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Bitcoin Polar Vortex: An Empirical Analysis of Crypto-Exposed Public Companies During the 2025-2026 Market Downturn

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Abstract

This study examines the performance of 17 publicly traded companies with significant Bitcoin and other cryptocurrency exposure during two distinct phases of a market cycle from November 2024 to February 2026. Employing total return analysis, annualized volatility, maximum drawdown, and rolling 60-day correlation with Bitcoin across a pre-downturn bull phase and a subsequent severe correction termed the Bitcoin Polar Vortex, the analysis finds extreme dispersion in outcomes that cannot be explained by Bitcoin exposure alone. Total returns ranged from -81.7% (Gemini) to +368.1% (Iris Energy), compared to Bitcoin's own -7.0% over the full period. AI-oriented Bitcoin miners demonstrated robust resilience, with Hut 8 Mining and TeraWulf each posting positive returns during the Polar Vortex period even as Bitcoin declined 45.5%. In contrast, all three digital asset treasury companies incurred losses exceeding 33%, with maximum drawdowns ranging from 76.9% to 79.7% and recovery durations of 378 to 442 days, reflecting a structural collapse in the premium investors once assigned to corporate Bitcoin holdings. Gemini, which completed its Nasdaq IPO in September 2025 near the market peak, experienced an 82.1% maximum drawdown concentrated almost entirely within the Polar Vortex period, raising questions about timing, governance, and the sustainability of pure-play exchange business models at scale. These findings suggest that business model diversification, particularly toward artificial intelligence infrastructure, serves as a meaningful hedge against cryptocurrency price risk for companies operating in the digital asset sector.

Keywords: *Cryptocurrency, Bitcoin, Mining companies, Digital asset treasury, Crypto exchanges, Market downturn, Equity performance, AI infrastructure, Portfolio risk, Drawdown analysis*

1. Introduction

The cryptocurrency market has experienced significant turbulence since late 2025, with prices entering a

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sustained downturn that has been termed a "Bitcoin Polar Vortex" (Krause, 2026). This correction unfolded against a backdrop of extraordinary prior gains, creating a full market cycle within a relatively compressed time frame. The subsequent price collapse of cryptocurrencies generated widespread financial losses across a diverse ecosystem of publicly traded companies whose fortunes are tied, to varying degrees, to Bitcoin and the broader digital asset market.

Bitcoin reached an all-time high of approximately $126,000 in early October 2025 (Business Standard, 2025; Mitrade, 2025). On October 10, 2025, the market witnessed its largest single-day liquidation event in history, with $19.5 billion in positions cleared across cryptocurrency exchanges within 24 hours (Forbes, 2025). This event marked the beginning of what this study terms the Bitcoin Polar Vortex, a rapid and severe downturn from which much of the market had not recovered as of the study's endpoint in late February 2026.

This market stress extended well beyond digital asset prices themselves. Publicly traded companies with cryptocurrency exposure, including exchanges, miners, and corporate treasury holders, faced intense pressure during this period. The magnitude and distribution of those losses across different business models represent the central empirical question of this study.

The Gemini cryptocurrency exchange, which completed its initial public offering on Nasdaq in September 2025, exemplifies these pressures. The company announced substantial workforce reductions, exited several international markets, and reported annualized operating expenses of $900 million against revenues well below that threshold (ForkLog, 2026). Its post-IPO share downward price trajectory serves as a case study in the risks associated with taking a pure-play cryptocurrency exchange public at or near a market peak.

This study contributes to the literature by providing a systematic empirical analysis of how different categories of crypto-exposed public companies performed during the 2025-2026 period, including the Bitcoin Polar Vortex, with particular attention to the role of business model diversification in explaining the dispersion of returns. The remainder of this paper is structured as follows. Section 2 describes the data and methodology. Section 3 presents empirical results. Section 4 offers discussion and interpretation. Section 5 concludes.

2. Data and Methodology

2.1. Sample Selection

The sample comprises 17 publicly traded companies with material cryptocurrency exposure, organized into four primary categories based on business model: Digital Asset Treasury (DAT) companies, Bitcoin miners, established crypto exchanges, and newly public crypto exchanges. Each category reflects a distinct relationship between firm operations and cryptocurrency market conditions.

DAT companies are firms that hold significant cryptocurrency reserves on their corporate balance sheets. The sample further subdivides this category into pure DAT and hybrid DAT firms. The pure DAT classification contains Strategy Inc. (MSTR), formerly MicroStrategy, whose primary business model has effectively transformed into a Bitcoin treasury operation. The company reported an operating loss of approximately $1.2 billion on its digital asset holdings as of late 2025. The hybrid DAT category includes Semler Scientific (SMLR) and Trump Media (DJT), which are operating businesses that have adopted aggressive Bitcoin treasury strategies as a secondary feature of their balance sheets.

The Bitcoin mining category contains nine firms divided into three strategic subcategories. AI-first miners have pivoted toward high-performance computing and AI hosting contracts, securing revenue streams with margins of approximately 80% to 90% (Advisor Perspectives, 2026). This group includes Core Scientific (CORZ), Hut 8 Mining (HUT), Iris Energy (IREN), and TeraWulf (WULF). Hybrid miners are building AI capacity while maintaining significant Bitcoin mining operations; this group includes Mara Holdings (MARA) and Riot Platforms (RIOT). Traditional miners maintain a primary focus on Bitcoin mining with limited AI exposure; this group includes Bitfarms (BITF), CleanSpark (CLSK), and Bit Digital (BTBT). JPMorgan analysts have noted that traditional miners face the most severe profitability pressure during Bitcoin price downturns, as their operating costs become uneconomical when prices decline sharply (ChainCatcher, 2026).

The established exchange category includes Bakkt (BKKT), Coinbase (COIN), Galaxy Digital (GLXY), and

Robinhood (HOOD), each of which has a multi-year operating history and varying degrees of revenue diversification. The newly public crypto exchange category contains Gemini (GEMI), which listed on Nasdaq on September 12, 2025, at an IPO price of $30 per share.

Benchmark indices include the S&P 500 ETF (SPY), Nasdaq 100 ETF (QQQ), Gold ETF (GLD), and the 10-year Treasury yield (^TNX). The iShares Bitcoin Trust (IBIT) serves as the Bitcoin price proxy for correlation calculations requiring aligned trading calendar dates.

2.2. Data Sources and Period

Daily adjusted closing prices were obtained from Yahoo Finance for the period November 1, 2024 through February 23, 2026. This period begins with the US presidential election and captures the subsequent bull market, the Bitcoin all-time high, and the Polar Vortex phase.

Both the iShares Bitcoin Trust (IBIT) and spot Bitcoin prices (BTC-USD) were downloaded to validate ETF tracking accuracy. Correlation analysis revealed a 0.9166 daily return correlation between IBIT and BTC-USD over the full sample period, with a tracking error (root mean square error) of 1.21%. The maximum ETF premium over spot was 6.79%, and the maximum discount was -3.10%. The total return difference between the ETF and spot was -0.16%, confirming that IBIT provides an acceptably close proxy for Bitcoin price movements in analyses requiring aligned trading dates.

To address the challenge of different trading calendars, since cryptocurrency ETFs trade on business days while spot Bitcoin trades continuously, all series were aligned to common trading dates. Forward and backward filling was applied to bridge gaps of no more than one trading day, consistent with standard practice in studies combining equity and cryptocurrency data.

2.3. Analytical Framework

For each company in the sample, the study calculates four principal metrics. Total period return is the percentage change from the first available price to February 23, 2026, calculated as $(P_t / P_0) - 1$. Annualized volatility is the standard deviation of daily returns multiplied by the square root of 252 trading days, following the convention established by Markowitz (1952). Maximum drawdown is the largest peak-to-trough decline observed during the analysis period, calculated as (trough value minus peak value) divided by peak value, capturing the worst-case loss an investor who bought at the prior peak would have experienced. Drawdown duration is the number of calendar days from the preceding peak to the maximum drawdown trough, providing a measure of the persistence of losses.

Rolling 60-day correlation is the Pearson correlation coefficient between each company's daily returns and Bitcoin ETF returns, calculated over rolling 60-trading-day windows. This metric captures the dynamic evolution of the Bitcoin-equity relationship over time, rather than a single static estimate.

2.4. Three-Period Analysis Design

To isolate the effects of the most intense market stress, the study employs a three-period analytical framework. The Pre-Polar Vortex period spans November 1, 2024 to September 30, 2025. This period begins with the US election and captures the subsequent bull market, during which Bitcoin rose 64.2% from $69,482 to $114,056.

The Bitcoin Polar Vortex period spans October 1, 2025 to February 23, 2026. This period begins just before the October 10 mass liquidation event and extends through the trough of the downturn, during which Bitcoin declined 45.5% to about $64,000.

The Full Sample period spans November 1, 2024 to February 23, 2026, capturing the complete market cycle from the post-election run-up through the peak and trough. Bitcoin returned -7.0% over this full period.

3. Results

3.1. Bitcoin Performance by Period

Bitcoin's price trajectory across the three study periods provides essential context for interpreting company-level results. During the Pre-Polar Vortex period, Bitcoin began at $69,482 and ended at $114,056, a gain of

64.2%, with a period high of $123,344. During the Polar Vortex period, Bitcoin peaked at $124,753 on October 6, 2025, and ended at $64,617, representing a 45.5% period decline and a 48.2% peak-to-trough drawdown. Over the full sample, Bitcoin began at $69,482 and ended at $64,617, returning -7.0%. The dramatic reversal from a 64.2% gain to a 45.5% loss within a matter of months frames the stress experienced by all crypto-exposed companies during the Polar Vortex.

According to KuCoin (2026), the current downturn has followed historical bear market patterns, with the correction lasting approximately four months as of the study's endpoint, compared to an average of roughly six months for prior Bitcoin bear markets.

3.2. Full Sample Period Performance

Table 1 presents summary statistics for all 17 sample companies over the full November 2024 to February 2026 period, organized by category.

Table 1: Full Sample Summary Statistics by Company (November 1, 2024 to February 23, 2026)

Category	Company	Total Return	Ann. Volatility	Avg 60-Day Corr. w/Bitcoin	Max Drawdown
DAT Pure	Strategy	-46.1%	79.9%	0.870	-77.4%
Hybrid DAT	Semler Scientific	-33.7%	101.8%	0.621	-79.7%
Hybrid DAT	Trump Media	-67.4%	84.2%	0.325	-76.9%
AI-First Miner	Core Scientific	+29.6%	65.2%	0.452	-65.0%
AI-First Miner	Hut 8 Mining	+237.3%	111.4%	0.489	-64.8%
AI-First Miner	Iris Energy	+368.1%	112.7%	0.427	-65.6%
AI-First Miner	TeraWulf	+152.9%	96.1%	0.457	-74.6%
Hybrid Miner	Mara Holdings	-51.1%	89.5%	0.755	-75.5%
Hybrid Miner	Riot Platforms	+65.8%	90.2%	0.594	-58.0%
Traditional Miner	Bitfarms	+9.7%	123.1%	0.538	-74.6%
Traditional Miner	Bit Digital	-53.4%	87.4%	0.747	-72.7%
Traditional Miner	CleanSpark	-4.9%	108.5%	0.702	-64.4%
Estab. Exchange	Bakkt	+8.0%	177.3%	0.612	-78.4%
Estab. Exchange	Coinbase	-12.4%	69.8%	0.808	-66.4%
Estab. Exchange	Galaxy Digital	-10.8%	92.5%	0.712	-60.7%
Estab. Exchange	Robinhood	+199.5%	71.8%	0.698	-53.4%
New IPO Exchange	Gemini	-81.7%	102.6%	0.530	-82.1%

Note: Bitcoin Spot (BTC-USD) returned -7.0% with 50.1% annualized volatility over the full sample period (November 1, 2024 to February 23, 2026). Avg 60-Day Corr. = average rolling 60-trading-day Pearson correlation with iShares Bitcoin Trust (IBIT) daily returns.

The most striking observation is the extreme dispersion in outcomes. Total returns range from -81.7% (Gemini) to +368.1% (Iris Energy), while annualized volatility ranges from 65.2% (Core Scientific) to 177.3% (Bakkt). This return dispersion is several times larger than Bitcoin's own -7.0% performance, demonstrating that firm-specific factors, particularly business model, rather than cryptocurrency price movements alone, drove performance during this period.

Among miners, the divergence is particularly pronounced. AI-first miners delivered average returns of +197.0%, while hybrid miners averaged +7.3% and traditional miners averaged -16.2%. This divergence within a single sector underscores how strategic positioning toward artificial intelligence infrastructure altered risk and return profiles.

The three DAT companies all experienced severe losses, ranging from -33.7% (Semler Scientific) to -67.4% (Trump Media), with maximum drawdowns between -76.9% and -79.7%. According to Forbes Africa (2026), dozens of smaller DAT companies have fallen to deep discounts to their net asset values, calling into question the strategic rationale for corporate Bitcoin treasury programs outside of a sustained bull market.

Established exchanges showed mixed results. Robinhood delivered an exceptional 199.5% return with the lowest maximum drawdown among non-benchmark companies in the study's sample (-53.4%), suggesting that its diversified business model, which includes retail brokerage, retirement accounts, and credit card services, buffered it against the worst of the cryptocurrency selloff. Coinbase, by contrast, lost –12.4%, and Bakkt, whose full-period return of +8.0% masked a severe -78.4% loss during the Polar Vortex, ended the period slightly above its starting price.

3.3. Companies with the Most Severe Drawdowns

Nine companies in the sample experienced maximum drawdowns exceeding 70% of their peak value. Table 2 details these companies.

Table 2: Companies With Maximum Drawdown Exceeding 70%

Company	Category	Max Drawdown	Days to Trough
Gemini	New IPO Exchange	-82.1%	158
Semler Scientific	Hybrid DAT	-79.7%	378
Bakkt	Estab. Exchange	-78.4%	113
Strategy	DAT Pure	-77.4%	442
Trump Media	Hybrid DAT	-76.9%	400
Mara Holdings	Hybrid Miner	-75.5%	433
TeraWulf	AI-First Miner	-74.6%	150
Bitfarms	Traditional Miner	-74.6%	147
Bit Digital	Traditional Miner	-72.7%	450

Note: Maximum drawdown is the largest peak-to-trough decline observed during the full sample period (November 1, 2024 to February 24, 2026). Days to Trough = calendar days from the preceding peak to the maximum drawdown trough.

Gemini ranks as the hardest-hit company in the sample, with a maximum drawdown of 82.1% from its September 2025 IPO price and a total loss of 81.7% over the study period. This result aligns with reporting by ForkLog (2026), which cited a Bloomberg assessment characterizing Gemini as facing a difficult path ahead given its operating cost structure and the challenging exchange market environment. The 158-day

drawdown duration is notably shorter than those of the DAT companies, reflecting that Gemini's losses concentrated rapidly and intensely during the Polar Vortex period rather than accumulating gradually.

All three DAT companies appear among the five hardest-hit firms, with drawdown durations of 378, 400, and 442 days. The Finance News Network (2026) reported that DAT companies collectively incurred losses exceeding $17 billion during this period, with The Defiant (2026) characterizing the scale of the losses as unprecedented for corporate treasury programs of this type.

Figure 1 illustrates the drawdown timelines for the five hardest-hit companies, with a vertical line marking the beginning of the Polar Vortex period. This chart displays the drawdown percentage over time for Gemini, Semler Scientific, Bakkt, Strategy (MSTR), and Trump Media.

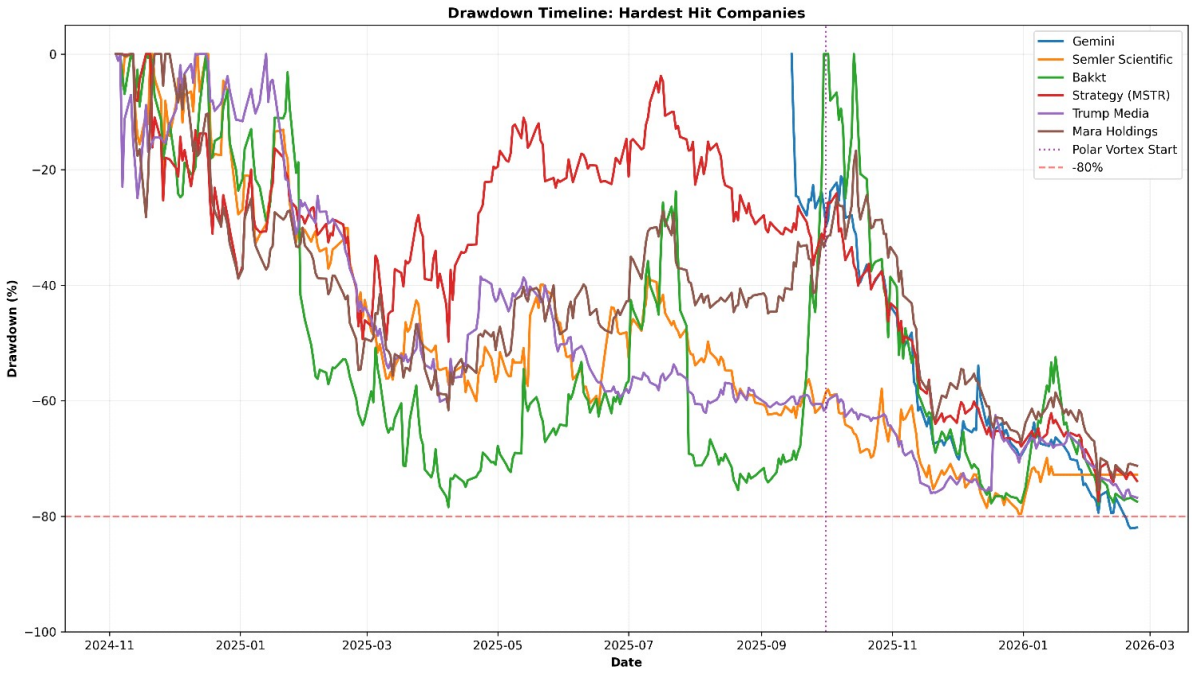

Figure 1: Drawdown Timeline for Hardest-Hit Companies

3.4. Three-Period Analysis: The Polar Vortex Revealed

The three-period analysis provides critical insight into when losses occurred and which categories demonstrated resilience. Table 3 presents the complete performance comparison across all three periods.

Several patterns emerge from this comparison. AI-first miners demonstrated remarkable resilience during the Polar Vortex. Hut 8 Mining gained 47.9% during this period, while TeraWulf gained 36.7% and Core Scientific lost only –6.0%. This performance stands in sharp contrast to hybrid miners, which lost an average of 37.5%, and traditional miners, which lost an average of –36.4% during the same interval.

Established exchanges suffered nearly uniformly during the Bitcoin Polar Vortex. Robinhood, which had delivered exceptional pre-crash gains of 497.3%, lost –48.4% during the Polar Vortex. Coinbase lost –53.7%, Galaxy Digital lost –43.2%, and Bakkt lost –70.3%. The magnitude of Bakkt's Polar Vortex loss is particularly notable given that it erased virtually all of the gains accumulated during the preceding bull phase.

Gemini's decline was concentrated almost entirely within the Polar Vortex. Of the company's total -81.7% return since its IPO, approximately -74.3 percentage points occurred during the Polar Vortex period, indicating that the company's post-IPO struggles cannot be attributed primarily to market conditions that predated the correction.

DAT companies experienced severe compression during the Bitcoin Polar Vortex. Strategy's –63.4% loss during this period reflects what Finance News Network (2026) described as the collapse of the valuation

Table 3: Three-Period Performance Comparison

Category	Company	Pre-Polar Vortex Return	Polar Vortex Return	Full Sample Return
DAT Pure	Strategy	+40.3%	-63.4%	-46.1%
Hybrid DAT	Semler Scientific	-2.2%	-34.5%	-33.7%
Hybrid DAT	Trump Media	-46.3%	-40.1%	-67.4%
AI-First Miner	Core Scientific	+37.7%	-6.0%	+29.6%
AI-First Miner	Hut 8 Mining	+117.3%	+47.9%	+237.3%
AI-First Miner	Iris Energy	+418.6%	-10.0%	+368.1%
AI-First Miner	TeraWulf	+84.2%	+36.7%	+152.9%
Hybrid Miner	Mara Holdings	+13.3%	-57.7%	-51.1%
Hybrid Miner	Riot Platforms	+101.6%	-17.3%	+65.8%
Traditional Miner	Bitfarms	+51.6%	-27.1%	+9.7%
Traditional Miner	Bit Digital	-15.7%	-49.3%	-53.4%
Traditional Miner	CleanSpark	+40.4%	-32.7%	-4.9%
Estab. Exchange	Bakkt	+258.0%	-70.3%	+8.0%
Estab. Exchange	Coinbase	+84.5%	-53.7%	-12.4%
Estab. Exchange	Galaxy Digital	+48.3%	-43.2%	-10.8%
Estab. Exchange	Robinhood	+497.3%	-48.4%	+199.5%
New IPO Exchange	Gemini	-25.1%	-74.3%	-81.7%
Reference	**Bitcoin (BTC-USD)**	**+64.2%**	**-45.5%**	**-7.0%**

Note: Pre-Polar Vortex period = November 1, 2024 to September 30, 2025. Polar Vortex period = October 1, 2025 to February 24, 2026. Full Sample = November 1, 2024 to February 24, 2026. Bitcoin row is shown in italics for reference.

premium investors had historically paid for Bitcoin-holding companies. Michael Saylor's firm, which had traded at a substantial premium to the net asset value of its Bitcoin holdings, saw that premium erode as Bitcoin prices fell and investor appetite for leveraged Bitcoin exposure diminished.

Figure 2 presents miner performance across the three periods, illustrating the sharp divergence between AI-oriented firms and their traditional counterparts. The chart compares the performance of nine mining companies across the Pre-Polar Vortex, Bitcoin Polar Vortex, and Full Sample periods. The company names are color-coded by subcategory: AI-First Miners, Hybrid Miners, and Traditional Miners. Hut 8 Mining and TeraWulf contrast sharply with negative returns for the for hybrid and traditional miners during all time periods.

Figure 3 presents category-level average returns across the full period. Categories shown include DAT Pure, Hybrid DAT, AI-First Miners, Hybrid Miners, Traditional Miners, Established Exchanges, and New IPO Exchanges.

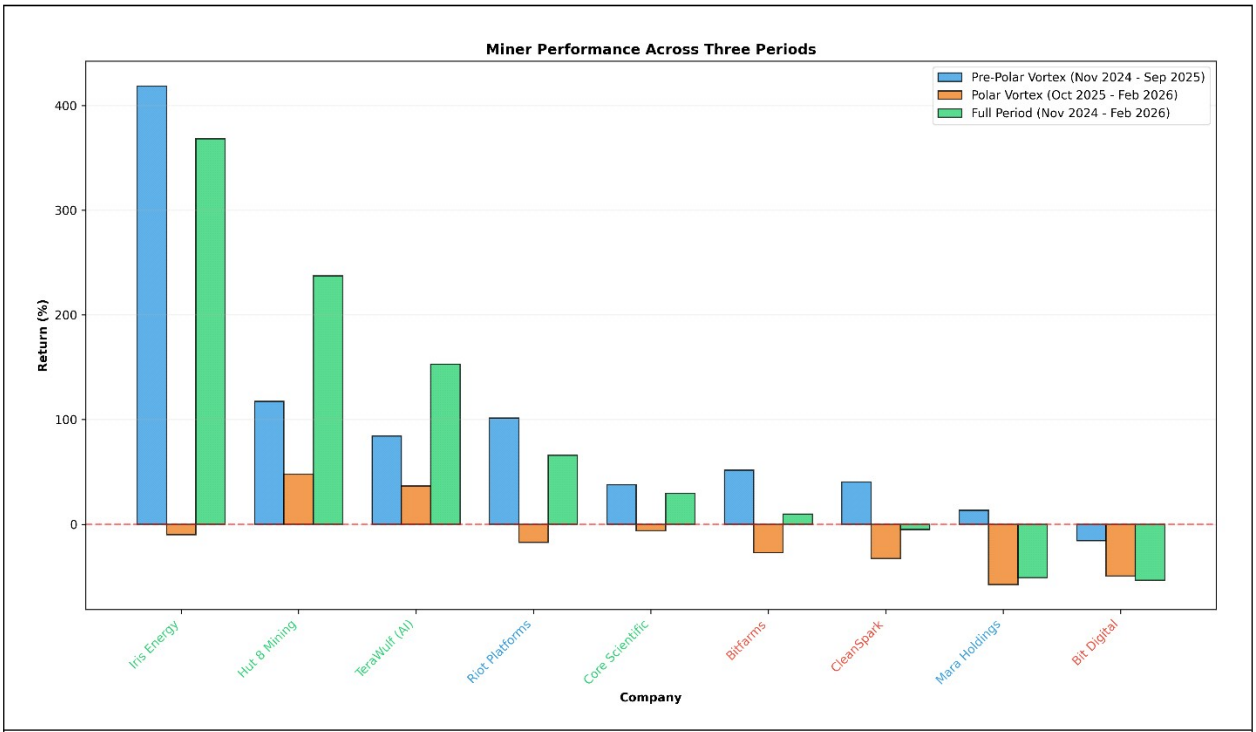

Figure 2: Miner Performance Across Three Periods

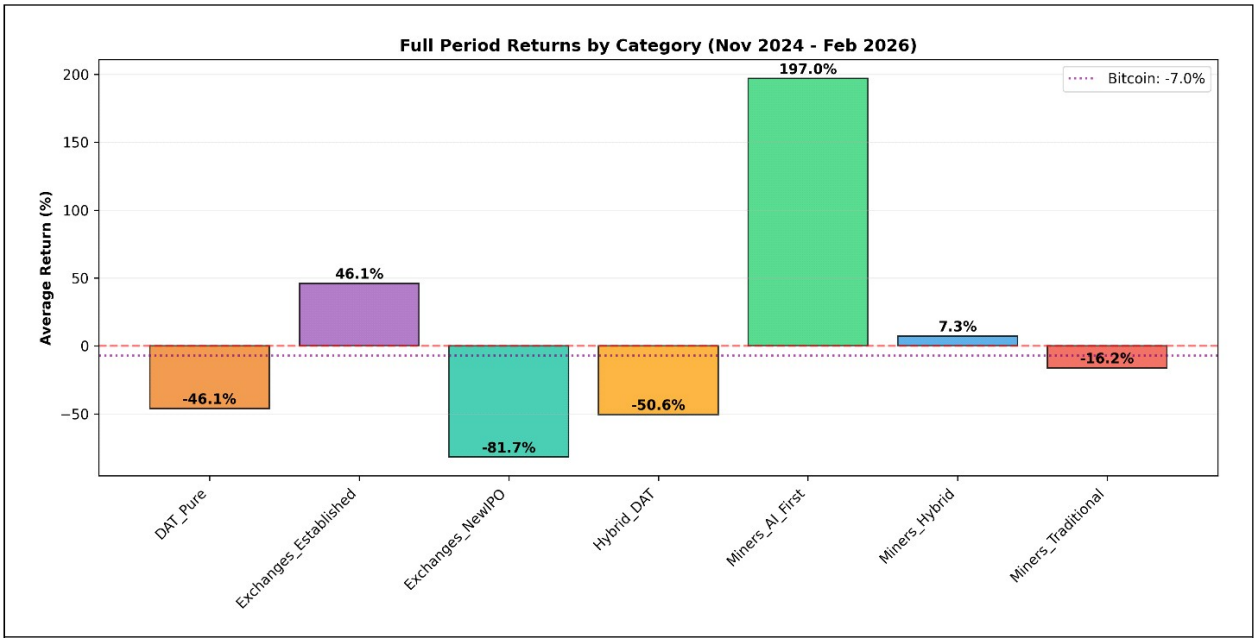

Figure 3: Category Returns Over Full Period

3.5. The Divergence Among Bitcoin Miners

The performance differential within the mining category during this study period represents what JPMorgan analysts termed the great divergence between miners pivoting to artificial intelligence infrastructure and those remaining focused on traditional proof-of-work mining (ChainCatcher, 2026). Table 4 presents the full breakdown by strategic orientation.

AI-first miners averaged +197.0% over the full period and +17.1% during the Polar Vortex, a period in which Bitcoin declined –45.5%. Their average rolling 60-day correlation with Bitcoin was 0.456, substantially lower than the 0.675 and 0.662 observed for hybrid and traditional miners, respectively. This lower correlation reflects the partial decoupling from Bitcoin price movements that AI hosting revenue provides.

Table 4: Miner Performance by Strategic Orientation

Subcategory	Company	Pre-Polar Vortex Return	Polar Vortex Return	Full Sample Return	BTC Corr.
AI-First Miners					
	Iris Energy	+418.6%	-10.0%	+368.1%	0.427
	Hut 8 Mining	+117.3%	+47.9%	+237.3%	0.489
	TeraWulf	+84.2%	+36.7%	+152.9%	0.457
	Core Scientific	+37.7%	-6.0%	+29.6%	0.452
	Average	**+164.5%**	**+17.1%**	**+197.0%**	**0.456**
Hybrid Miners					
	Riot Platforms	+101.6%	-17.3%	+65.8%	0.594
	Mara Holdings	+13.3%	-57.7%	-51.1%	0.755
	Average	**+57.4%**	**-37.5%**	**+7.3%**	**0.675**
Traditional Miners					
	Bitfarms	+51.6%	-27.1%	+9.7%	0.538
	CleanSpark	+40.4%	-32.7%	-4.9%	0.702
	Bit Digital	-15.7%	-49.3%	-53.4%	0.747
	Average	**+25.4%**	**-36.4%**	**-16.2%**	**0.662**

Note: BTC Corr. = average rolling 60-trading-day Pearson correlation with iShares Bitcoin Trust (IBIT) daily returns over the full sample period. Average rows shown in italics. Pre-Polar Vortex = November 1, 2024 to September 30, 2025. Polar Vortex = October 1, 2025 to February 24, 2026.

According to Advisor Perspectives (2026), six publicly traded mining companies announced high-performance computing contracts during this period, including Core Scientific, TeraWulf, Iris Energy, and Hut 8. The AI hosting business model resolves a structural vulnerability in traditional mining: while Bitcoin mining revenue varies directly and nonlinearly with Bitcoin prices, AI hosting contracts provide predictable cash flows independent of cryptocurrency market conditions. The primary bottleneck for AI infrastructure is not computational chips alone, but rather power availability and distribution infrastructure, and mining companies with established power contracts, cooling systems, and physical plant are well positioned to meet this demand.

Figure 4 presents risk-return scatter plots for all companies across the Polar Vortex period. The plot displays annualized volatility against total for all companies, which are color-coded by category. Bitcoin (proxied by IBIT) is included as a reference point.

3.6. Pure DAT Versus Hybrid DAT

The subdivision of DAT companies into pure and hybrid categories reveals nuanced differences in performance and risk characteristics. Strategy (pure DAT) returned -46.1% over the full period with a Polar Vortex loss of -63.4% and an average rolling Bitcoin correlation of 0.870. The hybrid DAT average (Semler Scientific and

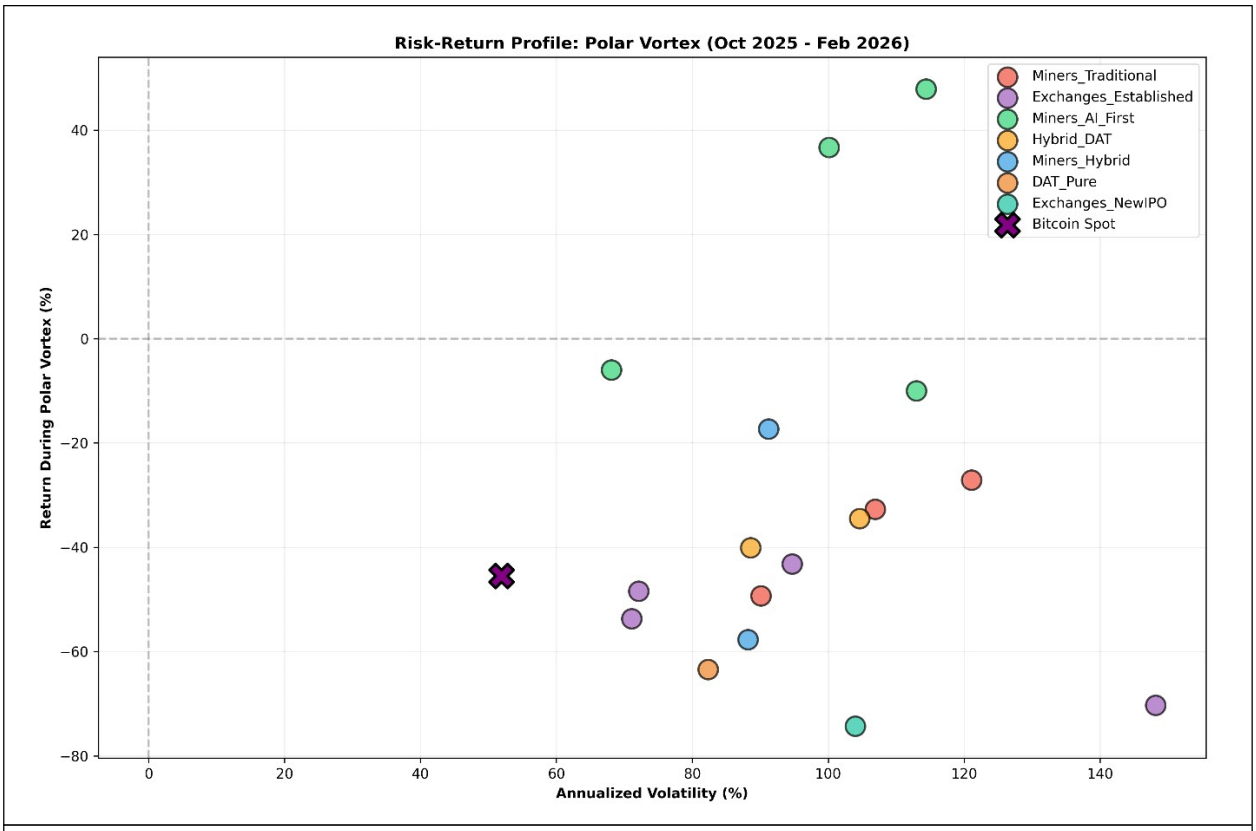

Figure 4: Risk-Return Scatter Plots During Bitcoin Polar Vortex

Trump Media combined) returned -50.6% over the full period, with a Polar Vortex loss averaging -37.3% and an average rolling Bitcoin correlation of 0.473.

While pure DAT exhibited substantially higher correlation with Bitcoin, reflecting its near-complete reliance on Bitcoin price appreciation for value creation, hybrid DAT companies actually performed slightly worse on a full-period basis (-50.6% versus -46.1%). This result reflects the compounding effect of poor performance in underlying operating businesses alongside Bitcoin price declines. Hybrid DAT companies did, however, demonstrate modestly greater Polar Vortex resilience, losing 37.3% on average compared to Strategy's 63.4% loss, consistent with the lower average Bitcoin correlation for this group.

4. Discussion

4.1. Business Model as the Primary Determinant of Performance

The results demonstrate that business model, rather than simple cryptocurrency exposure, was a primary driver of performance during the 2025-2026 period. Companies with concentrated exposure to cryptocurrency revenue streams, whether through exchange operations, spot mining, or corporate treasury holdings, suffered the most severe losses. Companies that had diversified their revenue base toward artificial intelligence infrastructure, or that derived revenue from sources largely uncorrelated with Bitcoin prices, performed substantially better.

Gemini's position as the worst-performing company in the sample illustrates the risks of a pure-play exchange model combined with late-cycle IPO timing. The company went public at what proved to be a near market peak in September 2025, providing no opportunity for pre-IPO holders to demonstrate resilience across a market cycle prior to the public offering. Its high operating cost structure, with annualized expenses of approximately $900 million, would require revenues that are difficult to sustain outside a bull market environment (ForkLog, 2026).

The divergence among miners provides complementary evidence for the centrality of strategic positioning. According to ChainCatcher (2026), JPMorgan analysts observed that the exit of high-cost miners has reduced

Bitcoin's production cost from approximately $90,000 at the beginning of 2025 to $77,000 by early 2026. This dynamic illustrates the self-correcting but painful nature of traditional mining economics: price declines force out marginal producers, but the losses incurred in the process can be severe for shareholders.

4.2. The Collapse of the Digital Asset Treasury Premium

DAT companies faced a distinct challenge beyond simple Bitcoin price exposure: the structural collapse of their valuation premiums. As Finance News Network (2026) reported, the premium that investors once paid for shares of Bitcoin-holding companies has largely evaporated, citing commentary from analyst Adam Lebowitz. This premium had reflected investor demand for indirect Bitcoin exposure through regulated equity markets, a demand that has been substantially diminished by the proliferation of spot Bitcoin ETFs.

Forbes Africa (2026) reported that dozens of smaller DAT firms have fallen to deep discounts relative to their net asset values, not only constraining their ability to raise fresh capital but also calling into question the strategic rationale for their Bitcoin treasury programs. MicroStrategy's original argument for corporate Bitcoin accumulation, published in 2020, was premised on Bitcoin as a superior store of value and on the scarcity-driven appreciation of a fixed-supply asset. During extended bear markets, the leverage embedded in these strategies, achieved through debt issuances used to purchase Bitcoin, amplifies losses and can create adverse feedback dynamics.

The prolonged drawdown durations observed for DAT companies, ranging from 378 to 442 days, suggest that this repricing may represent a more durable structural shift rather than a temporary market overreaction. Unlike previous market cycles in which DAT premiums rebounded with Bitcoin prices, the current environment features a wider array of direct Bitcoin investment vehicles, which reduces the uniqueness of the indirect exposure that DAT companies once provided.

4.3. The Bitcoin Polar Vortex as a Distinct Market Regime

The October 2025 to February 2026 period exhibited characteristics of a distinct market regime. The October 10 liquidation event, which cleared $2.2 billion in positions in a single day, represented an unprecedented shock to market microstructure. Subsequent price declines were characterized by persistent selling pressure and correlation among assets that had not always moved together during the preceding bull market.

The Polar Vortex also marked the first widespread period of economically unviable mining conditions since the 2022 bear market. ChainCatcher (2026) reported that the drop in Bitcoin prices rendered high-cost miners unprofitable, creating pressure on firms to reduce operations, sell equipment, or diversify revenues. This dynamic accelerated the bifurcation between AI-first miners, which had already secured alternative income streams, and traditional miners, which remained more fully dependent on Bitcoin prices.

4.4. Implications for Investors and Policymakers

The findings carry several implications for investors and policymakers. For investors, the results underscore that crypto-exposed equities are not a homogeneous asset class and should not be treated as such. The dispersion in outcomes documented here, spanning a range of nearly 450 percentage points in total return across 17 companies operating in broadly similar markets, demonstrates that business model analysis, rather than sector-level allocation, is the appropriate framework for evaluating these securities.

The strong performance of AI-first miners suggests that the intersection of cryptocurrency infrastructure and artificial intelligence computing may offer a more attractive risk-return profile than traditional cryptocurrency exposure. Investors seeking participation in digital asset markets while limiting downside exposure to Bitcoin price cycles may find these companies merit closer examination.

For policymakers, the severe distress experienced by newly public exchange Gemini raises questions about the adequacy of disclosure requirements and suitability assessments for companies entering public markets at cyclically elevated valuations. The company's high operating expense base and concentrated revenue model were not opaque to sophisticated investors, but the concentration of losses within a short post-IPO window suggests that market timing risks for newly public companies in cyclical sectors may warrant more direct regulatory attention.

4.5. *Limitations*

This study is subject to several limitations. First, the sample period captures a major downturn episode, and results may not generalize to market conditions with different characteristics. Second, the analysis excludes smaller and less liquid cryptocurrency-related companies, which may exhibit different patterns. Third, the categorization of companies by business model orientation involves judgment, and reasonable alternative classifications could affect findings at the margin. Fourth, the study relies on publicly available price and return data and does not incorporate non-public financial disclosures that might better explain individual company outcomes. Future research could extend this analysis to additional market cycles, expand the sample of companies, and incorporate granular financial statement data.

5. Conclusion

This empirical analysis of 17 crypto-exposed public companies during the November 2024 to February 2026 market cycle yields three principal conclusions.

First, the dispersion in outcomes far exceeded the range of Bitcoin's own price movement. Total returns ranging from -81.7% to +368.1% against Bitcoin's -7.0% demonstrate that firm-specific factors, particularly business model and revenue diversification, were the dominant determinants of performance. Treating crypto-exposed equities as a homogeneous asset class obscures economically important variation that has direct implications for investment and risk management.

Second, the Polar Vortex period from October 2025 to February 2026 constituted a distinct market regime characterized by concentrated selling pressure and widespread losses. The October 10 liquidation event, which cleared $2.2 billion in positions within a single trading day, marked a regime shift after which most categories of crypto-exposed companies lost value. The DAT premium collapse, which had been building gradually, accelerated sharply during this period.

Third, AI-first miners demonstrated substantial resilience during the Polar Vortex, with Hut 8 gaining 47.9% and TeraWulf gaining 36.7% even as Bitcoin declined 45.5%. This performance differential confirms that the pivot from pure cryptocurrency mining toward AI and high-performance computing infrastructure can meaningfully insulate firms from cryptocurrency price risk. The lower rolling Bitcoin correlations observed for this group (averaging 0.456 versus 0.662 to 0.675 for other miner subcategories) reflect a partial decoupling that has real consequences for investors.

The case of Gemini encapsulates the broader narrative of the Polar Vortex. As the hardest-hit company in the sample, with an 82.1% maximum drawdown and an 81.7% total loss since its September 2025 IPO, Gemini's trajectory illustrates the risks of entering public markets near a cyclical peak with a cost structure that is not yet sustainable at normalized revenue levels. Its experience also illustrates a broader challenge for pure-play cryptocurrency exchanges: in a market with multiple established competitors and increasingly direct investor access to digital assets through ETFs, achieving the scale required for long-term profitability is a formidable undertaking.

These findings suggest that investors should evaluate crypto-exposed companies as operating businesses with distinct risk profiles rather than as undifferentiated proxies for Bitcoin. For researchers, the 2025-2026 episode provides a well-identified natural experiment in how technological diversification, specifically toward AI infrastructure, can alter the risk characteristics of firms operating at the intersection of digital assets and high-performance computing.

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