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Perspective from
Franklin Templeton Investments Solutions

Back to benchmarks: An intuitive framework for incorporating digital assets into diversified portfolios

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Executive summary:

- For clients interested in digital assets, we take a differentiated approach by integrating digital assets into the portfolio's benchmark. This first step allows for the proper reflection of investor interest and appetite for risk.
- We prefer a risk-based approach to determine the benchmark weighting of digital assets, given the higher volatility of the asset class. For example, in a 60% global equity, 40% US fixed income portfolio, a 3% allocation to bitcoin (funded from equities) equated to 11.4% of total benchmark risk. In a 100% global equity portfolio, a 6% allocation to bitcoin equated to 16.4% of total benchmark risk (both examples as observed from February 2015 to February 2025).
- We believe it is prudent to fund digital assets from other high-risk assets or those with fatter tails,[1] such as emerging market equities and high-yield bonds.
- Beyond funding digital assets, additional allocations away from the riskiest assets toward safe havens, such as US Treasuries, can potentially stabilize the portfolio and mitigate overall risk.

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Introduction

The rapid rise of digital assets has presented unique opportunities and challenges for investors. Despite being a nascent asset class, its growth has been swift both in terms of the number of investors and the total amount invested. For financial professionals with clients seeking digital asset exposure, this paper aims to provide a framework for incorporating them into a multi-asset portfolio.

Recent research (described below) suggests that interested investors possess differentiated goals, preferences and risk tolerances. Before financial professionals begin adding digital assets to client portfolios, we think it is best practice to take a step back and start with adding them to the portfolio's benchmark through a risk-forward lens. This intuitive approach better accounts for these clients' risk tolerances and preferences. Once digital assets are in the benchmark, it is then possible to contemplate their funding sources, and other strategic tilts to optimize the portfolio's risk-adjusted return. We elaborate on this approach in detail below.

The case for digital asset integration within benchmarks

When considering the inclusion of digital assets in a portfolio, we believe the first step is to recognize the investor's risk preferences and understanding of digital assets. Research indicates a positive relationship between the possession of digital asset-related knowledge and the intention to invest in digital assets.[2] Additionally, studies show a positive relationship between risk tolerance and digital asset ownership. An analysis by the Federal Reserve Bank of Kansas City found that approximately 39% of digital asset investors reported a risk tolerance of 7 or more, (on a scale of 0-10), while the same can be said of only 16% of non-owners.[3]

Given these differences, we believe that for potential investors, digital assets should be included directly in their portfolios' benchmarks. This approach allows for better control and refined analysis over the active risk contribution from digital assets. Due to the high volatility of the asset class, including them as off-benchmark positions, even in small amounts, can disproportionately impact the overall active risk budget. Paradoxically, this can lead to investors owning fewer digital assets than they'd like, even as those positions dominate the portfolio's tracking error.[4]

Exhibit 1 illustrates a portfolio consisting of 60% global stocks and 40% US bonds (referred throughout as a 60/40 portfolio), with a 4% allocation to bitcoin as an off-benchmark position funded from equities. This results in the bitcoin allocation contributing 103% of the active risk.

Exhibit 1: Portfolio with Digital Asset vs. Benchmark without Digital Assets

February 2015–February 2025

Asset	Portfolio Weight	Benchmark Weight	Active Weight	Active Risk Contribution	% of Active Risk
Global Equities	56.0%	60.0%	-4.0%	-0.09%	-3.1%
US Fixed Income	40.0%	40.0%	0.0%	0.00%	0.0%
Bitcoin	4.0%	0.0%	4.0%	2.96%	103.1%
			Active Risk	**2.9%**	

Source: Bloomberg. Calculations by Franklin Templeton Investment Solutions, based on monthly returns. Values may not sum due to rounding. Global equities represented by the MSCI ACWI Net Total Return USD Index; US fixed income represented by Bloomberg US Aggregate Bond Index; Bitcoin represented by CoinDesk Bitcoin Price Index. Please see Index definitions. Bitcoin is used as the representative digital asset due to its longer history. Active risk refers to deviation from the portfolio benchmark, usually made in an attempt to outperform said benchmark, and is often synonymous with tracking error. The active weight is the difference between the benchmark weight and the portfolio weight. Please see Glossary. Indexes are unmanaged and one cannot directly invest in them. They do not include fees, expenses or sales charges. See www.franklintempletondatasources.com for additional data provider information.

Similarly, the risk contributions of additional active tilts are swamped by bitcoin exposure (see Exhibit 2). In this scenario, a significant underweight to equities and overweight to bonds does not meaningfully contribute to active risk (a mere 1.0% and 0.6%, respectively) when the off-benchmark digital asset allocation is present.

Exhibit 2: Portfolio with Active Tilts vs. Benchmark without Digital Assets

February 2015–February 2025

Asset	Portfolio Weight	Benchmark Weight	Active Weight	Active Risk Contribution	% of Active Risk
Global Equities	52.0%	60.0%	-8.0%	0.03%	1.0%
US Fixed Income	44.0%	40.0%	4.0%	0.02%	0.6%
Bitcoin	4.0%	0.0%	4.0%	2.81%	98.5%
			Active Risk	**2.9%**	

Source: Bloomberg. Calculations by Franklin Templeton Investment Solutions, based on monthly returns. Values may not sum due to rounding. Global equities represented by the MSCI ACWI Net Total Return USD Index; US fixed income represented by Bloomberg US Aggregate Bond Index; Bitcoin represented by CoinDesk Bitcoin Price Index. Please see Index definitions. Bitcoin is used as the representative digital asset due to its longer history. Active risk refers to deviation from the portfolio benchmark, usually made in an attempt to outperform said benchmark, and is often synonymous with tracking error. The active weight is the difference between the benchmark weight and the portfolio weight. Please see Glossary. Indexes are unmanaged and one cannot directly invest in them. They do not include fees, expenses or sales charges. See www.franklintempletondatasources.com for additional data provider information.

In contrast, when digital assets are part of the benchmark (see Exhibit 3), a clearer view of the drivers of relative risks becomes evident. Unlike Exhibits 1 and 2, we achieve an intelligible picture of the active risk distribution from the active weights, with 41.4% of the portfolio's active risk now stemming from the 5% underweight to equities.

Exhibit 3: Portfolio with Active Tilts vs. Benchmark with Digital Asset

February 2015–February 2025

Asset	Portfolio Weight	Benchmark Weight	Active Weight	Active Risk Contribution	% of Active Risk
Global Equities	52.0%	57.0%	-5.0%	0.35%	41.4%
US Fixed Income	44.0%	40.0%	4.0%	0.01%	0.6%
Bitcoin	4.0%	3.0%	1.0%	0.49%	58.0%
			Active Risk	**0.8%**	

Source: Bloomberg. Calculations by Franklin Templeton Investment Solutions, based on monthly returns. Values may not sum due to rounding. Global equities represented by the MSCI ACWI Net Total Return USD Index; US fixed income represented by Bloomberg US Aggregate Bond Index; Bitcoin represented by CoinDesk Bitcoin Price Index. Please see Index definitions. Bitcoin is used as the representative digital asset due to its longer history. Active risk refers to deviation from the portfolio benchmark, usually made in an attempt to outperform said benchmark, and is often synonymous with tracking error. The active weight is the difference between the benchmark weight and the portfolio weight. Please see Glossary. Indexes are unmanaged and one cannot directly invest in them. They do not include fees, expenses or sales charges. See www.franklintempletondatasources.com for additional data provider information.

Defining benchmark weights for digital asset investors

In determining the appropriate digital asset benchmark allocation for an investor, we start with their intention to invest in the asset class, which infers the view that adding digital assets will potentially enhance the portfolio's returns. This paper does not provide a performance projection for digital assets but rather centers on how to appropriately size the digital asset exposure within a multi-asset portfolio.

This decision should be evaluated within a risk management framework, in our view, assessing the maximum proportion of the portfolio's total risk that should be attributed to a single position. Generally, diversification across risk factors is essential to prevent the portfolio's performance from being overly influenced by any one position. Higher-volatility asset classes typically contribute more to the portfolio's total risk.

For example, Exhibit 4 presents two assets—global stocks and US bonds—with equal notional weight. However, despite being evenly split, nearly 82% of the 8.8% total risk originates from stocks. This demonstrates that, within portfolio construction, notional weights may not correspond one-to-one to the risk contribution.

Exhibit 4: Risk Breakdown of An Equal Weight Portfolio

February 2015–February 2025

Asset	Weight	Volatility	Contribution to Volatility	% of Volatility
Global Equities	50.0%	14.8%	7.1%	81.5%
US Fixed Income	50.0%	5.0%	1.6%	18.5%
Total Volatility			**8.8%**	

Source: Bloomberg. Calculations by Franklin Templeton Investment Solutions, based on monthly returns. Values may not sum due to rounding. Global equities represented by the MSCI ACWI Net Total Return USD Index; US fixed income represented by Bloomberg US Aggregate Bond Index. Please see Index definitions. Volatility is calculated as standard deviation, a statistical measurement of dispersion about an average, which depicts how widely returns varied over a certain period of time. Investors use the standard deviation of historical performance to try to infer the volatility of an investment; a high value implies greater volatility. Please see Glossary. Indexes are unmanaged and one cannot directly invest in them. They do not include fees, expenses or sales charges. See www.franklintempletondatasources.com for additional data provider information.

Exhibit 5 illustrates a 60/40 benchmark ("60/40 Benchmark") compared to one with 3% bitcoin (BTC) added, funded from equities, referred to as "Benchmark w/BTC." Unsurprisingly, the portfolio with bitcoin experienced a better historical return with elevated volatility and increased maximum drawdown—in other words, higher return with higher risk. However, we note that the increased risk was minimal compared to the commensurate increased return, as evidenced by the much-improved risk-adjusted return metrics (Sharpe ratio and return/maximum drawdown).[5] The bitcoin allocation was 11.4% of the total portfolio risk. For riskier portfolios, such as those composed entirely of equities, the bitcoin allocation may be higher.

In our view, a prudent approach to portfolio management limits single positions so that they do not dominate the overall portfolio. Limiting the risk of the bitcoin allocation as a percentage of total portfolio risk to 20% (or lower) could avoid overshadowing other positions in the portfolio. From February 2015 to February 2025, a portfolio with 6% bitcoin and 94% world equities would have seen bitcoin account for 16.4% of its total risk.[6]

Exhibit 5: Sizing the Digital Asset Position in the Benchmark

Asset	60/40 Benchmark	Benchmark w/BTC
Global Equities	60.0%	57.0%
US Fixed Income	40.0%	40.0%
Bitcoin	0.0%	3.0%
Risk/Reward Metrics		
Return	6.2%	8.6%
Volatility	9.9%	10.4%
Maximum Drawdown	-21.3%	-22.2%
Sharpe Ratio	0.46	0.66
Return/Maximum Drawdown	0.29	0.39
Bitcoin % of Total Volatility		11.4%

Source: Bloomberg. Calculations by Franklin Templeton Investment Solutions, based on monthly returns. Values may not sum due to rounding. Drawdown is expressed as a negative number to denote loss; however, its absolute value was used to derive return/maximum drawdown. Global equities represented by the MSCI ACWI Net Total Return USD Index; US fixed income represented by Bloomberg US Aggregate Bond Index; Bitcoin represented by CoinDesk Bitcoin Price Index. Please see Index definitions. Bitcoin is used as the representative digital asset due to its longer history. Volatility is calculated as standard deviation, a statistical measurement of dispersion about an average, which depicts how widely returns varied over a certain period of time. Investors use the standard deviation of historical performance to try to infer the volatility of an investment; a high value implies greater volatility. Maximum drawdown refers to the maximum fall of an investment's value, measured by the difference between the value of the lowest trough and that of the highest peak before the trough. The Sharpe ratio is a measure of volatility-adjusted performance and is calculated by dividing excess return (return above a risk-free rate) by the standard deviation of the portfolio's return (volatility). A higher value indicates better risk-adjusted returns. In this case, the risk-free rate is represented by the Bloomberg U.S. Treasury Bills 1-3 Months Total Return Index Value Unhedged. Please see Glossary. Indexes are unmanaged and one cannot directly invest in them. They do not include fees, expenses or sales charges. **Past performance is not an indicator or a guarantee of future performance.** See www.franklintempletondatasources.com for additional data provider information.

Refining digital asset allocations

The example displayed in Exhibit 5 funds bitcoin pro-rata across equities. It is prudent, in our view, to fund the digital asset allocation from higher-risk assets or those with fat tails. With this criterion in mind, emerging market stocks and high-yield bonds might serve as potential candidates when allocating to digital assets.

Furthermore, additional reductions to emerging market equities and high-yield bonds to increase exposure to safe havens (e.g., US Treasuries) could provide a ballast against the fluctuations of digital assets, thus helping to stabilize the portfolio and mitigate overall risk.

Given the volatility of digital assets, regular rebalancing of the portfolio, at least quarterly, to ensure continued appropriate exposures to the various asset classes is likely warranted.

Conclusion and key takeaways

In summary, our unique process of adding digital asset allocations directly to the benchmark, rather than solely within the portfolio, helps ensure that performance metrics and risk assessments accurately align with interested investors' preferences and risk profile.

We prefer to size the digital asset allocation from an assessment of its volatility and drawdowns, to ensure suitable exposures. Thoughtfully funding the digital asset position from other risky assets and counterbalancing with allocations to safe-haven assets can potentially enhance returns and limit drawdowns. This approach allows investors to engage in a market with substantial long-term potential, while adhering to a structured risk management strategy.

Contribution to risk will vary over time due to the evolving volatility of financial assets. As such, maintaining regular portfolio rebalancing and adhering to a disciplined risk management framework could be beneficial for investors seeking to capitalize on the long-term growth potential of digital assets.

For diversified portfolios, we feel it is wise to ensure that no single position dominates the overall portfolio. Given the volatile nature of digital assets, and to remain diversified, we generally believe that allocations should range between 5% and 20% of total risk, depending on the overall risk profile of the portfolio benchmark. Generally, investors may be best served to allocate only what they can afford to lose to digital assets, given the broad range of outcomes and potential for significant and lengthy drawdowns. For conservative investors interested in digital assets, a smaller allocation might be considered appropriate.

Index definitions:

MSCI ACWI Net Total Return USD Index (representing global equities): Market-capitalization weighted index representing both emerging and developed world markets.

Bloomberg US Aggregate Bond Index (representing US fixed income): Broad-based benchmark, which measures USD denominated, investment-grade and fixed-rate taxable bond market.

CoinDesk Bitcoin Price Index (representing bitcoin): Widely used index, which leverages prices from multiple exchanges to provide a USD denominated reference rate for bitcoin (BTC)

S&P 500 Index (representing US equities): Market-capitalization weighted index of 500 leading publicly traded companies in the United States.

MSCI EAFE Net Total Return USD Index (representing international developed equities): Equity index designed to measure the performance of developed markets, excluding Canada and United States.

MSCI Emerging Markets Net Total Return USD Index (representing emerging market equities): Equity index designed to measure the performance of emerging market equity markets, covering 24 countries.

ICE BofA US High Yield Constrained Index (representing US high-yield fixed income): tacks the performance of USD, below-investment-grade corporate debt issued in the United States.

Bloomberg US Treasury Total Return Unhedged USD Index (representing US Treasuries): Fixed income index which measures the performance of the US Treasury market with remaining maturity of one year or more.

Glossary

Active return/weight: Active management is a strategy employed by investors with the goal of generating portfolio returns that surpass the benchmark returns, once all costs are accounted for, at an acceptable level of risk. The surplus return, also known as active return, of an actively managed portfolio is determined by the weight difference between the active portfolio and the benchmark. The active weight is the difference between the benchmark weight and the portfolio weight.

Active risk/tracking error: The standard deviation of active returns. Active risk is also called tracking error or tracking risk.

Risk budgeting: Means of making optimal use of risk in the pursuit of return; how much risk an investor is willing to take.

Active risk budget: Is a strategic process in active portfolio management where the total risk appetite of the portfolio is distributed among the various components of portfolio choice. This process is crucial in optimizing the portfolio's exposures relative to the benchmark

Maximum drawdown: The maximum fall of an investment's value, measured by the difference between the value of the lowest trough and that of the highest peak before the trough.

Sharpe ratio: a measure of volatility-adjusted performance and is calculated by dividing excess return (return above a risk-free rate) by the standard deviation of the portfolio's return (volatility). A higher value indicates better risk-adjusted returns.

Standard deviation: Statistical measurement of dispersion about an average, which depicts how widely returns varied over a certain period of time. Investors use the standard deviation of historical performance to try to infer the volatility of an investment; a high value implies greater volatility.

Endnotes

1. In finance, "fat tails" refer to a statistical phenomenon where a probability distribution has a higher than expected likelihood of extreme events occurring, meaning there is a greater chance of observing very large positive or negative price movements compared to what a normal distribution would predict. This is often visualized as "fatter" ends on a bell curve representing the data distribution; essentially, it indicates a higher risk of outlier events happening in the market.
2. Source: C. Tzavaras. "Investor Demographics and Their Impact on the Intention to Invest in Cryptocurrencies: An Empirical Analysis of Crypto Investors and Non-Crypto Investors." Utrecht University. (Master's thesis). June 2023.
3. Source: F. Hayashi, A. Routh. "Financial Literacy, Risk Tolerance, and Cryptocurrency Ownership in the United States." Federal Reserve Bank of Kansas City, Research Working Paper no. 24-03. March 2024.
4. The standard deviation of active returns. Also known as active risk or tracking risk.
5. **Past performance is not indicative of future results.**
6. Calculated using monthly historical returns.

WHAT ARE THE RISKS?

All investments involve risks, including possible loss of principal.

Equity securities are subject to price fluctuation and possible loss of principal.

Fixed income securities involve interest rate, credit, inflation and reinvestment risks, and possible loss of principal. As interest rates rise, the value of fixed income securities falls. **Low-rated, high-yield bonds** are subject to greater price volatility, illiquidity and possibility of default.

International investments are subject to special risks, including currency fluctuations and social, economic and political uncertainties, which could increase volatility. These risks are magnified in **emerging markets.**

Blockchain and cryptocurrency investments are subject to various risks, including inability to develop digital asset applications or to capitalize on those applications, theft, loss, or destruction of cryptographic keys, the possibility that digital asset technologies may never be fully implemented, cybersecurity risk, conflicting intellectual property claims, and inconsistent and changing regulations. Speculative trading in bitcoins and other forms of cryptocurrencies, many of which have exhibited extreme price volatility, carries significant risk; an investor can lose the entire amount of their investment. Blockchain technology is a new and relatively untested technology and may never be implemented to a scale that provides identifiable benefits. If a cryptocurrency is deemed a security, it may be deemed to violate federal securities laws. There may be a limited or no secondary market for cryptocurrencies.

Digital assets are subject to risks relating to immature and rapidly developing technology, security vulnerabilities of this technology (such as theft, loss, or destruction of cryptographic keys), conflicting intellectual property claims, credit risk of digital asset exchanges, regulatory uncertainty, high volatility in their value/price, unclear acceptance by users and global marketplaces, and manipulation or fraud. Portfolio managers, service providers to the portfolios and other market participants increasingly depend on complex information technology and communications systems to conduct business functions. These systems are subject to a number of different threats or risks that could adversely affect the portfolio and their investors, despite the efforts of the portfolio managers and service providers to adopt technologies, processes and practices intended to mitigate these risks and protect the security of their computer systems, software, networks and other technology assets, as well as the confidentiality, integrity and availability of information belonging to the portfolios and their investors.

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