Some Banks Fail, a Bitcoin Timing Strategy

Carson Mullen and Ethan Morales

Abstract

When banks issue secondary equity offerings, we predict that this will cause panic to sell the bank's stock due to liquidity and bank run concerns, and a coinciding rush to alternative currencies, namely Bitcoin, over the next two weeks. Our backtest takes short positions on all US bank stocks, classified by Bloomberg, on the announcement of additional equity offerings, and buys Bitcoin for the same dollar amount for a 2-week holding period. Overall, the best backtest of a 14-day holding period shows positive results, with annualized arithmetic returns of 4.792%, an annualized Sharpe ratio of 1.046, and an annualized alpha of 2.823% that is statistically significant.

Motivation and Previous Literature

This trade is mostly built off of the price actions and previous research done based on the March 2023 regional banking crisis. The regional banking crisis saw Silicon Valley Bank attempt to issue equity after a liquidity shortage, this led to their eventual bankruptcy and saw a major rally in cryptocurrency, namely Bitcoin, simultaneously (Navid, Ali, Gubavera 2024). These findings were no coincidence, as there is a history of the negative price movements caused by additional equity offerings from banks, and flocks to crypto in times of financial distress caused by these offerings.

Banks have additional equity offerings primarily to raise new funds for loans and increase their capital ratios to provide liquidity. However, these also cause the perceived value of the banks to decrease and they are perceived as far riskier (He, Li, Lio, Vu 2024). In turn, the perceived riskiness and illiquidity cause negative abnormal returns across both undercapitalized and well-capitalized banks, independent of insider trading, and other economic drivers of issuance (Krishnan, Ergungor, Laux, Signh, Zebedee 1992).

For the crypto portion of the trade, in its short life span as an asset, Bitcoin has been shown to have increases in prices during global economic and financial crises from 2012-2018 (Hakim das Neves 2020). More specifically, decentralized financial instruments are safe-haven assets during extreme financial downturns such as the COVID-19 pandemic and are an effective hedge against

the market (Kumar 2020). In addition, local market crises have been shown to cause an increase in Bitcoin volume as a hedge to financial issues locally (Zhao 2022), illustrating how Bitcoin price movements are sensitive to events that are not necessarily macro and global and add to the likelihood of the success with trades across banks of all market caps, and especially regional banks.

Overall, this strategy is a fundamental, dumb money, and momentum-based strategy. Fundamentally, banks issuing equity is a sign that they are low on cash, and thus vulnerable to a bank run as well as the stock being overvalued at the time. This leads to a negative price momentum spiral as people fear bankruptcy for these individual names. In addition, we predict that this will cause a flock to alternative assets as people convert their assets to decentralized financial assets less susceptible to this risk. As a result, this will cause a Bitcoin rally that will only increase as retail traders become involved purely trading on Bitcoin momentum.

Backtest Details

Data Sources

We used Bloomberg to pull the dates of all US bank secondary equity issuance announcements and the Python Yahoo Finance package to pull price and return data.

New Files

- constants.py: Holds constant information used in multiple files
- pull-data.ipynb: Pulls price and return data from yf and renames tickers in Equity Issuances file to correctly merge

Universe

- US Equities that
    1. are in the banking industry as determined by Bloomberg
    2. are listed on Yahoo Finance
    3. announced a secondary equity offering
- Bitcoin

Signals

Announcement of Secondary Issuances of a US Bank derived from Bloomberg. This will be instantaneous and require no time lag, so we will trade on the date announced at the adjusted close price.

Trading Rule

Buy 6.25% of NAV in BitCoin and short 6.25% of NAV in the underlying banking stock that had the secondary issuance. Close both trades in 14 days from opening. We chose 6.25% because the maximum number of open trades at a time for our largest holding period was 32 (16 open and 16 close). 6.25% is the maximum percentage that would ensure that we don't exceed $1 long, $1 short, and $1 held at any given time. In summary, on the announcement date of the secondary equity issuance, we will buy 6.25% of NAV in BitCoin and short 6.25% in the bank stock at the adjusted closing price, and hold each for 14 days.

Holding Period

14 days (Also tested 7, 30, and 60 days)

Time Period

September 17th, 2014 - February 29th, 2024

September 17th, 2014 was the first day that Bitcoin appeared on Yahoo Finance. This is the first day that we assume our strategy becomes viable because Bitcoin becomes well known enough to be listed on a major financial platform. Before September 17th, it is unlikely that the general public knew about decentralized financial products such as Bitcoin. Since it is impossible that a person could switch from a bank to a decentralized asset, if they didn't know it existed we decided to start when it was first listed on Yahoo Finance.

February 29th, 2024 was the last day that we had information on Fama-French returns on the market and returns of the risk-free asset, so we decided this would be our end point.

Backtest Results

Figure 1. Graphs Comparing Holding Periods

The four graphs show the returns you would have had trading the SBF strategy over the time period given holding periods of one week, two weeks, one month, and two months scaled to $1. Please note that the scale of returns is linear for this trading strategy.

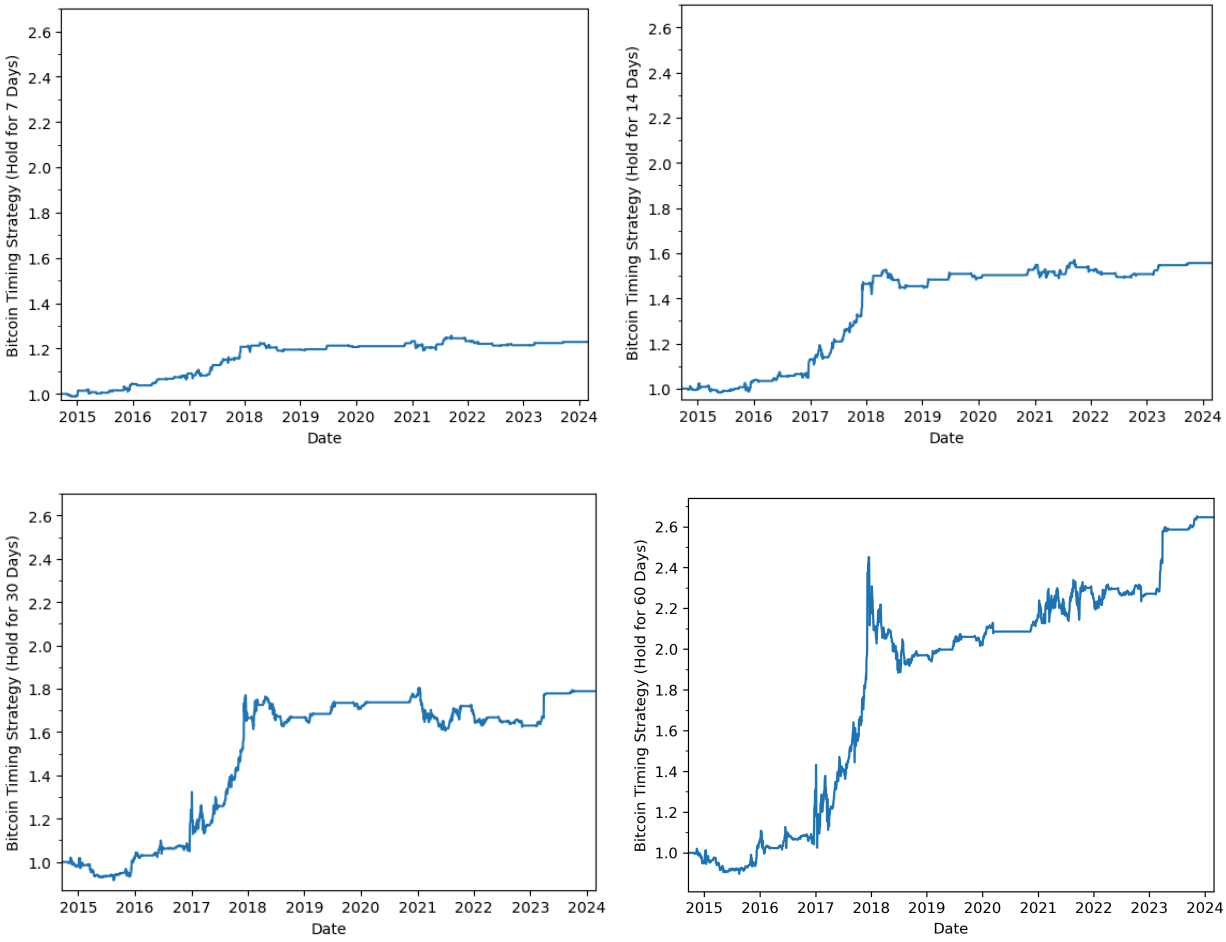

Figure 2. Regression Statistics

To test our strategy it wouldn't be fair to only regress excess returns of the strategy against excess returns of the market because Bitcoin has well-outperformed the market over the time period. We included two additional factors in the regression analysis: excess Bitcoin returns (BTC) and excess returns of KBE: SPDR® S&P® Bank ETF (Bank) to fully examine if our trading strategy generates alpha unrelated to returns of the underlying assets. It is important to note that all statistics (not including betas) are annualized.

Statistics	7 days	14 days	30 days	60 days
Arithmetic Mean	2.226%	4.792%	6.571%	11.696%
Geometric Mean	2.212%	4.799%	6.357%	10.872%
Variance	2.784%	4.581%	9.051%	16.558%
Average Drawdown	1.430%	1.979%	4.552%	9.317%
Maximum Drawdown	3.683%	5.416%	14.646%	28.397%
Alpha	1.394%	2.823%	1.899%	2.232%
Alpha Standard Error	0.861%	1.338%	2.499%	4.328%
Alpha T-Statistic	1.62	2.11	0.76	0.52
MKT β	-1.008%	-1.964%	-3.824%	-8.165%
MKT β Standard Error	0.436%	0.678%	1.267%	2.194%
MKT β T-Statistic	-2.31	-2.90	-3.02	-3.72
BTC β	1.302%	2.994%	7.028%	14.386%
BTC β Standard Error	0.079%	0.123%	0.230%	0.399%
BTC β T-Statistic	16.40	24.28	30.51	36.06
Bank β	-0.448%	-0.869%	-2.557%	-5.947%
Bank β Standard Error	0.270%	0.419%	0.784%	1.357%
Bank β T-Statistic	-1.66	-2.07	-3.26	-4.38
Sharpe Ratio	0.7997	1.0460	0.7260	0.7063

Interpretation

The largest question about our trading strategy was: how long to hold each asset? Our original hypothesis was to hold for only three days, which was far too short to gather meaningful gains. It is essential to capture the gains we expect from the flock from traditional banks to alternative currency, while not experiencing the volatility of Bitcoin for longer than necessary. We tested our trading strategy for four holding periods (one week, two weeks, one month, and two months) to test how longer holding periods affect returns, variance, alpha, and the relation to other benchmarks. As expected, as the holding period increased, there were larger returns (arithmetic and geometric mean), larger variance and drawdowns, a larger Bitcoin beta, and smaller market and bank betas.

From a maximizing risk and minimizing reward perspective, we found that the 14-day holding period was best. This period maximized alpha relative to the market, Bitcoin, and the bank ETF at 2.823%, had the only statistically significant alpha, and produced the highest Sharpe ratio of 1.046. In addition, the max and average drawdowns only increase by roughly 33% relative to the 7 days, while more than doubling returns. The 30 and 60 day holding periods however increase at a similar rate for both statistics, showing worse risk relative to returns.

There are several reasons that a 14-day holding period is more successful than longer holding periods. For one, Bitcoin is extremely volatile, and at a certain point other market signals dominate the movement caused by equity offerings, whether it is increasing regulatory concerns or other general shifts towards a negative sentiment.

On the bank side of the trade, there are many reasons why the short position may produce negative returns in the long run. For one, governmental institutions such as the FDIC or larger banks such as J.P Morgan may step in to provide stability and ensure deposits thus causing the bank to trade closer to its pre-announcement levels. Also, lower market cap banks that are near delisting are extremely susceptible to short squeezes which increase max drawdowns for the period tremendously. In addition, the cheaper price for these banks may make them attractive M&A targets for larger banks and thus may increase upon news of speculation.

By having a shorter holding period we mitigate the risk of holding these for longer periods. We also believe that the 14-day holding period returns better risk-reward statistics relative to the 7 day holding period because of the momentum nature of Bitcoin. Many Bitcoin traders, often retail, purely trade off of momentum, and thus won't initially all pile in at once for the announcement. This is illustrated by the Bitcoin beta increasing at a slightly greater rate than the bank ETF beta from the 7 to 14-day holding period.

The trading strategy was extremely successful when Bitcoin started taking off in 2017 but has somewhat stagnated since then, which is very interesting. This seems to be explained by decreasing amounts of equity offerings of banks. There have only been 28 US secondary equity

issuances since 2021, but there were 43 in 2017 alone. We managed to avoid the large losses in the middle months of 2021 and throughout 2022, but simultaneously avoided the large gains in 2020 and 2024. This is very interesting since the events in 2023 was what first led to our formation of the hypothesis. Additionally, as shown by Figure 1, the 14-day holding period does not realize the collapse of SVB. Only the 30-day and 60-day holding periods realize the returns from the regional banking crisis in 2023. This is a concern of the strategy, but we stand by using the 14-day as it consistently generated the most alpha and had the highest Sharpe ratio.

While we are impressed by the statistically significant alpha and high Sharpe ratio of the 14-day holding period strategy, it is very difficult to project if this will continue or was simply the result of an incredible run in 2017. The logic of the trading strategy is extremely plausible and we expect the relationship between equity issuances and flocks to crypto to continue, if secondary issuances continue.

There is strong incentive not to show any financial weakness and there has been a decrease in the number of regional banks; both of these factors will likely lead to a further decreased number of secondary equity issuances further decreasing the number of trades we can make. The SBF strategy is only as strong as the number of equity issuances executed, so there is concern that these returns will not hold up over time.

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