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Bitcoin in multi-asset portfolios

Adding bitcoin to a global 60/40 portfolio improves the risk-return profile

WisdomTree Market Insights

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Executive summary

15 years after its launch, bitcoin is reaching adulthood and represents 0.9% of the market portfolio.

Bitcoin exhibits high growth potential compared to other asset classes and remains uncorrelated. It's 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 increase in volatility and drawdowns created by adding bitcoin to a portfolio remains very contained thanks to the diversification and regular rebalancings.

Bitcoin is not a young upstart anymore. For the last 15 years since its launch, it has faced scepticism regarding its long-term viability. However, this period is largely over. With institutional-grade, regulated investment vehicles[1] available across the world and in the biggest markets at sub-forty basis point (bp) management expense ratios (MER), bitcoin has now fully entered the world of investable assets, and it's becoming increasingly hard for multi-asset managers to ignore it.

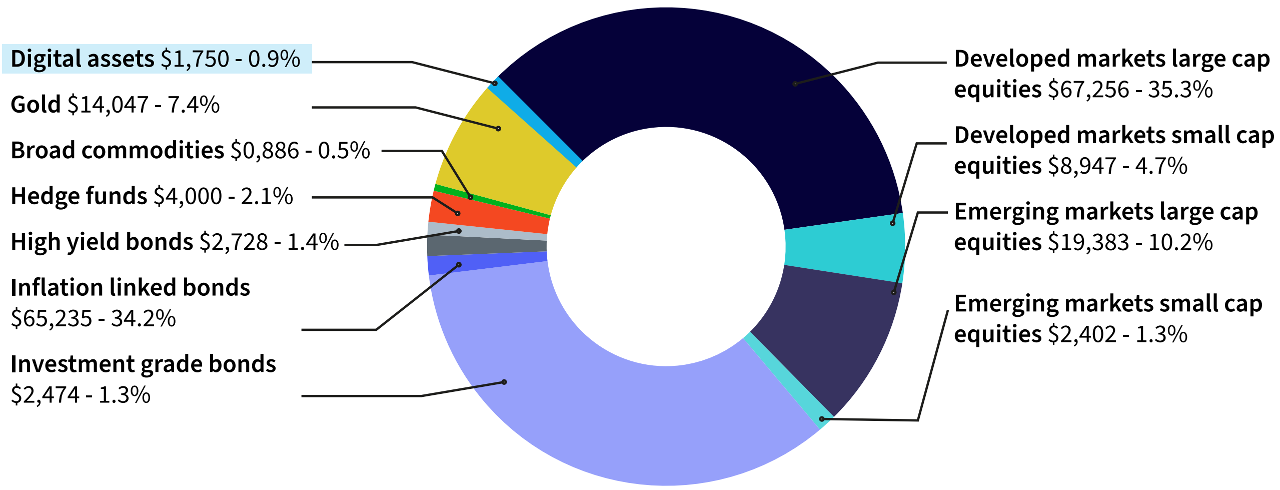
Cryptocurrencies in the Market Portfolio: 1% is a neutral positioning

The market portfolio consists of the weighted sum of every asset in the market. For most investors, it can be considered the 'neutral' asset allocation over which it's possible to overlay strategic and tactical market views.

Looking at the market portfolio, we note that 51% is in equities, 37% is in bonds, and 12% is in alternatives; a somewhat classic portfolio quite similar to the 60/40 structure. However, if we dig deeper, we notice that cryptocurrencies weigh 0.9% in this standard portfolio. In other words, an uninformed investor should have around 1% invested in cryptocurrencies. By not investing in crypto, managers are taking an active decision to underweight digital assets, reflecting a belief that the digital asset space will shrink over time and possibly disappear – quite a strong statement.

1 Exchange-traded products (ETPs) or exchange-traded funds (ETFs).

Figure 1: The Market Portfolio



Source: Bloomberg, WisdomTree. As of 31 January 2024. Market caps are shown in billions of US dollars. **You cannot invest directly in an index.**

Cryptocurrencies, an asset class that stands out: an exceptional source of growth

With 15 years of track record, it's now possible to study the historical behaviour of bitcoin. While the early years wouldn't yield usable insights, the last ten give us an idea of what to expect going forward. Ranking asset classes by performance on a calendar basis gives an incredible picture of bitcoin's growth potential. In seven out of the last ten years, bitcoin was the best-performing asset, often by a large margin. While bitcoin was also the worst-performing asset in the remaining three years, this still highlights how powerful this cryptocurrency can be to generate extra performance for multi-asset managers.

While we can't extrapolate too much from a short series of events, it's also worth noting that those 'bad years' are spaced by a gap of four years. Looking more closely, those negative years are placed exactly mid-way between halvings, the periodic events where bitcoin's supply issuance is reduced and miners' block rewards are halved.

Figure 2: Asset classes ranked by calendar year performance

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
REITS (15.9%)	Bitcoin (36.2%)	Bitcoin (120.3%)	Bitcoin (1403.2%)	Treasuries (-0.4%)	Bitcoin (94.8%)	Bitcoin (305.1%)	Bitcoin (59.8%)	Commodities (16.1%)	Bitcoin (152.9%)
Infrastructure (7.4%)	REITS (0.1%)	High Yield (14.3%)	Equities (24.0%)	Gold (-0.9%)	Equities (26.6%)	Gold (24.6%)	REITS (27.2%)	Gold (0.4%)	Equities (22.2%)
Equities (4.2%)	Small Caps (-1.0%)	Commodities (11.8%)	Small Caps (23.8%)	IG Bonds (-1.2%)	Small Caps (24.7%)	Small Caps (16.3%)	Commodities (27.1%)	Infrastructure (-4.7%)	Small Caps (16.8%)
Corporates (2.9%)	Equities (-2.4%)	Small Caps (11.6%)	Gold (12.7%)	Corporates (-3.2%)	REITS (23.1%)	Equities (16.3%)	Equities (18.5%)	High Yield (-12.7%)	Gold (14.6%)
Small Caps (1.8%)	High Yield (-2.7%)	Gold (8.1%)	REITS (11.4%)	High Yield (-4.1%)	Infrastructure (21.6%)	Corporates (10.0%)	Small Caps (16.1%)	IG Bonds (-16.2%)	High Yield (14.0%)
IG Bonds (0.6%)	IG Bonds (-3.2%)	Infrastructure (8.0%)	High Yield (10.4%)	REITS (-4.7%)	Gold (18.4%)	Treasuries (9.5%)	Infrastructure (6.3%)	Corporates (-17.0%)	REITS (10.9%)
Gold (0.1%)	Treasuries (-3.3%)	Equities (7.9%)	Infrastructure (9.8%)	Infrastructure (-5.3%)	High Yield (12.6%)	IG Bonds (9.2%)	High Yield (1.0%)	Treasuries (-17.5%)	Corporates (9.2%)
High Yield (0.0%)	Corporates (-3.6%)	REITS (5.0%)	Corporates (8.9%)	Equities (-9.4%)	Corporates (10.7%)	High Yield (7.0%)	Corporates (-3.2%)	Equities (-18.4%)	IG Bonds (5.7%)
Treasuries (-0.8%)	Infrastructure (-6.2%)	Corporates (3.7%)	IG Bonds (7.4%)	Commodities (-11.2%)	Commodities (7.7%)	Infrastructure (0.1%)	Gold (-4.3%)	Small Caps (-18.7%)	Treasuries (4.2%)
Commodities (-17.0%)	Gold (-12.1%)	IG Bonds (2.1%)	Treasuries (7.3%)	Small Caps (-14.4%)	IG Bonds (6.8%)	Commodities (-3.1%)	IG Bonds (-4.7%)	REITS (-24.4%)	Infrastructure (3.4%)
Bitcoin (-57.5%)	Commodities (-24.7%)	Treasuries (1.7%)	Commodities (1.7%)	Bitcoin (-74.3%)	Treasuries (5.6%)	REITS (-8.2%)	Treasuries (-6.6%)	Bitcoin (-64.2%)	Commodities (-7.9%)

Source: Bloomberg, WisdomTree. From 31 December 2013 to 31 December 2023. In USD. **You cannot invest directly in an index. Historical performance is not an indication of future performance and any investment may go down in value.**

Cryptocurrencies, an asset class that stands out: a risk-on diversifier

While performance is, of course, important, diversification is even more important in a multi-asset portfolio. The correlation between assets, more so than returns, is what can make an asset more or less valuable in the context of an asset allocation.

Because of their unusual history and very unique nature, cryptocurrencies do not fit in existing financial boxes. Users and developers don't always behave like financial actors. While it's disconcerting and could explain the significant hurdle to institutional adoption, it's also a strength as it enhances their decorrelation.

Figure 3 shows a correlation heatmap on USD monthly returns between bitcoin and a wide array of traditional exposures, including equities, bonds, commodities and alternatives. Most asset classes in the table correlate to at least one other asset class. This is not the case for digital assets. The correlation between digital assets and any traditional asset class remains below 30%. The correlation of bitcoin with equities, for example, is lower than that of Treasuries or commodities.

Figure 3: Bitcoin correlation to remaining asset classes is exceptionally low

	Equities	Small Caps	All Fixed Income	IG Bonds	Treasuries	Corporates	High Yield	Commodities	Gold	Infrastructure	REITS	Legend
Bitcoin	18%	21%	12%	11%	10%	12%	17%	13%	7%	15%	12%	1.0
Equities		95%	35%	31%	22%	49%	80%	43%	18%	82%	80%	0.9
Small Caps			37%	33%	23%	50%	82%	46%	20%	79%	83%	0.8
All Fixed Income				100%	98%	94%	60%	18%	58%	45%	53%	0.7
IG Bonds					99%	93%	56%	15%	58%	42%	50%	0.6
Treasuries						86%	45%	12%	59%	34%	42%	0.5
Corporates							75%	21%	50%	56%	65%	0.4
High Yield								41%	32%	74%	78%	0.3
Commodities									32%	42%	36%	0.2
Gold										29%	31%	0.1
Infrastructure											83%	-

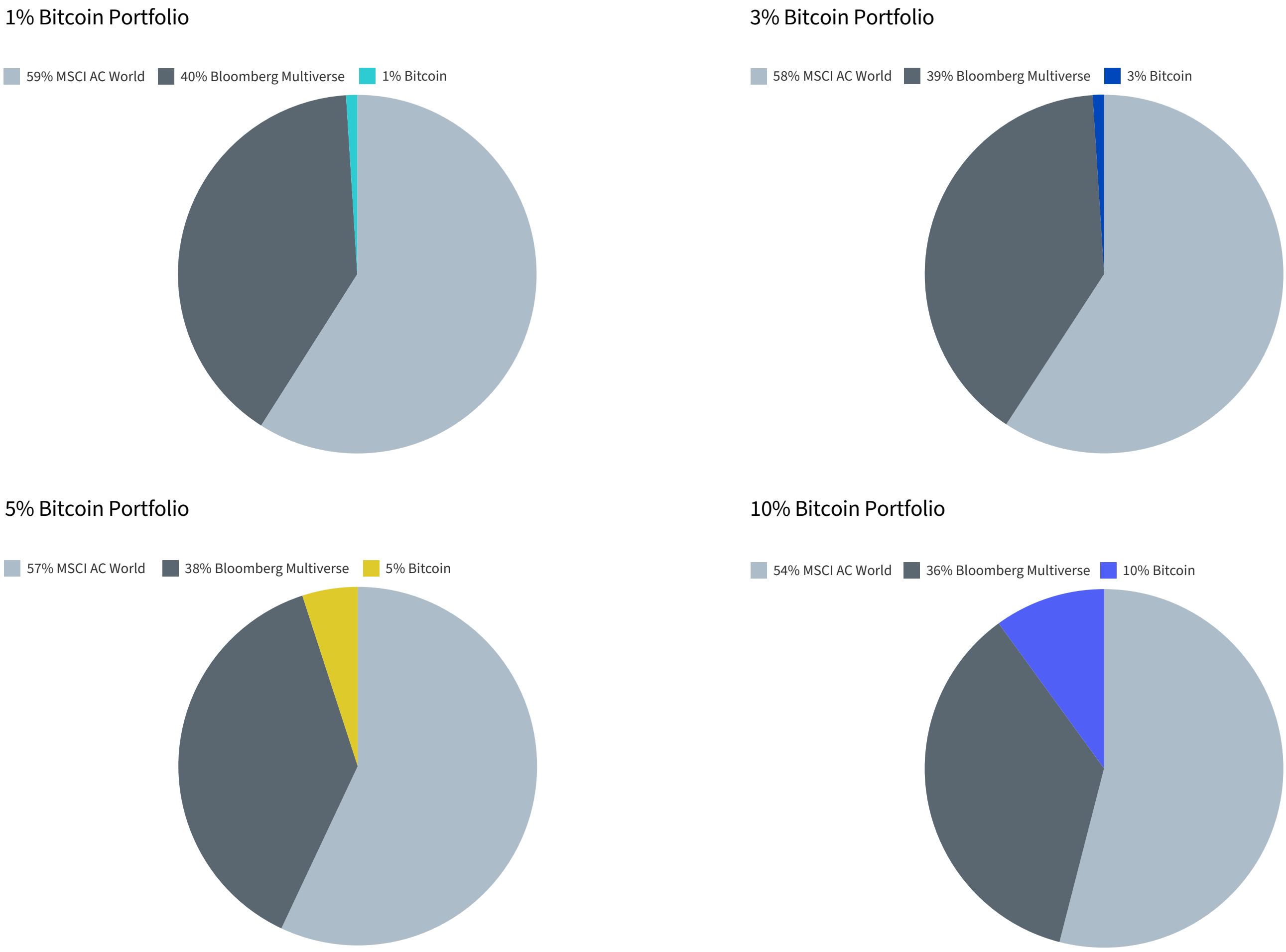
Source: Bloomberg, WisdomTree. From 31 December 2013 to 31 December 2023. In USD. Correlation based on weekly returns. **You cannot invest directly in an index. Historical performance is not an indication of future performance and any investment may go down in value.**

It's important to note that the correlation structure has not changed much with the increased adoption of bitcoin. The correlation matrix over the last two years (based on weekly returns) would also show correlations around or below 20% with all the asset classes. Adding to the strong growth potential, this strong decorrelation paints bitcoin as a great addition to the alternative bucket in any asset allocation.

The impact of adding 1% of bitcoin to a classic multi-asset portfolio

In this next section, we look at how small levels of bitcoin allocation can impact a portfolio's characteristics. The following section focuses on constant mix illustrative portfolios rebalanced monthly, unless otherwise specified. The control portfolio (60/40 Global Portfolio) allocates 40% to global bonds (including Treasuries, investment grade corporates and high yield), represented in this example by the Bloomberg Barclays Multiverse Total Return Index, and 60% to global equities (including emerging markets), represented in the example by the MSCI ACWI Net Total Return Index. Our constant proportion portfolios will then add 1%, 3%, 5% and 10% of bitcoin in the portfolio. All computations are simulated in USD and for illustrative purposes only.

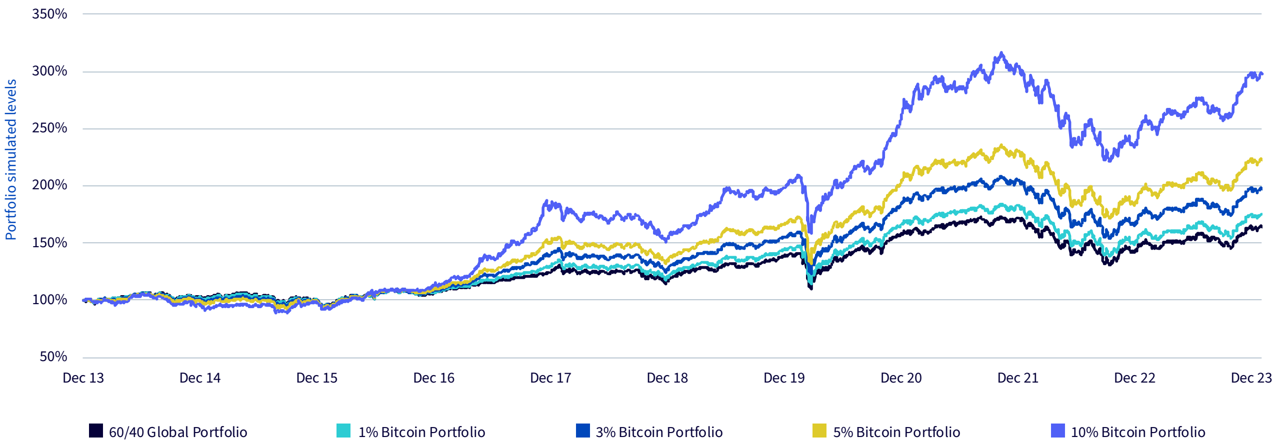
Figure 4: Constant mix portfolios



Source: WisdomTree. **For illustrative purposes only.**

Figure 5 shows the cumulative historical performance of the 60/40 Portfolio and the four bitcoin portfolios in which 1% to 10% of the allocation has been moved to bitcoin. Unsurprisingly, the higher the allocation to the cryptocurrency, the higher the historical return. Even a small 1% allocation led to a 0.7% outperformance versus the 60/40 Portfolio. The 5% Bitcoin Portfolio gained 3.22%. While those results were expected when we know the asset class performance over that period, they are still very important. For a multi-asset portfolio manager, 1% of extra performance over a given year can distinguish between beating or trailing peers.

Figure 5: Historical performance of example portfolios, including increasing proportions of bitcoin



	60/40 Global Portfolio	1% Bitcoin Portfolio	3% Bitcoin Portfolio	5% Bitcoin Portfolio	10% Bitcoin Portfolio	MSCI AC World	Bloomberg Multiverse	Bitcoin
Annualised Return	5.04%	5.69%	6.98%	8.26%	11.42%	7.92%	0.39%	49.29%
Volatility	8.93%	8.99%	9.28%	9.76%	11.61%	14.19%	5.02%	69.30%
Sharpe Ratio	0.42	0.49	0.61	0.71	0.87	0.47	-0.18	0.69
Beta	69%	70%	72%	75%	80%	100%	23%	173%
Max Drawdown	-24.4%	-24.9%	-26.1%	-27.3%	-30.2%	-33.7%	-25.3%	-83.1%
Up Capture	67.3%	69.7%	74.5%	79.1%	90.5%	100.0%	17.4%	227.4%
Down Capture	68.8%	68.5%	67.9%	67.4%	66.3%	100.0%	23.2%	86.3%

Source: Bloomberg, WisdomTree. From 31 December 2013 to 31 December 2023. In USD. Based on daily returns. **You cannot invest directly in an index. Historical performance is not an indication of future performance and any investment may go down in value. For illustrative purposes only.**

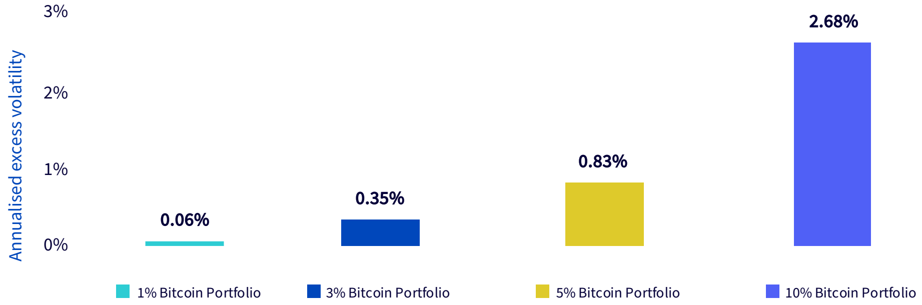
The statistics table also hints at some interesting insights that we need to investigate further:

+ Volatility increased slightly in the bitcoin portfolios but much less than expected since the 1% Bitcoin Portfolio only has 6bps extra volatility.
+ The underperformance of the bitcoin portfolios in drawdowns also seems quite contained, with an increased drawdown of only 58 bps for the 1% portfolio.

Adding bitcoin to a portfolio significantly improved the historical risk-adjusted performance

Bitcoin's higher performance has been accompanied by higher volatility over the period. However, this increase is severely limited by the low correlation we discussed earlier. The 1% Bitcoin Portfolio exhibits an excess volatility of only 6bps. The 5% Bitcoin Portfolio has 83bps more volatility than the 60/40 Portfolio. Since bitcoin's volatility is around 70%, without diversification effects, we would expect the 1% portfolio's volatility to increase by 70bps and the 5% by 3.5%. The actual results are very different.

Figure 6: Annualised excess volatility of the example bitcoin portfolios versus the 60/40 Portfolio



Source: Bloomberg, WisdomTree. From 31 December 2013 to 31 December 2023. In USD. Based on daily returns. **You cannot invest directly in an index. Historical performance is not an indication of future performance and any investment may go down in value. For illustrative purposes only.**

When balanced with the strong performance gains, this leads to a very strong gain in risk/return efficiency. The Sharpe ratio is increased strongly across the board by adding bitcoin to the multi-asset portfolio. For example, the 1% portfolio exhibits only 0.7% tracking error compared to the 60/40 Portfolio (this is the extra relative risk due to bitcoin being added). Considering the excess return of 65bps per annum, this leads to an information ratio of 0.93 for this extra risk. An excellent result that most active managers don't achieve.

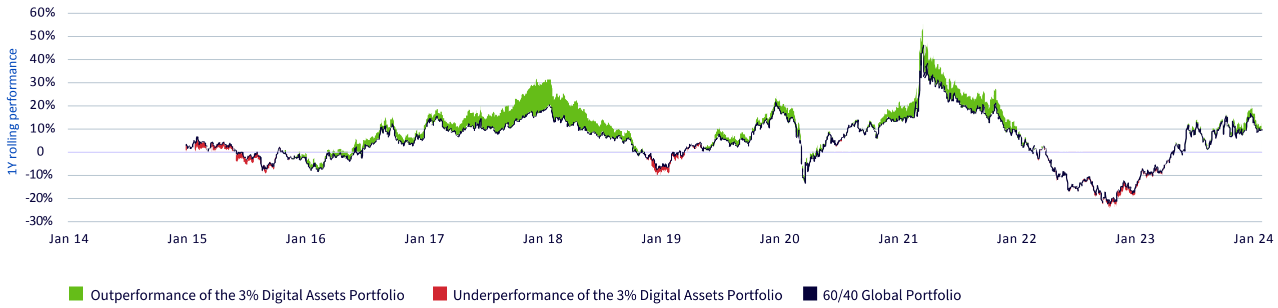
Bitcoin, an asymmetric asset with an asymmetric impact on the portfolio

Of course, volatility and tracking error are not the alpha and omega of risk measures. Investors are often more interested in drawdowns or value at risk.

Figure 7 shows the relative one-year performance of the 3% Bitcoin Portfolio versus the 60/40 Portfolio. The green zone indicates when bitcoin created some outperformance, and the red zone indicates when it created some underperformance.

Clearly, the historical outperformance in upside markets is quite significant, with very large green zones. On the other hand, the red zones appear quite limited. This highlights the clear asymmetry of bitcoin's behaviour and its impact on the portfolio. While the downside risk is there with some periods where bitcoin can lose 70% or 80%, the impact on the portfolio remains limited. On the contrary, bitcoin can increase manifold on the upside, leading to strong outperformance.

Figure 7: 3% Bitcoin Portfolio relative one-year rolling performance versus the 60/40 Portfolio



Source: Bloomberg, WisdomTree. From 31 December 2013 to 31 December 2023. In USD. Based on daily returns. **You cannot invest directly in an index. Historical performance is not an indication of future performance and any investment may go down in value.**

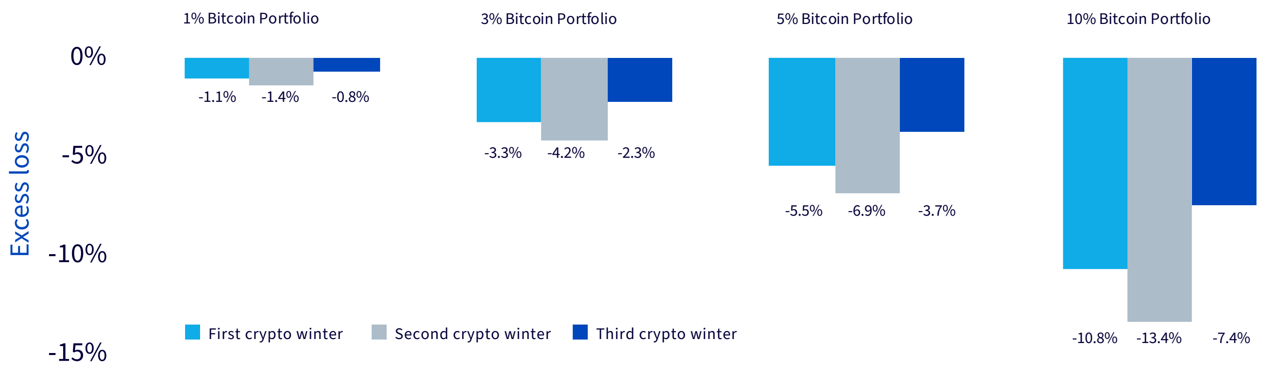
Digging into the number, we note that the example 3% Bitcoin Portfolio has outperformed in 72.5% of the one-year periods. The top 5% period of outperformance would have yielded at least 9.1% of outperformance. The worst 5% periods would have yielded 2.2% or less of underperformance. This again illustrates the asymmetry of the impact of the addition.

Limited downside despite deep drawdowns for bitcoin

Focusing purely on the downside, Figure 8 exhibits the impact of bitcoin allocation on the worst periods for the asset:

+ 2014 and up to 14 January 2015 – Bitcoin lost 75.5%
+ 18 December 2017 to 14 December 2018 – Bitcoin lost 83.1%
+ 10 November 2021 to 21 November 2022 – Bitcoin lost 72.8%

Figure 8: Relative drawdown during periods of intense pressure on bitcoin



Source: Bloomberg, WisdomTree. From 31 December 2013 to 31 December 2023. In USD. Based on daily returns. **You cannot invest directly in an index. Historical performance is not an indication of future performance and any investment may go down in value. For illustrative purposes only.**

Despite those deep losses for the asset, we note that the drawdowns of the 1% Bitcoin Portfolio remain quite limited to around -1%. The drawdowns for the 10% portfolio are deeper but proportional to the sizeable investment.

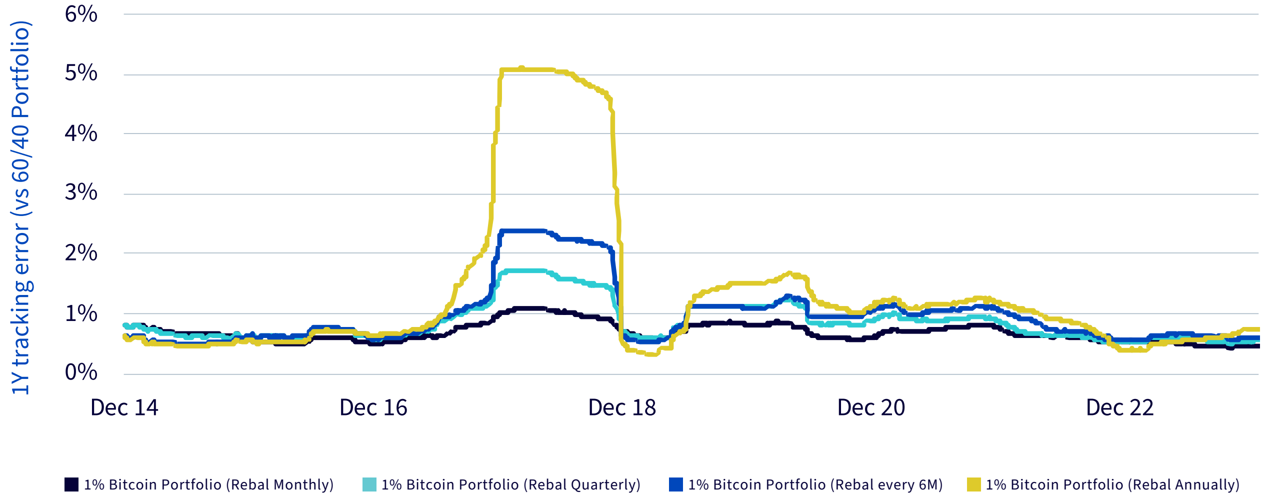
The bottom line is that adding bitcoin to these example portfolios would have historically increased the risk but in a relatively smaller amount than the gain in performance, leading to an improved risk profile for the portfolios.

Rebalancing frequency impacts the relative risk created by the addition of bitcoin

Because of the volatility of cryptocurrencies, operational considerations can significantly impact the portfolio. This is the case, for example, for the rebalancing frequency. If rebalancings are infrequent, the bitcoin allocation may grow multiple times in the portfolio on the back of the strong performance of the asset. If the 1% Bitcoin Portfolio is rebalanced only annually, for example, then the 1% weight would turn into a 14.4% weight in late 2017. More frequent rebalancing is the key to keeping the weight more constant.

Figure 9 illustrates the impact on the relative risk of those weight drifts. It shows the one-year tracking error of the 1% Bitcoin Portfolio versus the 60/40 Portfolio over time. With monthly rebalancings, the tracking error remains under 1.1%. With annual rebalancing, the tracking error can reach 5%.

Figure 9: Impact of rebalancing frequency on the relative risk of bitcoin portfolios over time



Source: Bloomberg, WisdomTree. From 31 December 2013 to 31 December 2023. In USD. Based on daily returns. **You cannot invest directly in an index. Historical performance is not an indication of future performance and any investment may go down in value. For illustrative purposes only.**

Given the wide oscillations experienced by cryptocurrency markets, a strategy that doesn't rebalance often is probably not the right approach for most investors:

+ Bitcoin tends to experience sharp price fluctuations. Such market conditions are generally favourable to strategies that can take profit or reinvest in a downturn, such as a constant mix strategy.
+ A systematic approach to profit taking is beneficial to reallocate gains from the bitcoin position to the lower risk buckets of the portfolio.

Appendix

Figure 10: Assets used in our analyses

Short name	Long name	Bloomberg ticker
Digital assets	MarketVector Digital Assets 100	MVDA
Bitcoin	Bitcoin	XBTUSD
Equities	MSCI All Country World net TR	NDUEACWF

Short name	Long name	Bloomberg ticker
Small caps	MSCI All Country World Small Cap net TR	M1WDSC
All fixed income	Bloomberg Multiverse TR	LF93TRUU
IG bonds	Bloomberg Global Aggregate TR	LEGATRUU
Treasuries	Bloomberg Global Aggregate Treasuries TR	LGTRTRUU
Corporates	Bloomberg Global Aggregate Corporates TR	LGDRTRUU
High yield	Bloomberg Global High Yield TR	LG30TRUU
Commodities	Bloomberg Commodity TR	BCOMTR
Gold	LBMA Gold Price PM USD	GOLDLNPM
Infrastructure	MSCI World Infrastructure net TR	M1WO0INF
REITS	FTSE EPRA NARIET Developed TR	RUGL

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