '90/5/5/0' representing the benchmark portfolio of 90% risk allocated to equities, 5% to bonds, 5% to commodities, and 0% to bitcoin. Risk is incrementally assigned to bitcoin starting at 1%, culminating in a 4% risk allocation to bitcoin and a 1% allocation to commodities from the original 5% commodity risk budget ('90/5/1/4').

As bitcoin is introduced into the risk budget, its higher idiosyncratic volatility swiftly dominates even a modest risk allocation, originally designated for commodities. Consequently, the capital allocated to commodities and bitcoin within the 5% risk sleeve diminishes in terms of the portfolio's overall weight. This shift opens allocations for comparatively lower risk assets such as fixed income and equities. Put simply, increasing the risk budget for bitcoin, sourced from commodities, not only harbours the potential to amplify returns due to bitcoin's upside potential, but also can bolster portfolio returns through increased exposures to cash-flowing assets such as fixed income and equities — all occurring with only a marginal uptick in overall portfolio volatility. Overall, a 1% risk allocation to bitcoin translates into 0.7% capital allocation. Likewise, a 4% risk allocation translates into 1.9% capital allocation, while replacing the entire risk allocation from commodities to bitcoin results in a 2.2% weight to bitcoin.

Figure 10: Average overweight/underweight vs. benchmark portfolio
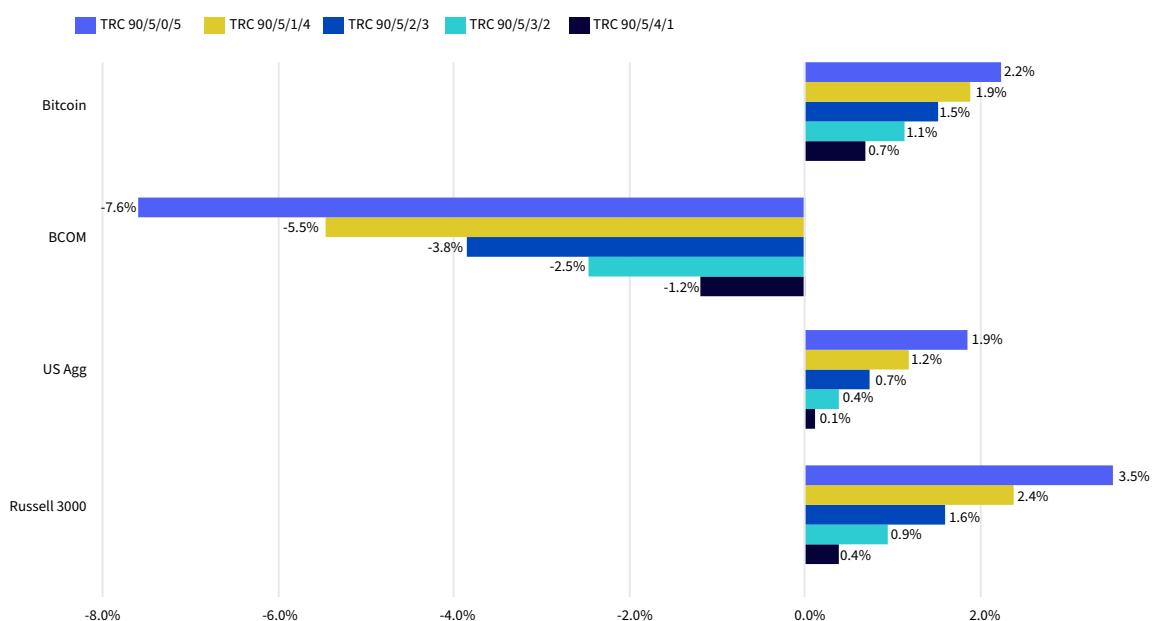
Source: WisdomTree, Bloomberg. From January 2014 through December 2023. 'TRC' denotes 'Target Risk Contribution', and '90/5/5/0' representing the benchmark portfolio of 90% risk allocated to equities, 5% to bonds, 5% to commodities, and 0% to bitcoin. **Historical performance is not an indication of future performance and any investments may go down in value.**

Figure 10 shows that the reallocation of even a modest 1% of the risk budget to bitcoin can enhance the portfolio's Sharpe ratio. This mirrors findings from similar analyses we conducted on a rebalanced traditional 60/40 portfolio.

Setting aside the performance-induced Sharpe ratio improvements, the risk side is very interesting. Notably, the portfolio's volatility experiences a marginal increase when bitcoin is introduced in small quantities. A 1% reallocation from the commodities risk budget results in a mere 20 basis points increase in overall portfolio volatility in each scenario. Given the historical return and volatility profile of bitcoin, this seems a relatively cheap cost for adding it to the asset mix.

Figure 11: The Sharpe ratios of the target risk contribution portfolios
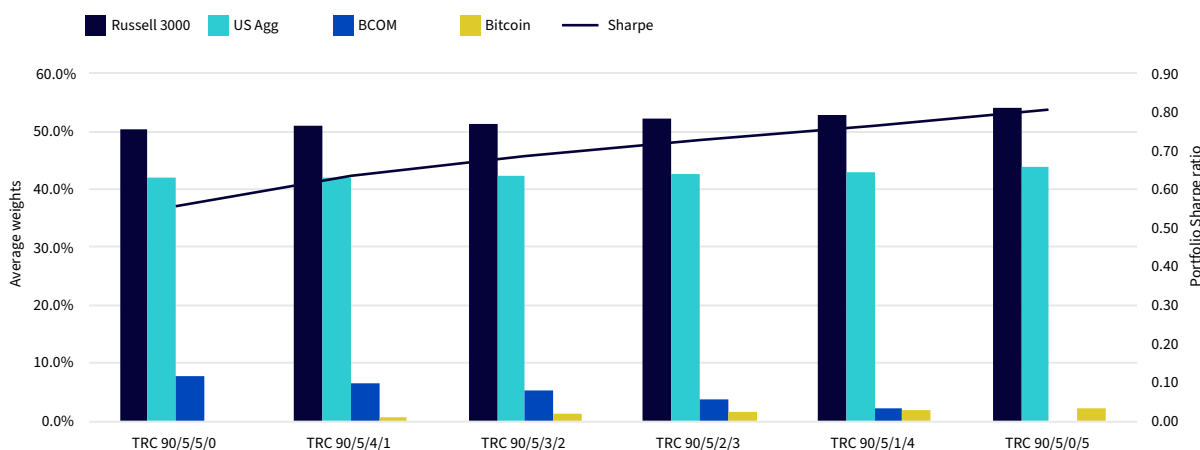

Source: WisdomTree, Bloomberg. From January 2014 through December 2023. 'TRC' denotes 'Target Risk Contribution', and '90/5/5/0' representing the benchmark portfolio of 90% risk allocated to equities, 5% to bonds, 5% to commodities, and 0% to bitcoin. **Historical performance is not an indication of future performance and any investments may go down in value.**

Table 1: The annualised volatility for the target risk contribution portfolios

Volatility	1Y	3Y	5Y	SI	2015	2016	2017	2018	2019	2020	2021	2022	2023
TRC 90/5/5/0	12.2%	12.3%	12.0%	**9.7%**	6.8%	4.6%	2.2%	6.8%	4.3%	16.5%	5.4%	16.3%	12.2%
TRC 90/5/4/1	12.3%	12.4%	12.2%	**9.9%**	7.2%	4.5%	2.5%	6.8%	4.2%	16.9%	5.5%	16.5%	12.3%
TRC 90/5/3/2	12.5%	12.6%	12.4%	**10.1%**	7.4%	4.5%	2.8%	6.9%	4.3%	17.2%	5.6%	16.6%	12.5%
TRC 90/5/2/3	12.7%	12.8%	12.6%	**10.3%**	7.6%	4.5%	3.0%	6.9%	4.3%	17.6%	5.8%	16.7%	12.7%
TRC 90/5/1/4	12.9%	13.1%	12.8%	**10.5%**	7.8%	4.5%	3.3%	7.0%	4.4%	17.9%	6.1%	16.8%	12.9%
TRC 90/5/0/5	13.2%	13.4%	13.1%	**10.7%**	8.1%	4.5%	3.6%	7.0%	4.5%	18.2%	6.3%	17.0%	13.2%

Source: WisdomTree, Bloomberg. From January 2014 through December 2023. 'TRC' denotes 'Target Risk Contribution', and '90/5/5/0' representing the benchmark portfolio of 90% risk allocated to equities, 5% to bonds, 5% to commodities, and 0% to bitcoin. **Historical performance is not an indication of future performance and any investments may go down in value.**

Conclusion

As cryptocurrencies slowly gain their place in multi-asset portfolios, it becomes necessary to create a framework to assess the relevant allocation to those assets, taking into account their growth potential, diversification potential, and the change wrought by their wider adoption. In this paper we looked at three frameworks to assess what that allocation could look like for different types of investors. Our findings can be found in the table below summarised across three types of portfolios: Conservative, Balanced and Aggressive.

	Conservative portfolio	Balanced portfolio	Aggressive portfolio
Bootstrapping method	**~1%** Allocation resulting in 1% relative max drawdown with 99% confidence	**~3%** Allocation resulting in 2.5% relative max drawdown with 99% confidence	**~5%** Allocation resulting in 5% relative max drawdown with 99% confidence
Markowitz Mean-Variance method	**~1%** Optimal weight in mid scenario for 5% Target Vol portfolio	**~5%** Optimal weight in mid scenario for 10% Target Vol portfolio	**~8%** Optimal weight in mid scenario for 15% Target Vol portfolio
Risk contribution method	**~0.7%** 1% risk contribution allocation to crypto	**~1.5%** 3% risk contribution allocation to crypto	**~2.2%** 5% risk contribution allocation to crypto

Overall, it looks like a conservative portfolio would aim for a slight underweight to crypto compared to the market portfolio, with an allocation of around 1%. This is perfectly logical as a conservative portfolio is also underweight other risk assets such as equities. A balanced portfolio could aim for a slight overweight with around 3% of the allocation. Finally, an aggressive portfolio, with its classic overweight to risky assets compared to the market portfolio could easily target a 5% allocation to crypto.

If there is one thing to take away from this research, it's that the time for ignoring this asset class has passed. Not allocating to the asset class is no longer the default decision. Investors or multi-asset managers need to have a view and a plan for this maturing asset class.

Part 4 - Implementation solutions

In 2019, WisdomTree became the first established ETP provider to launch physically backed crypto ETPs with the **WisdomTree Physical Bitcoin**. The WisdomTree crypto ETP range leverages 20 years of expertise in providing and managing physically backed ETPs for institutional investors. The result is a best-in-class, institutional-grade and low-cost range of eight ETPs that provide thoughtful, price competitive access to individual cryptocurrencies and diversified baskets.

Our institutional-grade crypto ETPs are 100% physically backed and use a dual custody model that leverages regulated custodians. This ensures assets are professionally secured in 'cold storage' and held in segregated wallets. At 0.35%, our bitcoin ETP has one of the lowest fee levels for institutional-grade physical bitcoin ETPs in Europe that are 100% backed by bitcoin.

Transparency is paramount to us and our clients, so we clearly disclose all the key characteristics of our crypto ETPs on our dedicated product web pages and material, including staking rewards where applicable.

WisdomTree Crypto ETPs: Key Characteristics

Single Coin Crypto ETPs		
	WisdomTree Physical Bitcoin	**WisdomTree Physical Ethereum**
Key product information		
ISIN	GB00BJYDH287	GB00BJYDH394
Base Currency	USD	USD
Management Fee	0.35% p.a.	0.35% p.a.
Physically backed	Yes	Yes
Coin lending	No	No
Staking enabled	No	Yes
Launch Date	03-Dec-19	29-Apr-21
Underlying Exposure	Bitcoin	Ethereum
Product Page	Link	Link
Issuer and custodian		
Issuer	WisdomTree Issuer X Limited	WisdomTree Issuer X Limited
Issuer Domicile	Jersey	Jersey
Regulated Custodian(s)	Swissquote Bank AG, Coinbase Custody Trust Company, LLC	Swissquote Bank AG, Coinbase Custody Trust Company, LLC
Cold Storage	Yes	Yes
Vault Location	US and Switzerland	US and Switzerland
Insurance Facilities	Yes with both custodians	Yes with both custodians
Legal and regulatory information		
Legal Structure	ETP	ETP
Legal Form	Debt Security	Debt Security
Passported Countries	Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, United Kingdom	Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, United Kingdom
UCITS Eligibility	Currently, there are no definitive regulatory policies available to determine eligibility for UCITS investment. WisdomTree has completed an analysis applying the framework for UCITS eligibility to Exchange Traded Notes with cryptoassets as the underlying asset. If you would like to find out the details from this analysis, please contact us.	
Trading information		
Exchange Ticker	BTCW / WBIT	ETHW / WETH
Exchanges	London Stock Exchange, Börse Xetra, SIX, Euronext Paris, Euronext Amsterdam	London Stock Exchange, Börse Xetra, SIX, Euronext Paris, Euronext Amsterdam
Trading Currencies	USD, EUR, GBx, CHF	USD, EUR, GBx, CHF
Price Reference / Index	CME CF Bitcoin Reference Rate	CME CF Ether-Dollar Reference Rate
In-kind creation and redemption	Yes	Yes
Number of Authorised Participants	5	5

Crypto Basket ETPs		
	WisdomTree Physical Crypto Mega Cap Equal Weight	**WisdomTree Physical Crypto Market**
Key product information		
ISIN	GB00BMTP1733	GB00BMTP1626
Base Currency	USD	USD
Management Fee	0.40% p.a.	0.70% p.a.
Physically backed	Yes	Yes
Coin lending	No	No
Staking enabled	No	No
Launch Date	29-Nov-21	29-Nov-21
Underlying Exposure	Equal-weighted Bitcoin and Ethereum	Diversified basket of 10 leading cryptocurrencies
Product Page	Link	Link
Issuer and custodian		
Issuer	WisdomTree Issuer X Limited	WisdomTree Issuer X Limited
Issuer Domicile	Jersey	Jersey
Regulated Custodian(s)	Swissquote Bank AG, Coinbase Custody Trust Company, LLC	Swissquote Bank AG, Coinbase Custody Trust Company, LLC
Cold Storage	Yes	Yes
Vault Location	US and Switzerland	US and Switzerland
Insurance Facilities	Yes with both custodians	Yes with both custodians
Legal and regulatory information		
Legal Structure	ETP	ETP
Legal Form	Debt Security	Debt Security
Passported Countries	Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, Switzerland	Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, Switzerland
UCITS Eligibility	Currently, there are no definitive regulatory policies available to determine eligibility for UCITS investment. WisdomTree has completed an analysis applying the framework for UCITS eligibility to Exchange Traded Notes with cryptoassets as the underlying asset. If you would like to find out the details from this analysis, please contact us.	
Trading information		
Exchange Ticker	MEGA / WMEG	BLOC / WBLC
Exchanges	Börse Xetra, SIX, Euronext Paris, Euronext Amsterdam	Börse Xetra, SIX, Euronext Paris, Euronext Amsterdam
Trading Currencies	USD, EUR, CHF	USD, EUR, CHF
Price Reference / Index	WisdomTree CF Crypto Mega Cap Equal Weight Index	WisdomTree CF Crypto Market Index
In-kind creation and redemption	Yes	Yes
Number of Authorised Participants	5	5

Appendix

The annualised return assumptions for the next 10 years for the asset classes (except bitcoin) are:
+ Bloomberg Short Treasury Total Return Index: **2.9%**

+ Bloomberg US Aggregate Total Return Index: **5.2%**

+ MSCI ACWI Net Total Return Index: **7.8%**

We referred to the JP Morgan Long-Term Capital Market Assumptions (28th annual edition, 2024).

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