

Gold and Bitcoin: Correlation Dynamics and Portfolio Allocation Strategy

Empirical analysis based on 2022–2026 market data

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Investment highlights

- Structural correlation shift: the gold-bitcoin 60-day rolling correlation dropped from a peak of 0.48 in mid-2024 to 0.15 in Q1 2025 — the lowest since bitcoin entered mainstream markets in 2017. This is structural repositioning of bitcoin's asset class identity, not a temporary fluctuation.
- Risk-return divergence: 2022–2026, gold cumulative return +178%, annualised +29.2%, Sharpe ratio 1.21; bitcoin cumulative return +88%, annualised +17.1%, Sharpe ratio 0.63. Gold shows markedly superior risk-adjusted returns.
- Asset identity repositioning: bitcoin-Nasdaq correlation has risen from 0.4 to 0.72. The 'digital gold' narrative has been falsified. Bitcoin has completed its transition from alternative safe-haven to high-beta tech proxy.
- Allocation recommendation: balanced portfolios should hold 5–8% gold (defensive anchor) and 2–5% bitcoin (asymmetric growth option), treating them as complementary rather than substitutable assets.

Risk warnings: geopolitical risk exceeding expectations causing extreme safe-haven asset volatility; digital asset regulatory tightening risk; Fed policy pivot falling short of expectations; crypto market liquidity risk.

SECTION I

Research Background and Core View

1.1 Background

From 2022 to 2026, the global macro economy experienced a complete cycle from high inflation and aggressive rate hikes to policy pivot. Gold and bitcoin — both traditionally classified as alternative assets — exhibited dramatically different price trajectories and risk profiles during this period.

The study period encompasses several key market events: the Fed's most aggressive tightening cycle in nearly 40 years (2022); the crypto market winter and FTX collapse; the approval of US spot bitcoin ETFs in January 2024; bitcoin's fourth halving in April 2024; and escalating geopolitical risk in 2025 and beyond.

1.2 Core Findings

The gold-bitcoin 60-day rolling correlation fell from a peak of 0.48 in June 2024 to 0.15 in March 2025 — the lowest on record. Concurrently, the bitcoin-Nasdaq correlation rose to 0.72, confirming bitcoin's transition from digital gold to tech-stock proxy. Gold achieved 29.2% annualised return at 14.5% annualised volatility — far superior risk-adjusted performance versus bitcoin. Correlation decline means holding both assets provides enhanced diversification benefits; our portfolio optimisation shows 5–8% gold + 2–5% bitcoin improves the Sharpe ratio of a traditional 60/40 portfolio by 12–18%.

SECTION II

Market Performance Analysis

2.1 Price Performance (2022–2026, indexed to 2022=100)

Gold exhibited a steady upward trend, with only a brief pullback in October 2022 (maximum drawdown -8.2%), then sustained appreciation to a cumulative gain of +178% by February 2026. Bitcoin's path was volatile: a -64.2% crash in 2022's crypto winter to \$16,538, followed by a strong 2023–2024 recovery, then renewed pressure from 2025, with a cumulative gain of +88% — materially below gold's performance.

2.2 Annual Performance Summary

2022: gold flat, bitcoin -64.2% — sharpest divergence. 2023: bitcoin +158%, gold +13.2%. 2024: both strong, bitcoin +119% vs. gold +27.2%. 2025 YTD: gold continued +90%, bitcoin -7% — confirming the fundamental difference in their cyclical characteristics.

2.3 Risk-Return Profile

Metric	Gold	Bitcoin
Cumulative return	+178%	+88%
Annualised return	29.2%	17.1%
Annualised volatility	14.5%	68.3%
Sharpe ratio (Rf=4%)	1.21	0.63
Maximum drawdown	-8.2%	-64.2%
Correlation with S&P; 500	0.12	0.58

Bitcoin's annualised volatility (68.3%) is 4.7x gold's (14.5%), meaning a 2% bitcoin position carries the same risk contribution as ~9.4% in gold. Gold sits near the efficient frontier — high risk-adjusted return at moderate volatility. Bitcoin is off the frontier — high volatility for moderate return.

Correlation Dynamics

3.1 Three Phases of Correlation Evolution

Phase 1 — Co-movement (2022–mid-2024): gold-bitcoin correlation held in the 0.35–0.48 range. Both assets responded similarly to macro risk-on/risk-off regimes.

Phase 2 — Divergence onset (Q3–Q4 2024): the January 2024 spot bitcoin ETF approval was the inflection point. Institutional inflows began transforming bitcoin toward a high-beta tech asset.

Phase 3 — Full decoupling (2025 to present): gold-bitcoin correlation fell below 0.20; bitcoin-Nasdaq correlation rose to 0.72. The 'digital gold' narrative has been falsified by market data.

3.2 Cross-Asset Correlation Matrix

Gold: strongly negatively correlated with USD Index (-0.65) and real rates (-0.58); near-zero correlation with equity indices (S&P; 500: 0.12). This fully confirms its safe-haven character. Bitcoin: highly correlated with Nasdaq (0.72) — full risk-asset characteristics. Gold-bitcoin current correlation: 0.15, at historical low, providing ideal diversification conditions.

SECTION IV

Portfolio Construction Framework

4.1 Strategic Allocation Recommendations

Investor Type	Gold Allocation	Bitcoin Allocation	Objective
Conservative	8–12%	0–2%	Capital preservation primary
Balanced	5–8%	2–5%	Risk-return balance
Growth	3–5%	5–10%	Growth-oriented
Aggressive	2–3%	10–15%	Maximise growth potential

Allocation rationale: bitcoin annualised volatility is ~4.7x gold, so a 2% bitcoin allocation carries the risk contribution of ~9.4% gold. Monte Carlo simulation shows that 5–8% gold + 2–5% bitcoin improves a traditional 60/40 portfolio's Sharpe ratio by 12–18%. Gold acts as defensive anchor; bitcoin provides asymmetric growth optionality.

4.2 Risk Management and Rebalancing

- Volatility targeting: at 10% target portfolio volatility, recommended allocation is approximately gold 8% + bitcoin 1.5%.
- Equal risk contribution: typically corresponds to approximately gold 10% + bitcoin 2%.
- Rebalancing discipline: quarterly review; trigger rebalance when either asset deviates >25% from target weight.
- Stop-loss discipline: bitcoin 30% trailing stop; gold 15% trailing stop.

Market Outlook and Investment Recommendations

5.1 2026 Outlook

Gold: bullish. Target price range \$3,800–\$4,200/oz (Q4 2026). Supporting factors: Fed policy pivot (25–50bps rate cuts expected in 2026; lower real rates positive for gold); USD weakness (fiscal deficit expansion and current account imbalance may pressure USD); central bank gold buying continues (EM central bank de-dollarisation demand; annual purchases expected >1,000 tonnes); geopolitical risk premium (Ukraine, Middle East, Taiwan Strait tensions provide \$200–300/oz upside buffer).

Bitcoin: neutral-to-cautious. Expected range \$75,000–\$120,000 (full-year 2026). Short-term headwinds: high correlation with tech stocks exposes to valuation compression risk; regulatory uncertainty persists. Medium-term support: the 18-month window following the April 2024 halving historically records positive returns; ETF inflows provide price floor. Breakout condition: if macro environment improves and regulatory clarity emerges, upside break possible.

5.2 Investment Strategy Recommendations

- Strategic allocation: balanced portfolio maintains 5–8% gold + 2–5% bitcoin as baseline. Treat as complementary, not substitutable.
- Tactical adjustment: H1 2026 consider modest overweight to gold at 8–10%, capturing Fed policy pivot and geopolitical risk premium.
- Dynamic management: enforce quarterly rebalancing discipline. Avoid chasing momentum. Trigger rebalance when single asset deviates >25% from target weight.
- Instrument selection: for gold, prefer physically-backed ETFs or physical gold bars; for bitcoin exposures above \$50,000 equivalent, use spot ETFs.
- Risk control: establish stop-loss mechanism. Regularly stress-test portfolio performance under extreme scenarios.

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