

Crypto Power Five Index Versus S&P 500: A Critical Analysis of Volatility, Diversification, and Investment Merits

Ned Gandevani, PhD, MBA
November 17, 2025

1. Introduction: Crypto's Place, Promise and Peril Amid Market Downturns

This market cycle has proven especially punishing for anything with a whiff of risk, from blue-chip stocks to the most speculative corners of the cryptocurrency world. As investors search for ballast, old questions return anew: does crypto truly diversify a portfolio, or does it merely compound risk? Against this backdrop, I present the Crypto Power Five Index, a volume-weighted composite of Bitcoin (BTC), Ethereum (ETH), XRP, Dogecoin (DOGE), and Litecoin (LTC). But with new volume, volatility, and beta data in hand, it is time to question whether investing in such broad-based crypto baskets is truly rational, especially compared to owning single coins such as Bitcoin.

2. Executive Summary

This paper scrutinizes the Crypto Power Five Index's (CP5I) long-run characteristics, comparing them with the S&P 500 and Bitcoin. Through annual, monthly, and geometric return data from 2015 to 2025 and applying critical performance metrics, the study surfaces crucial insights, and fresh doubts, about the wisdom of index-based crypto exposure. While low S&P correlation remains, new data on the index's risk and Sharpe ratio call for much greater caution than most investor marketing would suggest.

3. Index Construction: The Crypto Power Five Index

As of 2025, the CP5I weights are 64.95% BTC, 29.04% ETH, 3.69% XRP, 1.66% DOGE, and 0.66% LTC, each selected for ongoing liquidity and influence. Over ten turbulent years, the index soared from 217.95 to 62,814.88 (CAGR: 76.19%), but this performance demands deeper examination,

especially given the wild swings in component CAGRs: ETH at 123.86%, DOGE at 103.60%, XRP at 87.31%, BTC at 75.95%, and LTC at 40.57%.

4. Data and Methodology

Price data comes from CoinMarketCap, CoinGecko, and Yahoo Finance. Performance, risk, and return metrics are calculated using established formulas, monthly return for correlation analysis, and both arithmetic and geometric means for longer-term risk assessment. All comparisons apply end-of-period prices and volume-weighted index weights as of 2025, consistent with accepted research conventions (Baur et al., 2018).

5. Return and Volatility, Does the Data Support Diversification?

The yearly history lays bare both the temptations and risks of this approach:

Period	BTC	ETH	XRP	DOGE	LTC	CP5I
2015–16	120.33%	850.51%	79.07%	100.00%	20.72%	330.60%
2016–17	2530.52%	8347.77%	9372.73%	2900.00%	8219.94%	4515.00%
2017–18	-71.10%	-78.00%	-34.86%	-53.33%	-86.80%	-71.60%
2018–19	51.42%	4.73%	-44.73%	-3.57%	37.12%	33.30%
2019–20	96.69%	162.05%	9.45%	7.41%	26.16%	110.60%
2020–21	261.66%	791.98%	281.80%	8134.48%	215.00%	545.90%
2021–22	-72.40%	-72.06%	-65.52%	-63.89%	-75.20%	-71.90%
2022–23	116.90%	62.72%	61.87%	-8.82%	23.73%	96.40%
2023–24	150.31%	57.21%	83.47%	363.73%	33.65%	123.60%
2024–25	4.45%	-0.31%	97.62%	-56.35%	0.97%	5.47%

On the surface, years like 2016–17 and 2020–21 make the CP5I look like a lottery ticket, but the deep double-digit losses in others, especially in 2017–18 and 2021–22, show this is not a one-way bet. The magnitude of the swings suggests that just as easily as an investor can catch a moonshot, they can see most or all of their gains evaporate in a matter of months.

Most concerning is the index's **annualized standard deviation of 1,448%**, an almost cartoonish figure, more than ten times higher than that of most publicly traded asset classes (Bouri et al., 2017). What this means practically is that annual losses or gains exceeding *14x* the starting value

are not just possible but, based on history, probable. This is not diversification in the traditional sense; it is market roulette, regardless of industry narrative.

6. Beta and Volatility Relative to Bitcoin: Too Much Risk Chasing “Diversification”?

With a beta versus Bitcoin of 1.79, the CP5I is nearly twice as volatile as the world’s most infamous digital asset. When Bitcoin moves, the index moves harder. For those who believe diversification within crypto will deliver more stable returns, this metric challenges that narrative. It turns out that bundling multiple volatile assets, especially highly correlated ones, does not inherently lower risk. Rather, it may turbocharge both upside and downside.

7. Risk-Adjusted Return: The Sharpe Ratio Illusion

Drilling down, annualized arithmetic returns for the CP5I are staggering, but compounding exposes harsh reality. Its geometric mean return is roughly 105% per year, yet paired with 1,448% volatility, this generates a dismal Sharpe ratio of just 0.07. For context, a Sharpe above 1 is considered strong; below 0.5 is mediocre. In essence, the risk taken does not, in the aggregate, get rewarded beyond the historical risk-free rate (Bouri et al., 2017; CPA Australia, 2022). On closer inspection, the apparent high returns are simply payment for extraordinary, and in many years unrewarded, risk.

8. Non-correlation and Diversification: Uncorrelated, But At What Cost?

The CP5I keeps its monthly return correlation with the S&P 500 between 0.10–0.20, underscoring the case for “alternative” diversification in a statistical sense (CPA Australia, 2022). But correlation is not everything: when the asset in question is so volatile that its Sharpe ratio disappears, its role as a portfolio ballast must be reconsidered. Low correlation cannot rescue an allocation if near-total drawdowns are not rare but routine.

9. Why the Weak Link? Economic and Market Structure Considerations

Crypto’s global, retail-driven, and speculative profile, network-specific timelines (like halvings), and sensitivity to liquidity surges and regulatory shocks create price movements disconnected from equity markets (Kim et al., 2020). This is the source of its non-correlation, but also of its extreme, unpredictable swings.

10. Should the Crypto Power Five Index Be a Portfolio Staple? A Critical View

- **Diversification or Danger?** Low S&P 500 correlation is not a free lunch. Given the CP5I's volatility and beta, even small allocations could actually raise portfolio risk, not dampen it, should they coincide with periods of outsized loss.
- **Risk Premium or Red Herring?** The low Sharpe ratio exposes that average returns may be illusory, careful sizing, discipline, and a willingness to stomach epic drawdowns become non-negotiable.
- **Alternatives Exist.** For most investors, owning Bitcoin alone (with far lower volatility and somewhat higher Sharpe) might be more rational than gambling on a broad index with even more ferocious swings.

11. Conclusion: A Case For Caution, Not Dogma

While the Crypto Power Five Index provides clear evidence of non-correlation to equities and periodic bursts of awe-inspiring performance, the cost is radical volatility, subpar risk-adjusted returns, and drawdown risk that defies the economic logic underpinning classic diversification theory. For most investors, the signal here is clear: the search for ballast and return in crypto index baskets must be tempered by a sober assessment of risk. Owning the “market” in crypto can make things worse, not better. As always, sound portfolio strategy depends not just on returns, but on how violently those returns are delivered.

References

Baur, D. G., Hong, K., & Lee, A. D. (2018). Bitcoin: Medium of exchange or speculative assets? *Journal of International Financial Markets, Institutions and Money*, 54, 177-189.

<https://doi.org/10.1016/j.intfin.2017.12.004>

Bouri, E., Molnár, P., Azzi, G., Roubaud, D., & Hagfors, L. I. (2017). On the hedge and safe haven properties of Bitcoin: Is it really more than a diversifier? *Finance Research Letters*, 20, 192-198.

<https://doi.org/10.1016/j.frl.2016.09.025>

CPA Australia. (2022). The correlation between cryptocurrencies and traditional financial assets.

<https://www.cpaaustralia.com.au/>

Kim, Y., Lee, H., & Vong, A. P. I. (2020). Diversification, volatility, and downside risk in cryptocurrency portfolios: Evidence from major cryptocurrencies. *Finance Research Letters*, 35, 101489.

<https://doi.org/10.1016/j.frl.2019.101489>

Markowitz, H. (2014). *Portfolio selection*. Yale University Press. (Original work published 1952)