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Ranking Public Bitcoin Miners

A framework to quantify the liquidity, solvency, and profitability of publicly traded Bitcoin miners

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Executive Summary



In 2022, a spotlight was shined on the financial health of publicly traded Bitcoin mining firms. Excessive leverage parlayed with higher interest rates, mining difficulty, energy costs, and a broad-based decline in asset prices all contributed to the financial distress shown across the Bitcoin mining industry. In order for investors to effectively navigate this environment, proper analysis of the most recent financial statements of public Bitcoin miners is crucial. This report utilizes methods practiced by traditional financial professionals to quantify the financial health of public miners and calculates a **“Miner Score”** to rank them based on the following criteria:

1. **Breakeven Cost to Produce Bitcoin** - Divides Cost of Mining Revenue by the quantity of BTC mined over the same period to estimate the production cost of 1 Bitcoin. By Q3 2022, many public miners were unprofitable from this lens.
2. **Current Ratio** - Divides Total Current Assets by Total Current Liabilities to estimate the ability of a company to cover its short-term financial obligations.
3. **Debt-to-Equity Ratio** - Divides Total Liabilities by Total Shareholders Equity to show how much a company relies on debt vs. equity financing. By Q3 2022, this ratio pointed out several miners who would run into solvency issues in Q4.
4. **Cash Ratio** - Divides Total Cash and Cash Equivalents by Current Liabilities to estimate the ability of a company to repay short-term debt obligations solely using cash on-hand.

This analytical framework is limited by the timing of available data and is only intended to be used for education. The results of this study are solely based on subjective data and are not an advertisement to buy, sell or hold any particular security.

Breakeven Using Cost of Mining Revenue

$$\text{Breakeven BTC Price} = \text{Cost of Mining Revenue} \div \text{Quantity of BTC Mined}$$



The Cost of Revenue (CoR) is reported on the income statement of public companies. For firms who solely mine BTC, we either used the CoR given at face value if depreciation was already removed, or subtracted the depreciation expense provided in the filing. Companies who have other revenue sources generally describe their Cost of Revenue by revenue source in the footnotes.

By dividing the direct Cost of Mining Revenue by the quantity of BTC mined over a given period, we can approximate the breakeven (BE) price of the BTC mined. In theory, if BTC is above their BE price, then that firm is in profit on the BTC mined over the period. It should be noted, however, that numbers used in financial statements are backward-looking estimates. Furthermore, solely looking at the Cost of Mining Revenue does not take into account other operating costs such as depreciation, impairment, and administrative expenses.

The table on the right shows the breakeven Bitcoin price for the given period calculated using CoR. This data is sorted lowest to highest by BE price, and includes a red line to show companies with a BE below BTC's 9/30/22 closing price of \$19,426.11.

Public Miner Breakeven Bitcoin Price (Cost of Revenue)					
All Values Are in USD and Based on the Most Recent Financial Report					
Company	Ticker	Reporting Period	Cost of Mining Revenue (Less Dep/Amort)	Quantity of BTC Mined	Breakeven BTC Price
HIVE Blockchain	HIVE	6m Ended 9/30/22	\$13,814,033.00	1679.00	\$8,227.54
Iris Energy	IREN	12m Ended 6/30/22	\$18,426,000.00	1987.00	\$9,273.28
Cleanspark	CLSK	12m Ended 9/30/22	\$41,233,650.00	3752.00	\$10,989.78
Bitfarms LTD	BITF	9m Ended 9/30/22	\$41,146,000.00	3733.00	\$11,022.23
Riot Platforms	RIOT	9m Ended 9/30/22	\$51,766,000.00	3842.00	\$13,473.71
Sphere 3D	ANY	9m Ended 9/30/22	\$1,527,000.00	91.90	\$16,615.89
Marathon Digital	MARA	9m Ended 9/30/22	\$42,974,265.00	2581.60	\$16,646.37
Hut 8 Mining	HUT	9m Ended 9/30/22	\$47,863,910.00	2870.00	\$16,677.32
Bit Digital	BTBT	9m Ended 9/30/22	\$14,352,879.00	820.80	\$17,486.45
Cathedral Bitcoin	CBTTF	9m Ended 9/30/22	\$3,565,785.01	182.58	\$19,529.99
Digihost Technology	DGHI	9m Ended 9/30/22	\$13,950,534.00	642.00	\$21,729.80
Argo Blockchain	ARBK	6m Ended 6/30/22	\$22,796,088.00	939.00	\$24,276.98
Greenidge Generation	GREE	9m Ended 9/30/22	\$57,054,000.00	2048.00	\$27,858.40
Mawson Infrastructure	MIGI	9m Ended 9/30/22	\$40,954,957.00	1231.26	\$33,262.64
TeraWulf	WULF	9m Ended 9/30/22	\$5,804,000.00	160.00	\$36,275.00
Stronghold Digital Mining	SDIG	9m Ended 9/30/22	\$73,934,273.00	1642.00	\$45,026.96
Core Scientific	CORZ	9m Ended 9/30/22	\$306,875,000.00	6567.00	\$46,729.86
Cipher Mining	CIFR	3m Ended 9/30/22	\$17,755,000.00	196.00	\$90,586.73
BIT Mining	BTCM	3m Ended 9/30/22	\$4,300,000.00	15.00	\$286,666.67
Median					\$19,529.99
Average					\$39,597.66

Data Source: SEC EDGAR, Investor Relations

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Breakeven Using Total Operating Expense and CoR



$$\text{Breakeven BTC Price} = (\text{Cost of Mining Revenue} + \text{Total OpEx}) \div \text{Quantity of BTC Mined}$$

As mentioned in the previous slide, instead of calculating the BE BTC price solely using the direct Cost of Revenue, we can add the Total Operating Expense given on the income statement to find the price BTC would need to surpass to cover all expenses incurred through all operational business activities.

The total cost to the firm to produce BTC is going to be higher than the direct cost to mine. Therefore, we'll tend to see significantly higher BE prices when accounting this way. Furthermore, using total OpEx takes into account other expenses, such as the depreciation of ASICs and buildings, and employee wages.

While this does show the ability of public miners to turn a profit solely from BTC mining, many of these companies also have other revenue sources such as Ethereum staking, hosting, or consulting. For this reason, our team prefers the breakeven prices in the previous slide to determine the true BE price for public miners.

The table on the right shows breakeven Bitcoin prices using Total Operating Expense and CoR for the given period. These values are sorted lowest to highest in the green column. After incorporating total operating expenses, no public miner had a BE price below BTC's 9/30/22 closing price of \$19,426.11.

Public Miner Breakeven Bitcoin Price (Total Operating Expense & CoR)					
All Values Are in USD and Based on the Most Recent Financial Report					
Company	Ticker	Reporting Period	Operating Expense + Cost of Revenue	Quantity of BTC Mined	Breakeven BTC Price
Iris Energy	IREN	12m Ended 6/30/22	\$58,742,000.00	1987.00	\$29,563.16
Bitfarms LTD	BITF	9m Ended 9/30/22	\$132,323,000.00	3733.00	\$35,446.83
Argo Blockchain	ARBK	6m Ended 6/30/22	\$34,788,516.00	939.00	\$37,048.47
HIVE Blockchain	HIVE	6m Ended 9/30/22	\$69,956,539.00	1679.00	\$41,665.60
Hut 8 Mining	HUT	9m Ended 9/30/22	\$120,598,190.00	2870.00	\$42,020.28
Cleantalk	CLSK	12m Ended 9/30/22	\$161,578,139.00	3752.00	\$43,064.54
Digihost Technology	DGHI	9m Ended 9/30/22	\$29,088,347.00	642.00	\$45,308.95
Bit Digital	BTBT	9m Ended 9/30/22	\$69,138,082.00	820.80	\$84,232.56
Cathedra Bitcoin	CBTTF	9m Ended 9/30/22	\$16,040,227.95	182.58	\$87,853.15
Mawson Infrastructure	MIGI	9m Ended 9/30/22	\$110,023,541.00	1231.26	\$89,358.50
Greenidge Generation	GREE	9m Ended 9/30/22	\$199,003,000.00	2048.00	\$97,169.43
Core Scientific	CORZ	9m Ended 9/30/22	\$673,779,000.00	6567.00	\$102,600.73
Stronghold Digital Mining	SDIG	9m Ended 9/30/22	\$190,329,582.00	1642.00	\$115,913.27
Marathon Digital	MARA	9m Ended 9/30/22	\$328,854,956.00	2581.60	\$127,384.16
Riot Platforms	RIOT	9m Ended 9/30/22	\$553,649,000.00	3842.00	\$144,104.37
Cipher Mining	CIFR	3m Ended 9/30/22	\$35,835,000.00	196.00	\$182,831.63
TeraWulf	WULF	9m Ended 9/30/22	\$35,823,000.00	160.00	\$223,893.75
Sphere 3D	ANY	9m Ended 9/30/22	\$47,025,000.00	91.90	\$511,697.50
BIT Mining	BTCM	3m Ended 9/30/22	\$113,620,000.00	15.00	\$7,574,666.67
Median					\$89,358.50
Average					\$506,095.98

Data Source: SEC EDGAR, Investor Relations

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Current Ratio



$$\text{Current Ratio} = \text{Total Current Assets} \div \text{Total Current Liabilities}$$

The Current Ratio divides total current assets by total current liabilities to measure the ability of a company to pay its short-term financial obligations. Current assets include things such as cash, accounts receivable, inventory, and short-term investments. Examples of current liabilities would be accounts payable, notes payable, and other short-term debt.

The traditional benchmark for the Current Ratio is 2.0 or greater. This implies that the company has double the amount of current assets than liabilities, and indicates a strong ability to cover short-term debts. But, companies with extremely high Current Ratios are likely not effectively allocating their assets, or don't have profitable ventures to do so.

Companies like CORZ, GREE, SDIG and WULF are examples of firms who filed for bankruptcy, or began some form of capital restructuring, in late-2022 or early-2023. The low ability for these names to repay debts was displayed by having the lowest Current Ratios in Q3.

The table to the right shows the Current Ratio of public miners, sorted highest to lowest. It also shows how much their Current Ratio grew last year, and a red line showing the median Current Ratio.

Public Bitcoin Miners - Current Ratio							
All Values Are in USD and Based on the Most Recent Financial Report							
Company	Ticker	Reporting Period	Current Assets	Current Liabilities	Current Ratio	Current Ratio (EoY '21)	2022 CR Change
Bit Digital	BTBT	9m Ended 9/30/22	\$68,384,982.00	\$3,460,258.00	19.763	19.141	0.621
Hut 8 Mining	HUT	9m Ended 9/30/22	\$194,123,790.00	\$20,291,080.00	9.567	17.959	-8.392
Sphere 3D	ANY	9m Ended 9/30/22	\$29,311,000.00	\$4,095,000.00	7.158	15.058	-7.900
Cathedra Bitcoin	CBTTF	9m Ended 9/30/22	\$17,627,963.35	\$2,675,619.36	6.588	8.286	-1.698
Marathon Digital	MARA	9m Ended 9/30/22	\$240,107,010.00	\$45,541,517.00	5.272	49.287	-44.015
Riot Platforms	RIOT	9m Ended 9/30/22	\$476,895,000.00	\$107,058,000.00	4.455	5.220	-0.765
HIVE Blockchain	HIVE	6m Ended 9/30/22	\$88,714,081.00	\$23,664,145.00	3.749	17.469	-13.720
Cipher Mining	CIFR	3m Ended 9/30/22	\$69,774,000.00	\$19,609,000.00	3.558	448.216	-444.658
Argo Blockchain	ARBK	6m Ended 6/30/22	\$166,561,500.00	\$78,925,182.00	2.110	2.852	-0.741
BIT Mining	BTCM	3m Ended 9/30/22	\$65,201,000.00	\$33,157,000.00	1.966	1.127	0.839
Iris Energy	IREN	12m Ended 6/30/22	\$160,254,000.00	\$85,106,000.00	1.883	1.385	0.498
Cleantech	CLSK	12m Ended 9/30/22	\$50,775,974.00	\$34,040,775.00	1.492	5.736	-4.245
Bitfarms LTD	BITF	9m Ended 9/30/22	\$102,811,000.00	\$82,057,000.00	1.253	2.838	-1.585
Digihost Technology	DGHI	9m Ended 9/30/22	\$2,896,684.00	\$2,651,286.00	1.093	6.562	-5.470
Mawson Infrastructure	MIGI	9m Ended 9/30/22	\$37,339,806.00	\$62,029,758.00	0.602	0.570	0.032
Greenidge Generation	GREE	9m Ended 9/30/22	\$54,507,000.00	\$98,365,000.00	0.554	2.411	-1.857
Stronghold Digital Mining	SDIG	9m Ended 9/30/22	\$64,577,473.00	\$128,694,292.00	0.502	0.592	-0.090
Core Scientific	CORZ	9m Ended 9/30/22	\$213,571,000.00	\$1,289,007,000.00	0.166	2.362	-2.196
TeraWulf	WULF	9m Ended 9/30/22	\$16,105,000.00	\$105,559,000.00	0.153	1.484	-1.331
Median					1.966	5.220	-1.698
Average					3.783	32.029	-28.246

Data Source: SEC EDGAR, Investor Relations

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Debt-to-Equity Ratio



$$\text{Debt-to-Equity Ratio} = \text{Total Liabilities} \div \text{Total Shareholders Equity}$$

The Debt-to-Equity (D-E) Ratio divides total liabilities by total shareholders equity to show the amount of debt compared to equity financing and retained earnings. Highly leveraged firms will have high D-E Ratios as the total value of liabilities vastly outweighs the value of their equity.

A D-E Ratio in the range of 0.5-1.5 is considered ideal among financial analysts as it shows a healthy reliance on debt supported by significant equity. Generally speaking, a low D-E Ratio indicates a low likelihood of default, but extremely low (<0.1) D-E Ratios could indicate an unhealthy reliance on equity financing.

In December 2022, Core Scientific (CORZ) filed for chapter 11 bankruptcy. Their unhealthy reliance on debt was evident by a D-E ratio nearly 7.5x greater than the next highest in the group in Q3.

The table to the right shows the D-E Ratios of public miners, sorted lowest to highest. It also shows the change in their D-E Ratio over 2022, and includes a red line to show the median D-E Ratio.

Public Bitcoin Miners - Debt-to-Equity Ratio							
All Values Are in USD and Based on the Most Recent Financial Report							
Company	Ticker	Reporting Period	Total Liabilities	Total SH's Equity	Debt-to-Equity Ratio	D-E Ratio (EoY '21)	2022 D-E Change
Sphere 3D	ANY	9m Ended 9/30/22	\$5,186,000.00	\$205,353,000.00	0.025	0.023	0.002
Bit Digital	BTBT	9m Ended 9/30/22	\$6,435,080.00	\$158,241,721.00	0.041	0.048	-0.008
Cipher Mining	CIFR	3m Ended 9/30/22	\$24,393,000.00	\$383,100,000.00	0.064	0.002	0.062
Digihost Technology	DGHI	9m Ended 9/30/22	\$6,388,832.00	\$54,614,880.00	0.117	1.092	-0.975
Riot Platforms	RIOT	9m Ended 9/30/22	\$154,251,000.00	\$1,299,371,000.00	0.119	0.128	-0.009
Cleanspark	CLSK	12m Ended 9/30/22	\$48,612,961.00	\$404,011,811.00	0.120	0.038	0.082
Hut 8 Mining	HUT	9m Ended 9/30/22	\$49,012,930.00	\$361,187,210.00	0.136	0.273	-0.138
HIVE Blockchain	HIVE	6m Ended 9/30/22	\$49,877,841.00	\$228,492,292.00	0.218	0.128	0.091
BIT Mining	BTCM	3m Ended 9/30/22	\$36,243,000.00	\$163,936,000.00	0.221	0.429	-0.208
Iris Energy	IREN	12m Ended 6/30/22	\$133,098,000.00	\$437,362,000.00	0.304	-3.447	3.751
Bitfarms LTD	BITF	9m Ended 9/30/22	\$113,919,000.00	\$263,041,000.00	0.433	0.284	0.149
Argo Blockchain	ARBK	6m Ended 6/30/22	\$168,701,526.00	\$201,162,444.00	0.839	0.426	0.413
Cathedral Bitcoin	CBTTF	9m Ended 9/30/22	\$15,923,142.52	\$18,833,382.42	0.845	0.688	0.158
Mawson Infrastructure	MIGI	9m Ended 9/30/22	\$87,836,065.00	\$93,274,185.00	0.942	0.268	0.674
Marathon Digital	MARA	9m Ended 9/30/22	\$850,675,471.00	\$625,101,962.00	1.361	1.121	0.240
Stronghold Digital Mining	SDIG	9m Ended 9/30/22	\$142,481,891.00	\$102,226,900.00	1.394	0.466	0.928
TeraWulf	WULF	9m Ended 9/30/22	\$188,023,000.00	\$121,843,000.00	1.543	1.151	0.393
Greenidge Generation	GREE	9m Ended 9/30/22	\$217,790,000.00	\$89,557,000.00	2.432	0.607	1.825
Core Scientific	CORZ	9m Ended 9/30/22	\$1,330,974,000.00	\$73,027,000.00	18.226	0.785	17.441
Median					0.304	0.284	0.149
Average					1.546	0.237	1.309

Data Source: SEC EDGAR, Investor Relations

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Cash Ratio



$$\text{Cash Ratio} = \text{Total Cash and Cash Equivalents} \div \text{Total Current Liabilities}$$

The Cash Ratio is found by dividing the sum of cash and cash equivalents by current liabilities. This ratio measures the firm's ability to repay short-term obligations solely using cash on-hand.

A Cash Ratio of 1.0 is the benchmark to signify strong liquidity. Extremely high Cash Ratios could indicate that the company has underallocated cash into investments, or that the company has no profitable projects to utilize their cash. Miners with high Cash Ratios were generally liquidating their BTC holdings, and likely capitulating rigs, in 2022.

A low Cash Ratio tells us that the firm is currently unable to cover short-term liabilities without selling assets or liquidating receivables. ARBK, SDIG, CORZ, and MIGI all struggled to repay creditors in 2022 which resulted in bankruptcy, or restructurings to avoid bankruptcy. These names had some of the lowest Cash Ratios in the group.

The table to the right shows the cash ratios of public miners, sorted highest to lowest. It also shows their 2022 Cash Ratio growth and includes a red line to show the median Cash Ratio.

Public Bitcoin Miners - Cash Ratio							
All Values Are in USD and Based on the Most Recent Financial Report							
Company	Ticker	Reporting Period	Cash & Cash Equivalents	Current Liabilities	Cash Ratio	Cash Ratio (EoY '21)	2022 CR Change
Bit Digital	BTBT	9m Ended 9/30/22	\$32,266,078.00	\$3,460,258.00	9.325	8.405	0.920
Riot Platforms	RIOT	9m Ended 9/30/22	\$254,974,000.00	\$107,058,000.00	2.382	2.842	-0.461
Digihost Technology	DGHI	9m Ended 9/30/22	\$4,864,000.00	\$2,651,286.00	1.835	0.166	1.669
Cipher Mining	CIFR	3m Ended 9/30/22	\$28,111,000.00	\$19,609,000.00	1.434	420.523	-419.089
Iris Energy	IREN	12m Ended 6/30/22	\$109,970,000.00	\$85,106,000.00	1.292	1.336	-0.044
Marathon Digital	MARA	9m Ended 9/30/22	\$55,339,400.00	\$45,541,517.00	1.215	19.230	-18.015
Hut 8 Mining	HUT	9m Ended 9/30/22	\$24,105,330.00	\$20,291,080.00	1.188	5.376	-4.188
Sphere 3D	ANY	9m Ended 9/30/22	\$4,149,000.00	\$4,095,000.00	1.013	10.437	-9.424
Cathedral Bitcoin	CBTTF	9m Ended 9/30/22	\$2,233,678.82	\$2,675,619.36	0.835	2.038	-1.203
Cleanspark	CLSK	12m Ended 9/30/22	\$20,462,570.00	\$34,040,775.00	0.601	1.793	-1.192
Bitfarms LTD	BITF	9m Ended 9/30/22	\$35,814,000.00	\$82,057,000.00	0.436	1.241	-0.805
BIT Mining	BTCM	3m Ended 9/30/22	\$12,548,000.00	\$33,157,000.00	0.378	0.209	0.169
HIVE Blockchain	HIVE	6m Ended 9/30/22	\$8,142,444.00	\$23,664,145.00	0.344	4.141	-3.797
Greenidge Generation	GREE	9m Ended 9/30/22	\$28,013,000.00	\$98,365,000.00	0.285	1.980	-1.695
Argo Blockchain	ARBK	6m Ended 6/30/22	\$11,217,780.00	\$78,925,182.00	0.142	0.216	-0.074
Stronghold Digital Mining	SDIG	9m Ended 9/30/22	\$16,723,511.00	\$128,694,292.00	0.130	0.344	-0.214
TeraWulf	WULF	9m Ended 9/30/22	\$4,466,000.00	\$105,559,000.00	0.042	0.947	-0.905
Core Scientific	CORZ	9m Ended 9/30/22	\$29,546,000.00	\$1,289,007,000.00	0.023	0.368	-0.345
Mawson Infrastructure	MIGI	9m Ended 9/30/22	\$1,182,588.00	\$62,029,758.00	0.019	0.272	-0.253
Median					0.601	1.793	-0.805
Average					1.206	25.361	-24.155

Data Source: SEC EDGAR, Investor Relations

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The “Miner Score” Framework



To aggregate this data, and rank the public miners included in this report, our team assigned each company a “Miner Score”. This score calculates the company’s average percentile ranking across the 4 categories: Breakeven Price using Cost of Revenue, Current Ratio, Debt-to-Equity Ratio, and Cash Ratio.

For example, CLSK had the 3rd lowest breakeven BTC price, therefore CLSK received a score of 16/18 (0.89 or 89) in this category. BTCM had the highest BE price, giving it a score of 0/18 in this category. A perfect Miner Score of 100 would mean that company held the #1 ranking across all 4 categories.

The table below breaks down the percentile rankings (category score) across each of the 4 categories. They were then averaged to calculate the “Total Miner Score” for each company. Cells with red text show instances when scores were adjusted to remove misleading results. Firms who had a Current Ratio >10.0, D-E Ratio <0.10, or Cash Ratio >5.0 were adjusted downwards.

"Miner Score" Category Breakdown														
Company Name	Ticker	BE Price	Ranking	Score	Curr. Ratio	Ranking	Score	D-E Ratio	Ranking	Score	Cash Ratio	Ranking	Score	Total Miner Score
Riot Platforms	RIOT	\$13,473.71	5	0.778 (77.8)	4.455	5	0.722 (72.2)	0.119	2	0.778 (77.8)	2.382	1	0.944 (94.4)	80.6
Hut 8 Mining	HUT	\$16,677.32	8	0.611 (61.1)	9.567	1	0.944 (94.4)	0.136	4	0.667 (66.7)	1.188	6	0.667 (66.7)	72.2
Iris Energy	IREN	\$9,273.28	2	0.944 (94.4)	1.883	10	0.444 (44.4)	0.304	7	0.500 (50.0)	1.292	4	0.778 (77.8)	66.7
HIVE Blockchain	HIVE	\$8,227.54	1	1.000 (100.0)	3.749	6	0.667 (66.7)	0.218	5	0.611 (61.1)	0.344	12	0.333 (33.3)	65.3
Cleanspark	CLSK	\$10,989.78	3	0.889 (88.9)	1.492	11	0.389 (38.9)	0.12	3	0.722 (72.2)	0.601	9	0.500 (50.0)	62.5
Digihost Technology	DGHI	\$21,729.80	11	0.444 (44.4)	1.093	13	0.278 (27.8)	0.117	1	0.833 (83.3)	1.835	2	0.889 (88.9)	61.1
Marathon Digital	MARA	\$16,646.37	7	0.667 (66.7)	5.272	4	0.778 (77.8)	1.361	12	0.222 (22.2)	1.215	5	0.722 (72.2)	59.7
Sphere 3D	ANY	\$16,615.89	6	0.722 (72.2)	7.158	2	0.889 (88.9)	0.025	19	0.000 (0.0)	1.013	7	0.611 (61.1)	55.6
Cathedra Bitcoin	CBTTF	\$19,529.99	10	0.500 (50.0)	6.588	3	0.833 (83.3)	0.845	10	0.333 (33.3)	0.835	8	0.556 (55.6)	55.6
Bitfarms LTD	BITF	\$11,022.23	4	0.833 (83.3)	1.253	12	0.333 (33.3)	0.433	8	0.444 (44.4)	0.436	10	0.444 (44.4)	51.4
Argo Blockchain	ARBK	\$24,276.98	12	0.389 (38.9)	2.110	8	0.556 (55.6)	0.839	9	0.389 (38.9)	0.142	14	0.222 (22.2)	38.9
Cipher Mining	CIFR	\$90,586.73	18	0.056 (5.6)	3.558	7	0.611 (61.1)	0.064	17	0.000 (0.0)	1.434	3	0.833 (83.3)	37.5
BIT Mining	BTCM	\$286,666.67	19	0.000 (0.0)	1.966	9	0.500 (50.0)	0.221	6	0.556 (55.6)	0.378	11	0.389 (38.9)	36.1
Greenidge Generation	GREE	\$27,858.40	13	0.333 (33.3)	0.554	15	0.167 (16.7)	2.432	15	0.056 (5.6)	0.285	13	0.278 (27.8)	20.8
Mawson Infrastructure	MIGI	\$33,262.64	14	0.278 (27.8)	0.602	14	0.222 (22.2)	0.942	11	0.278 (27.8)	0.019	18	0.000 (0.0)	19.4
Stronghold Digital Mining	SDIG	\$45,026.96	16	0.167 (16.7)	0.502	16	0.111 (11.1)	1.394	13	0.167 (16.7)	0.130	15	0.167 (16.7)	15.3
Bit Digital	BTBT	\$17,486.45	9	0.556 (55.6)	19.763	19	0.000 (0.0)	0.041	18	0.000 (0.0)	9.325	19	0.000 (0.0)	13.9
TeraWulf	WULF	\$36,275.00	15	0.222 (22.2)	0.153	18	0.000 (0.0)	1.543	14	0.111 (11.1)	0.042	16	0.111 (11.1)	11.1
Core Scientific	CORZ	\$46,729.86	17	0.111 (11.1)	0.166	17	0.056 (5.6)	18.226	16	0.000 (0.0)	0.023	17	0.056 (5.6)	5.6
MEDIAN		\$19,529.99			1.966			0.304			0.601			
AVERAGE		\$39,597.66			3.783			1.546			1.206			

Plotting the Miner Score

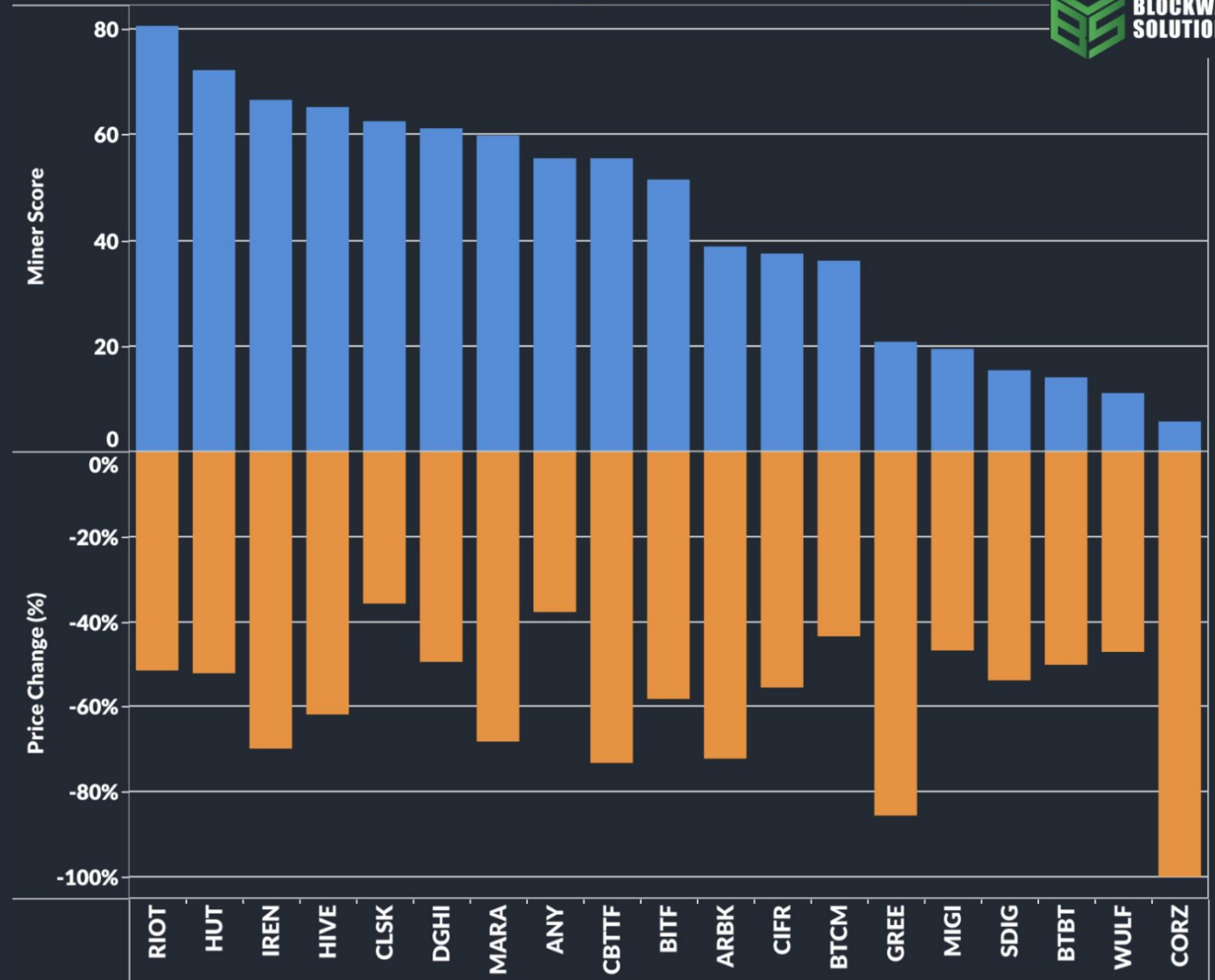


The chart on the right displays the Miner Score of each company overlaid with their stock price return in Q4 2022. As you can see, all of these stocks were sold aggressively in the 4th quarter. However, Cleanspark (CLSK) was down the least at -35.9%.

More interestingly, the financial data used to formulate this report largely came from Q3 earnings reports. Core Scientific (CORZ) received the lowest Miner Score (5.6) as of September 30th and ultimately filed for Chapter 11 bankruptcy on December 20th. As a result, CORZ was delisted from the Nasdaq, resulting in a stock price decline of 100% in Q4. Other names with low Miner Scores in Q3 also ran into trouble in Q4 2022 or Q1 2023. For example, WULF and GREE both announced debt restructurings, and SDIG announced a debt-to-equity swap.

The names with the highest Miner Scores tend to be institutional favorites and generally offer the most liquidity. Clearly, by implementing this analytical framework investors can more effectively manage risk and make better informed investment decisions.

Public Bitcoin Miner “Miner Score”, Q4 2022 Stock Price Change



Conclusion



Using any single accounting ratio, solely looking at breakeven prices, or only viewing Miner Scores is generally not the most practical way to apply financial analysis in the real world. The fundamental analysis highlighted in this report uses backward-looking data, while equity price action is based on forward-looking mechanisms. Understanding the financial health of the firms is certainly important, but we must also utilize technical analysis within the greater macroeconomic context to understand how institutions are currently viewing risk.

This report proves that despite all operating with essentially the same objective, to mine Bitcoin at the lowest possible cost, not all public miners are created equal. Investing in public miners is just one of the many avenues to gain directional exposure to Bitcoin, but we prefer to mine Bitcoin for ourselves. Mining Bitcoin can allow you to earn cash flow while eliminating much of the counterparty, market, and credit risk associated with simply buying shares of public miners.

Market contagion from the forced selling of ASICs by large miners, and overall high fear levels, have led to large declines in ASIC pricing. These discounts provide a great opportunity to **start mining now.**

Having sold over 350,000 ASICs since 2017, Blockware Solutions played a pivotal role in bringing Bitcoin mining to North America. Buying or hosting rigs with Blockware Solutions eliminates the difficulty of sourcing scalable energy, procuring ASICs, and building large facilities all by yourself.

If you're an individual or institution interested in buying or hosting rigs with a trusted partner like Blockware Solutions, or would simply like to learn more, you can [request a quote here](#) or reach out to the team at sales@blockwaresolutions.com.