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Protected Bitcoin: Improving Portfolios Utilizing a Stable Risk Framework

Executive summary

As Bitcoin has matured into a $2.1 trillion asset and emerging global store of value, institutional investors face a key challenge: gaining exposure while managing its elevated volatility. Conventional portfolio sizing approaches are fundamentally limited, typically suggesting a modest allocation (1-2%) to avoid material increases in overall portfolio risk.

Our approach combines options with treasuries to harness bitcoin exposure while matching the downside risk profiles of traditional asset classes - what we call a Stable Risk Framework. Our framework aims to provide:

Calibrated risk profiles

That align with traditional asset class parameters (0%, 10%, and 20% downside potential over a one-year outcome period)

Effective portfolio integration

Allowing investors to allocate to Bitcoin from multiple parts of the portfolio, with back-tested improvements in portfolio risk-return

Enhanced risk-adjusted returns

With Sharpe ratios exceeding Bitcoin and approximately double that of global equities.[1]

Low correlation

With global equities, fixed income, and other traditional assets

This paper demonstrates how our approach allows investors to focus on desired investment outcomes rather than concerns around high volatility and drawdowns, enabling more meaningful allocations and providing an answer to the question, "How does bitcoin fit in a portfolio?"

In particular, we illustrate the merits of three funding approaches (fixed income, global equities, and gold). Our back testing demonstrates how Protected Bitcoin strategies effectively transformed Bitcoin's risk-return profile and improve a portfolio's returns while maintaining similar or lower risk levels.

The evolution of Bitcoin into a broadly-investible asset

Bitcoin's remarkable growth is undisputed, but sophisticated investors need more. For an asset to be investible, they typically require it to be material (i.e. large enough and liquid enough to enable investment); to have achieved regulatory clarity; and to be sufficiently integrated into financial markets ("financialization").

Bitcoin is now too large to ignore. With a market capitalization approaching $2.1 trillion,[2] bitcoin now ranks as the world's 7th largest asset and 2nd largest commodity behind gold.[3] Among digital assets, it dominates—representing greater than 60% of total market capitalization.[4] It is also a liquid and deep market, on par with many other of the world's largest assets. This meteoric rise reflects both prospective interest and growing recognition of Bitcoin's unique properties within the global financial system.

The regulatory landscape has evolved significantly to accommodate this growth and provide clarity, including two landmark executive orders in the United States removing regulatory and enforcement headwinds, enabling the US banking system to meaningfully interact with the digital asset ecosystem, protecting property rights such as self-custody, encouraging domestic bitcoin mining, and perhaps most importantly, establishing a national Strategic Bitcoin reserve.[5] The U.S. legislature is moving quickly to crystallize protections and provide clarity via statute (e.g. GENIUS Act). Additionally, many U.S. states have introduced, and in some cases, passed legislation seeking to provide similar protections, including in some cases facilitating institutional Bitcoin purchases. Regulatory clarity has driven investment into spot Bitcoin ETPs, which have attracted over $120 billion in spot ETF assets since launching in January 2024.[6]

Around the same time, the last key step in bitcoin's integration in financial markets occurred—the listing of exchange-traded options and associated infrastructure in U.S. markets. This financialization now enables sophisticated risk management approaches previously unavailable to investors, without assuming significant counterparty and liquidity risks of OTC markets.

The development of a liquid options market, with competitive pricing dynamics, is the key to unlocking bitcoin's potential. While bitcoin's returns are undeniable and low correlations to traditional assets appealing, an allocation to bitcoin invariably introduces significant volatility to an overall portfolio. Sizing alone does not answer a fiduciary's key question with respect to any new investment—what can I replace without adding unacceptable risk?

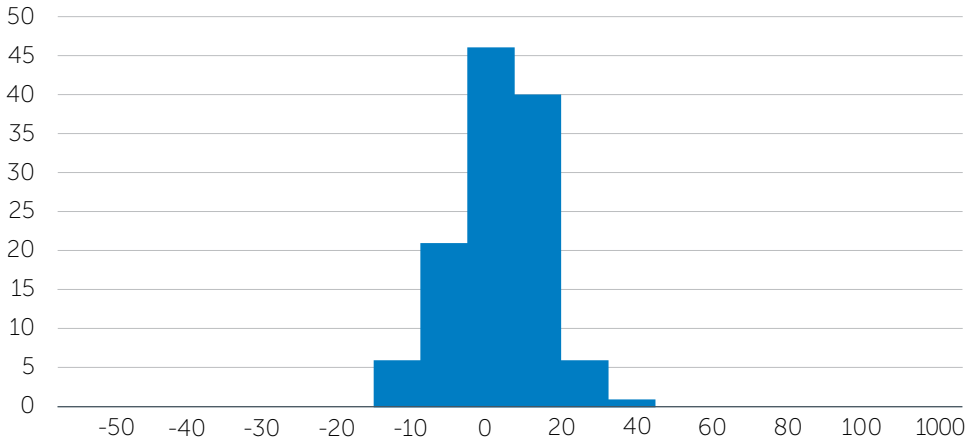
Bitcoin's unique return profile challenges traditional portfolio construction

Bitcoin represents a paradigm shift in asset return distribution patterns. It "feels" less predictable than traditional assets, because it does not follow the same patterns. While traditional assets typically display returns clustered around a mean with relatively rare tail outcomes, bitcoin's returns are distinctively "tail-heavy" with higher frequency of highly positive and negative results. The result is three distinctive characteristics:

1. Very high returns
2. Elevated volatility and sharp drawdowns
3. Unique return profile resulting in low correlation with other asset classes

Exhibit 1 demonstrates how returns for a 60/40 stock-bond portfolio typically fall directionally like a bell curve pattern—where moderate returns are most common and extreme outcomes are rare.

Exhibit 1: Return distribution of 10-year trailing, monthly rolling 1-year performance (60/40 stock-bond portfolio)



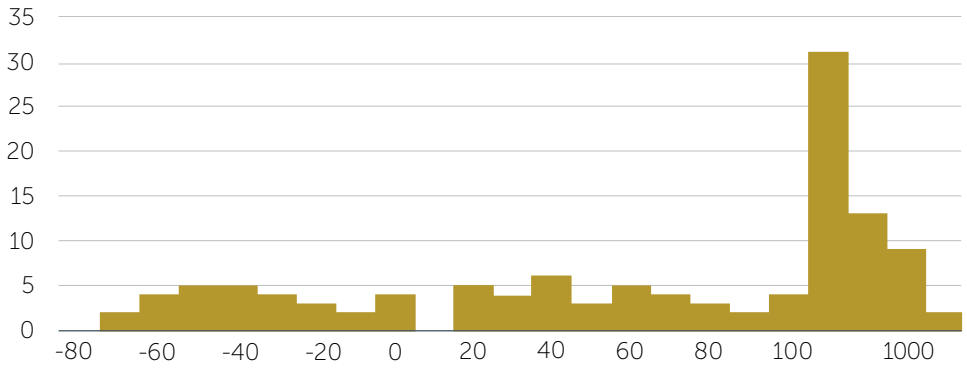
Source: Calamos Investments, MSCI and Bloomberg - 7/1/2015 to 6/30/2025. Equities are represented by MSCI ACWI Index, Bonds are represented by the Bloomberg US Agg Bond Index. **Past performance is no guarantee of future results.**

60/40 STOCK-BOND PORTFOLIO

Moderate returns are most common and extreme outcomes are rare

Bitcoin exhibits a markedly different behavior. Its return distribution resembles what we might call a "crooked smile," with returns clustering at the extremes rather than the middle.

Exhibit 2: Return distribution of 10-year trailing, monthly rolling 1-year performance (Bitcoin)



Source: Calamos Investments, MSCI and Bloomberg - 7/1/2015 to 6/30/2025
Past performance is no guarantee of future results.

This unique return pattern isn't merely a statistical curiosity - it reflects bitcoin's fundamentally different value drivers

This unique return pattern isn't merely a statistical curiosity; it reflects bitcoin's fundamentally different value drivers. Traditional assets like stocks and bonds derive value from economic fundamentals such as earnings, interest rates, and measurable market conditions. Bitcoin's value is influenced by different factors, including supply/demand dynamics within a fixed issuance schedule, expanding network effects and adoption trends, market sentiment around technological developments and geopolitical events affecting perception of monetary sovereignty.

There is a common misconception, a simplification, that bitcoin is always correlated to "risk" assets. In reality, this unique return profile results in bitcoin's lower correlations over longer time frames with other asset classes—not just equities, but also fixed income and even gold, which has similar properties as a store of value.

10-yr trailing correlation	Equities	Gold	Bonds
Bitcoin	0.35	0.11	0.18

Source: Calamos Investments, MSCI and Bloomberg - 7/1/2015 to 6/30/2025

While this pattern presents benefits, it also presents several challenges for allocators.

Heightened volatility	Bitcoin's annualized volatility has ranged from 40-120%, approximately 4-5 times higher than diversified equity indices
Asymmetric tail risk	While Bitcoin offers significant upside potential, its historical drawdowns of 70-80% exceed acceptable parameters for most fiduciaries
Unpredictable regimes	While bitcoin is often likened to a "risk" asset with similarities to Nasdaq-100 or "Mag 7," that comparison is an oversimplification. Bitcoin does not always behave that way and can shift patterns rapidly during certain market conditions

When incorporating even a small bitcoin allocation into a traditional portfolio, these characteristics fundamentally transform the portfolio's risk-return profile, making it more susceptible to extreme outcomes and larger price swings than are traditionally acceptable. Exhibit 3 compares 10-year trailing risk-return statistics of a traditional 60/40 Stock—Bond portfolio with a 55/40/5 Stock—Bond—Bitcoin portfolio. A 5% allocation to bitcoin funded from equities would have increased volatility by about 1.2% on an annualized basis and materially increased average drawdown and average loss.

Exhibit 3: Portfolio risk statistics[7]

	Standard deviation	Sortino ratio	Average drawdown	Average loss
60/40 Stock– Bond	9.96	0.76	-7.18	-2.21
55/40/5 Stock—Bond–Bitcoin	11.15	1.29	-7.46	-2.50

Source: Calamos Investments, MSCI and Bloomberg - 7/1/2015 to 6/30/2025

These challenges explain why many institutional investors remain underexposed to bitcoin despite its growth potential. We believe they need an approach that bridges the gap between bitcoin's unique characteristics and their fiduciary risk requirements.

Redefining Bitcoin—using options for Protected Bitcoin exposure

Advancements in both bitcoin as an asset and options markets have enabled Calamos to apply stable risk techniques, creating risk-calibrated exposures to bitcoin.

Using a combination of zero-coupon US Treasury Bonds and options on the Bitcoin Index, we've established three Protected Bitcoin Strategies with specific maximum loss potentials ("floors") and upside participation (to a cap rate), over the 1-year life of the options portfolio. Intuitively, as the potential for loss increases (i.e., lower floor) the opportunity to capture upside also increases.

By setting maximum loss floors, we stabilize risk at levels that approximate traditional asset classes.

Strategy	Over 1-yr outcome period		Risk equivalents
	Maximum loss (Floor)	~Upside potential	
100% Protected Bitcoin	0%	~10–15%	Fixed income & cash equivalents
90% Protected Bitcoin	10%	~25–35%	Gold, multi-alternatives, real estate, managed futures, hedge funds
80% Protected Bitcoin	20%	~40–60%	Public & private equities

These strategies accomplish their outcome through three layers:

1. **Protection layer**
   Zero-coupon bonds that return par at maturity, establishing a floor for potential losses.
2. **Upside participation layer**
   Long ATM or ITM call options that provide exposure to bitcoin's price appreciation. At-the-money options establish 100% protection, while in-the-money options can be used to establish 80% or 90% protection.
3. **Cap layer**
   Short OTM call options that fund the protection but limit maximum gains.

Implementation typically involves an options roll cycle with treasuries and options expiration dates that align.

Exhibit 4: 80% or 90% protection over 1-yr outcome period

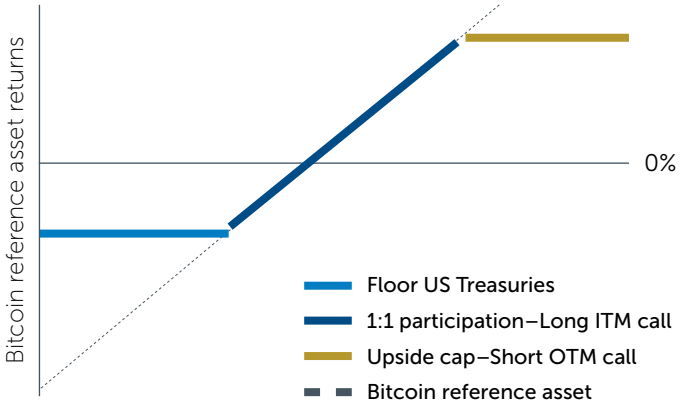
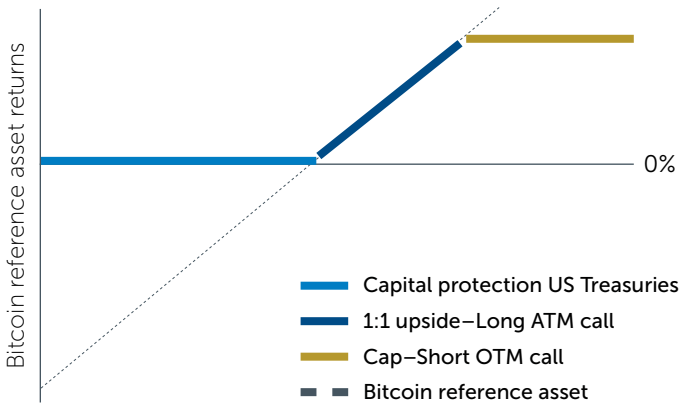


Exhibit 4: 100% protection over 1-yr outcome period



Source: Calamos Investments

This structure ensures that, for example, a 90% Protected Bitcoin Strategy will experience a maximum 10% decline over the one-year outcome period regardless of bitcoin's performance, while matching bitcoin's returns up to the cap rate.

Incorporating Protected Bitcoin using a Stable Risk Framework

A Stable Risk Framework cuts off the downside tail of an asset at a level matching a corresponding traditional investment asset. In essence, this harnesses the volatility to draw out the return and diversification benefits, enabling investors to select where to put the strategy in a traditional portfolio, based on desired risk tolerance and funding location.

Until now, exposure to bitcoin has required a "sizing" approach, wherein allocators assess historical and expected performance of each asset, and right-size the asset inside a portfolio based off the investor's risk appetite or return objective. Where assets exhibit volatility outside of acceptable parameters, a novel approach is required.

The result of a Stable Risk Framework is a portfolio component that offers exposure to bitcoin returns within a risk framework that institutional investors can incorporate into their overall allocation strategy while focusing on outcome rather than worrying about excess volatility. We propose three funding strategies below.

Asset class	Asset class portfolio use case	Representative index	Protected Bitcoin complement
Equities	Growth	MSCI ACWI	80% Protected Bitcoin
Gold	Overall portfolio diversification & inflation hedge	S&P GSCI Gold Index	90% Protected Bitcoin
Bond	Downside protection & equity diversification	Bloomberg US Agg Bond	100% Protected Bitcoin

With Protected Bitcoin Strategies' defined upside and downside parameters, a Stable Risk Framework becomes possible

Funding strategies—analysis & back-testing

We back-tested the 100%, 90% and 80% Protected Bitcoin Strategies using options pricing models and historical Bitcoin data from April 2019 through June 2025. The results demonstrated how these strategies effectively transformed bitcoin's risk-return profile to match different asset classes—including fixed income, gold and global equities. Notably, over the common inception time period, all three Protected Bitcoin Strategies had Sharpe ratios superior to bitcoin itself.

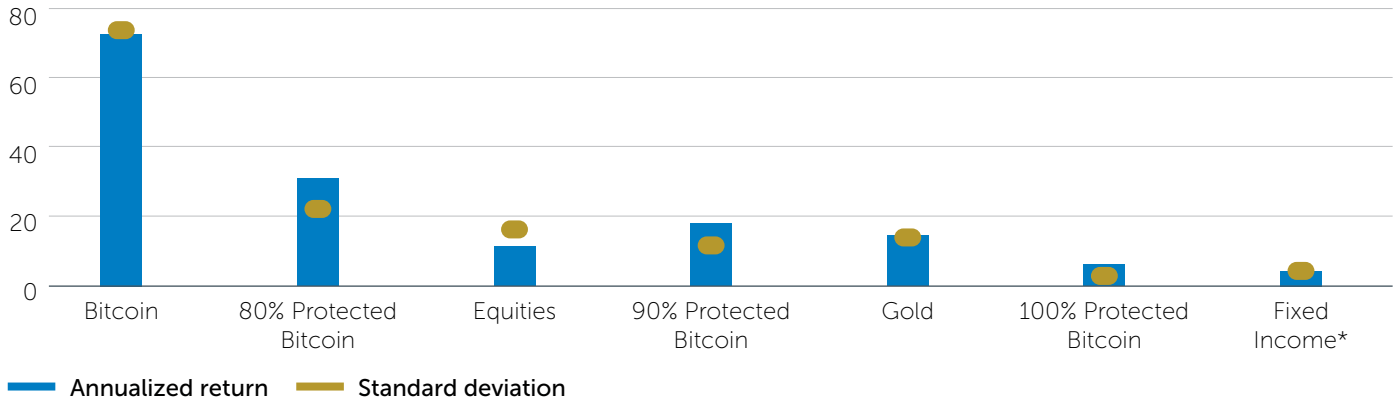
Exhibit 5:

Strategy	Annualized return	Standard deviation	Sharpe ratio	Sortino ratio	Average drawdown	Average loss
Bitcoin	69.91%	72.39%	1.05	2.17	-30.30%	-12.70%
80% Protected Bitcoin	31.26%	22.14%	1.23	2.52	-10.61%	-3.87%
Equities	11.78%	16.50%	0.60	0.91	-11.18%	-4.16%
90% Protected Bitcoin	18.73%	11.87%	1.30	2.65	-5.36%	-2.38%
Gold	14.95%	13.89%	0.89	1.68	-8.66%	-2.54%
100% Protected Bitcoin	6.69%	2.88%	1.46	4.10	-0.45%	-0.27%
Fixed Income*	4.32%	4.09%	0.47	0.69	-2.42%	-0.82%
Cash	2.57%	0.62%	—	—	0.00	0.00

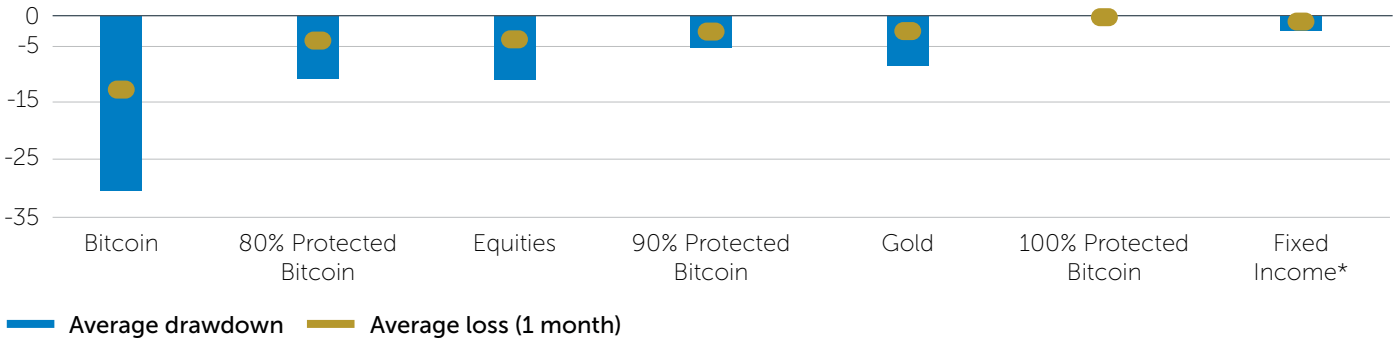
Source: Calamos Investments, MSCI and Bloomberg 4/1/2019 to 6/30/2025

*Fixed Income: Utilized a long term, 30 year time frame as the common inception period listed resulted in an abnormally negative return period for fixed income. We believe this to be a more conservative and fair representation of the risk/return profile.

Annualized return & standard deviation



Drawdown metrics



Source: Calamos Investments, MSCI, Standard & Poor's, and Bloomberg - 4/1/2019 to 6/30/2025.

*Fixed Income: Utilized a long term, 30 year time frame as the common inception period listed resulted in an abnormally negative return period for fixed income. We believe this to be a more conservative and fair representation of the risk/return profile.

Several key observations emerged from this analysis:

1. **Matched risk profiles**
   Each Protected Bitcoin Strategy demonstrated drawdown and loss characteristics similar to its funding strategy asset class equivalent.
2. **Enhanced returns**
   The Protected Bitcoin Strategies delivered significant returns of their traditional counterparts with similar risk metrics.
3. **Superior risk-adjustment**
   All three Protected Bitcoin Strategies showed higher Sharpe and Sortino ratios than their traditional equivalents.

Additionally, Protected Bitcoin Strategies maintained bitcoin's consistently low correlation with traditional asset classes while cutting off tail risk.

Exhibit 6: Correlation since common inception

	Equities	Gold	Bonds
80% Protected Bitcoin	0.40	0.19	0.22
90% Protected Bitcoin	0.38	0.21	0.22
100% Protected Bitcoin	0.24	0.27	0.22

Source: Calamos Investments 4/1/2019 to 6/30/2025

As noted previously, bitcoin correlation to traditional asset classes is inherently low given the return distribution pattern and drivers of growth. Even though Protected Bitcoin Strategies cut off the tails, they maintain a consistently low correlation with equities, fixed income, and gold respectively. This phenomenon is particularly valuable for portfolio construction, as it means the Protected Bitcoin Strategies provide true diversification benefits despite their managed downside risk.

Applying the bitcoin Stable Risk Framework—portfolio application scenarios

With matching risk profiles, we can now test specific examples of replacing traditional assets with a portion of Protected Bitcoin.

SCENARIO 1: EQUITY REPLACEMENT WITH 80% PROTECTED BITCOIN STRATEGY

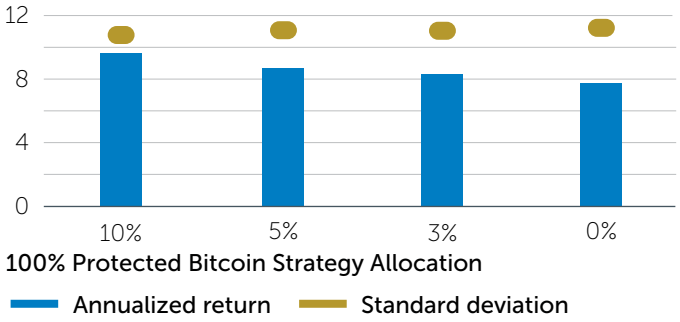
Investors can apply Bitcoin as an enhancement of their growth allocation. The table below illustrates the impact of replacing equity allocations with an 80% Protected Bitcoin strategy. **Notably, replacing 5% of equities with 80% Protected Bitcoin increased returns by 97 basis points annually, with a 32 basis point *decrease* in annual standard deviation and *improved* drawdown characteristics.** These benefits widened with a 10% allocation.

Exhibit 7: Asset allocation—equity replacement

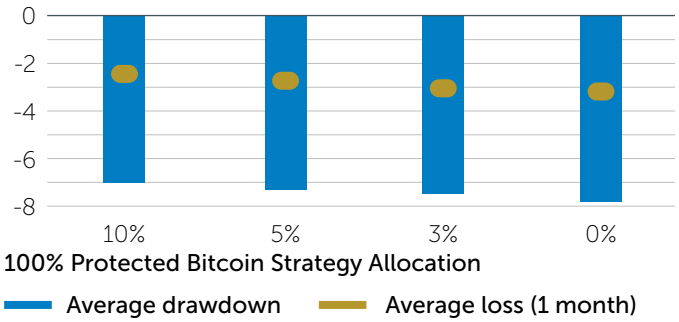
Allocation			Portfolio Characteristics					
Equity	80% Prot. Bitcoin	Fixed income	Anlzd return	Standard deviation	Sharpe ratio	Sortino ratio	Average drawdown	Average loss
60%	**0%**	40%	7.72%	11.31%	0.48	0.71	-7.79%	-3.08%
57%	**3%**	40%	8.30%	11.11%	0.54	0.80	-7.54%	-2.95%
55%	**5%**	40%	8.69%	10.99%	0.57	0.87	-7.38%	-2.75%
50%	**10%**	40%	9.66%	10.77%	0.67	1.04	-6.97%	-2.39%

Source: Calamos Investments, MSCI and Bloomberg - 4/1/2019 to 6/30/2025

Annualized return & standard deviation



Drawdown metrics



SCENARIO 2: GOLD OR INFLATION HEDGE REPLACEMENT WITH 90% PROTECTED BITCOIN STRATEGY

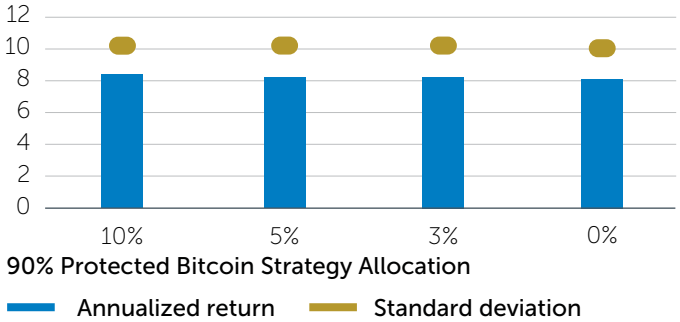
Bitcoin is often compared to gold, as an emerging store of value, with characteristics of a digital commodity. **Replacing a 5% gold allocation with 90% Protected Bitcoin increased portfolio returns by 17 basis points annually while maintaining *identical* standard deviation and *improving* drawdown metrics.** The table below illustrates the impact of replacing gold allocations with a 90% Protected Bitcoin Strategy.

Exhibit 8: Asset allocation—gold replacement

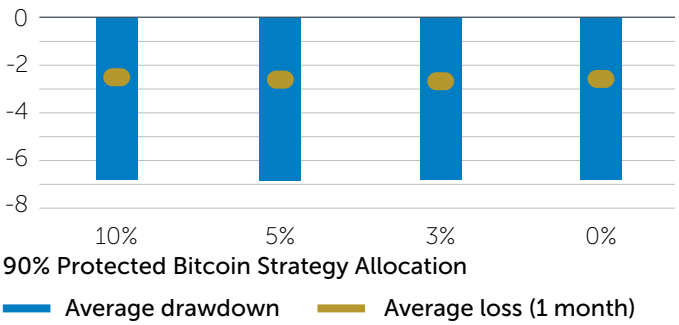
Allocation				Portfolio Characteristics					
Gold	90% Prot. Bitcoin	Equity	Fixed income	Anlzd return	Standard deviation	Sharpe ratio	Sortino ratio	Average drawdown	Average loss
10%	**0%**	50%	40%	8.11%	10.14%	0.56	0.85	-6.88%	-2.54%
7%	**3%**	50%	40%	8.21%	10.13%	0.57	0.86	-6.86%	-2.63%
5%	**5%**	50%	40%	8.28%	10.14%	0.58	0.87	-6.84%	-2.63%
0%	**10%**	50%	40%	8.43%	10.21%	0.59	0.89	-6.80%	-2.51%

Source: Calamos Investments, MSCI, Standard & Poor's, and Bloomberg - 4/1/2019 to 6/30/2025

Annualized return & standard deviation



Drawdown metrics



SCENARIO 3: FIXED INCOME REPLACEMENT OR TREASURY MANAGEMENT WITH 100% PROTECTED BITCOIN STRATEGY

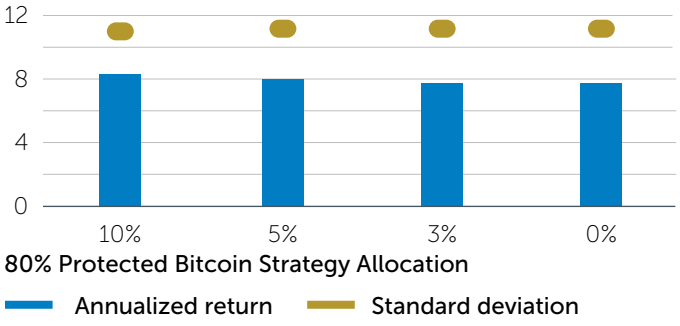
As capital discipline around required rate of returns normalizes, option-based strategies that can produce returns higher than treasuries with similar downside will become more desirable. **Even a conservative implementation replacing just 3% of fixed income with 100% Protected Bitcoin increased portfolio returns by 18 basis points annually, *lowered* the standard deviation and *improved* risk metrics.** Note that similar or improved metrics may be achieved replacing cash as well as fixed income. The table below illustrates the impact of replacing fixed income allocations with a 100% Protected Bitcoin strategy.

Exhibit 9: Asset allocation—fixed income replacement

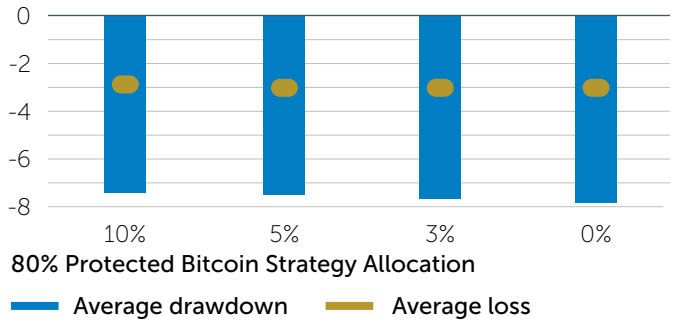
Allocation			Portfolio Characteristics					
Fixed income	100% Prot. Bitcoin	Equity	Anlzd return	Standard deviation	Sharpe ratio	Sortino ratio	Average drawdown	Average loss
40%	**0%**	60%	7.72%	11.31%	0.48	0.71	-7.79%	-3.08%
37%	**3%**	60%	7.90%	11.22%	0.50	0.74	-7.69%	-3.04%
35%	**5%**	60%	8.01%	11.16%	0.51	0.76	-7.62%	-3.01%
30%	**10%**	60%	8.31%	11.01%	0.54	0.81	-7.44%	-2.94%

Source: Calamos Investments, MSCI and Bloomberg - 4/1/2019 to 6/30/2025

Annualized return & standard deviation



Drawdown metrics



Replacing 5% of fixed income with 100% Protected Bitcoin improved portfolio returns by 29 basis points annually

Implementation considerations

Institutional investors considering Protected Bitcoin Strategies should evaluate several practical factors:

1. **Cap rate dynamics & rate regimes**
   The effectiveness of the protection strategy varies with market dynamics including the risk free rate, and bitcoin's implied volatility skew.
2. **Time horizon alignment**
   The protection horizon (typically annual) should align with the institution's performance measurement periods.
3. **Tax considerations**
   For taxable investors, options-based strategies have specific tax implications that should be evaluated with tax advisors. These considerations can be addressed through a tax efficient structure such as an ETF.

Conclusion: The pathway to bitcoin integration

We believe that the Bitcoin network has hit an adoption inflection point with an estimated 50 million investors in the US and more than 300 million globally.[8] While these numbers are strong, they only translate to 4% of the global population. While continued adoption seems likely, we expect price volatility to continue.

Bitcoin's unique characteristics require rethinking portfolio construction. Protected Bitcoin strategies offer a pathway to meaningful exposure. A 5% allocation using the strategies outlined in this paper can help investors solve the central challenge of incorporating bitcoin's diversification benefits while curtailing tail risk.

For fiduciaries, these strategies provided key advantages:

Risk clarity	Predefined maximum loss parameters align with governance requirements
Efficient exposure	Higher allocations provide meaningful portfolio impact
Framework compatibility	Protected strategies fit within existing asset class categories
Adaptive implementation	Protection levels can evolve as the asset class matures

By transforming bitcoin's risk profile to match traditional parameters, these strategies enable institutions to participate in the digital asset revolution while maintaining their fiduciary responsibilities.

Protected Bitcoin strategies may deliver significant improved risk-adjusted returns.

*From a River Financial report published February 2025

A deeper dive—Sizing Framework vs. Stable Risk Framework

Spot Bitcoin exposure presents several challenges in traditional asset allocation, including tail risk, reduced kurtosis of return distribution and increased volatility. Protected Bitcoin Strategies can bring up expected returns and provide similar diversification benefits with downside risk that is tailored for different allocations within a traditional portfolio. To jump to the key takeaways, followed by the results, the Protected Bitcoin Strategies offered significant advantages over the leading recommendation of 1-2% allocation to unprotected/spot Bitcoin:

1. **Larger meaningful allocations**
   By controlling downside risk,institutions can allocate 3-10% to Protected Bitcoin Strategies instead of the minimal 1-2% recommended by the Sizing Framework.
2. **More efficient exposure**
   Protected strategies delivered significantly improved risk-adjusted returns compared to small allocations of unprotected Bitcoin.
3. **Clearer risk budgeting**
   Rather than measuring risk contribution, our approach directly controls the maximum loss potential.

A Sizing Framework suggests reducing Magnificent exposure for spot bitcoin

The leading Sizing Framework approach treats bitcoin as an "exotic" asset class requiring extreme position sizing constraints. The traditional Sizing Framework suggests a 1-2% allocation to unprotected bitcoin, largely via reduced exposure to the “Mag 7” stocks: Apple (AAPL), Microsoft (MSFT), Alphabet/Google (GOOGL/GOOG), Amazon (AMZN), Meta/Facebook (META), NVIDIA (NVDA), and Tesla (TSLA). These companies gained this nickname because of their outsized influence on market performance, particularly in the S&P 500 Index. They've been significant drivers of market returns, especially during the AI boom and post-pandemic recovery period. The term is a nod to the 1960 film "The Magnificent Seven." The backdrop suggests that reducing Mag 7 exposure may stem from finding the “most-like” asset in the portfolio and paring back exposure to simply make room for another volatile high growth asset. In practice, however, reducing Mag 7 exposure would likely result in a reduction in broader equity exposure, as many investment portfolios are exposed to the Mag 7 via passive broad based equity investments.

A Stable Risk Framework allows investors to allocate to bitcoin from multiple parts of the portfolio

Delivering risk-calibrated exposure to bitcoin creates a bridge into bitcoin without having to reduce risk budget in other parts of the portfolio to make room for the increased risk of bitcoin. In our view, applying a Sizing Framework to bitcoin puts undue pressure to sell other “risky” assets (i.e., Magnificent 7 or Nasdaq-100 stocks) in order to fund exposure to another “risky” asset like bitcoin.

Protected Bitcoin methodology

Each Protected Bitcoin strategy ladders four 1-year rolling quarterly strategies, starting on April 1, 2019. Bitcoin options data are sourced from Amberdata, with the options traded on the Deribit exchange. The options contract on Deribit is based on Bitcoin futures, which have the same expiration date as options. Since options on Deribit are traded 24 hours, 3 PM CST was chosen to calculate daily return.

Black–Scholes model is utilized for the option pricing. The risk-free rates with the maturity matching the days-to-expiry of the options are used. The returns for protected strategies are before transaction cost.

For more information about the Calamos Protected Bitcoin ETFs, please visit calamos.com/bitcoin or call 1-866-363-9219.

The performance shown in this paper is hypothetical in nature and does not represent the performance and/or investment risk characteristics of any specific client. While the performance listed for each respective strategy is based on actual performance, the aggregate portfolio performance, allocations listed and account comparisons shown are hypothetical in nature, as no actual clients are invested in these strategies. Hypothetical performance results have many inherent limitations, including those described below:

- Hypothetical performance results are generally prepared with the benefit of hindsight.
- There are limitations inherent in model results, such results do not represent actual trading and that they may not reflect the impact that material economic and market factors might have had on the advisor's decision making if the advisor were actually managing clients' money.
- The hypothetical performance shown does not involve financial risk, and no hypothetical performance calculation can completely account for the impact of financial risk on an actual investment strategy.
- The ability to withstand actual losses or to adhere to a particular investment strategy in spite of losses are material points which can adversely affect actual performance results.

There are distinct differences between hypothetical performance results and the actual results subsequently achieved by a particular investment portfolio. No representation is being made that an account will or is likely to achieve profits or losses similar to those shown, and any investment may result in loss of principal.

As with any hypothetical illustration there can be additional unforeseen factors that cannot be accounted for within the illustrations included herein.

Hypothetical performance and index returns presented assume reinvestment of any and all earnings/distributions.

Glossary

Return: Expressed in percentage terms, Morningstar's calculation of total return is determined each month by taking the change in monthly net asset value, reinvesting all income and capital-gains distributions during that month, and dividing by the starting NAV. Average annual total return measures net investment income and capital gain or loss from portfolio investments as an annualized average.

Standard deviation: A statistical measurement of dispersion about an average, which, for a mutual fund, depicts how widely the returns varied over a certain period of time. Used to measure performance volatility or overall risk of a fund.

Sharpe ratio: Measures risk-adjusted performance by subtracting the fund's return by the risk-free rate and dividing by the fund's standard deviation. Determines reward per unit of risk. The Sharpe ratio can be used to compare two funds directly on how much risk a fund had to bear to earn excess return over the risk-free rate.

Sortino ratio: similar to Sharpe ratio except it uses downside risk (Downside Deviation) in the denominator.

Average loss: a geometric average of the periods with a loss. It is calculated by compounding the returns for loss periods where rates of return are less than 0 and then the monthly average is calculated.

Average drawdown (Average DD): An average of yearly maximum drawdown measures.

Disclosures

Calamos Investments LLC, referred to herein as Calamos, is a financial services company offering such services through its subsidiaries: Calamos Advisors LLC, Calamos Wealth Management LLC, Calamos Investments LLP, and Calamos Financial Services LLC.

The Target Outcome may not be achieved, and investors may lose some or all of their strategy. The strategy is designed to achieve the Target Outcome only if an investor buys on the first day of the Outcome Period and holds a strategy until the end of the Outcome Period. While the strategy seek to provide 100%, 90% or 80% protection against losses experienced by the price of Spot bitcoin for investors who hold the strategy for an entire Outcome Period, there is no guarantee a strategy will successfully do so. If a strategy has increased significantly, an investor that purchases the strategy after the first day of an Outcome Period could lose their entire investment. An investment in the strategy is only appropriate for investors willing to bear those losses. There is no guarantee the Capital Protection and Cap will be successful, and an investor investing at the beginning of an Outcome Period could also lose their entire investment.

Digital Assets Risk: The Bitcoin network was first launched in 2009 and bitcoins were the first cryptographic digital assets created to gain global adoption and critical mass. Although the Bitcoin network is the most established digital asset network, the Bitcoin network and other cryptographic and algorithmic protocols governing the issuance of digital assets represent a new and rapidly evolving industry that is subject to a variety of factors that are difficult to evaluate. Moreover, because digital assets, including bitcoin, have been in existence for a short period of time and are continuing to develop, there may be additional risks in the future that are impossible to predict as of the date of this prospectus. Digital assets represent a new and rapidly evolving industry, and the value of the Underlying ETPs' shares depends on the acceptance of bitcoin. The realization of one or more of the following risks could materially adversely affect the value of the Underlying ETPs' shares.

Investing involves risks. Loss of principal is possible. The strategy faces numerous market trading risks, including authorized participation concentration risk, underlying ETP risk, cap change risk, capital protection risk, capped upside risk, cash holdings risk, concentration risk, clearing member default risk, correlation risk, costs of buying and selling fund shares, counterparty risk, derivatives risk, equity securities risk, FLEX options risk, interest rate risk, investment in a subsidiary, investment timing risk, liquidity risk, management risk, market maker risk, market risk, new fund risk, non-diversification risk, options risk, OTC options risk, position limits risk, premium-discount risk, secondary market trading risk, sector risk, tax risk, trading issues risk, U.S. Government security risk, U.S. Treasury risk, and valuation risk.

100%, 90% or 80% capital protection is over a one-year period before fees and expenses. All caps are predetermined.

Cap Rate – Maximum percentage return an investor can achieve from an investment in a strategy if held over the Outcome Period.

Protection Level – Amount of protection a strategy is designed to achieve over the Days Remaining.

Outcome Period – Number of days in the Outcome Period.

Endnotes

1. Since common inception, 4/1/2019 to 6/30/2025
2. YCharts as of 6/30/2025.
3. CoinMarketCap as of 6/30/2025.
4. CoinMarketCap as of 6/30/2025.
5. Establishment of the Strategic Bitcoin Reserve and United States Digital Asset Stockpile, Executive Order dated March 6, 2025. The order referred to Bitcoin as "digital gold" and "a unique store of value in the global financial system."
6. Morningstar as of 6/30/2025.
7. Please see glossary for data point definitions.
8. Nakamoto Survey as of 9/30/24, River Financial as of February 2025

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