

## Crypto Portfolio Hedge using tradable volatility (EVIV & BVIV) during FTX Collapse

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Beginning of November 2022 was a disaster not only for FTX but also for many institutional and retail crypto traders. Following the reports, concerns over the balance sheet of FTX triggered a major selloff in FTT token, panic spread to the whole market quickly, and FTX filed for bankruptcy on November 11.

In this article, we investigate how EVIV and BVIV, two tradable products that track implied volatility of ETH and BTC, could have protected ETH and BTC hodlers against large losses during the FTX collapse.

Let's first look at what happened before Binance CEO's announcement on November 6. Both ETH and BTC started November with positive returns. ETH was up 3.61% and BTC was up 3.90%<sup>1</sup> just before the meltdown started as Figure 1 shows.

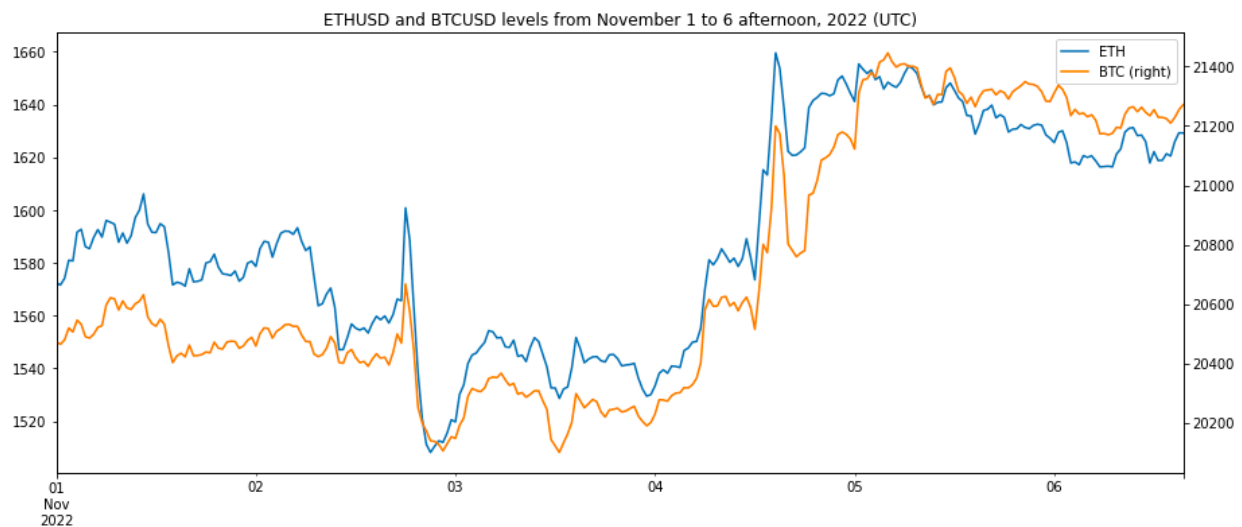


Figure 1: Pre-crash ETHUSD and BTCUSD levels

The crypto market turmoil<sup>2</sup> was wild: Almost all crypto assets experienced heavy losses. ETH lost 31.35% and BTC 24.53% of their values within a few days as can be seen in Figure 2.

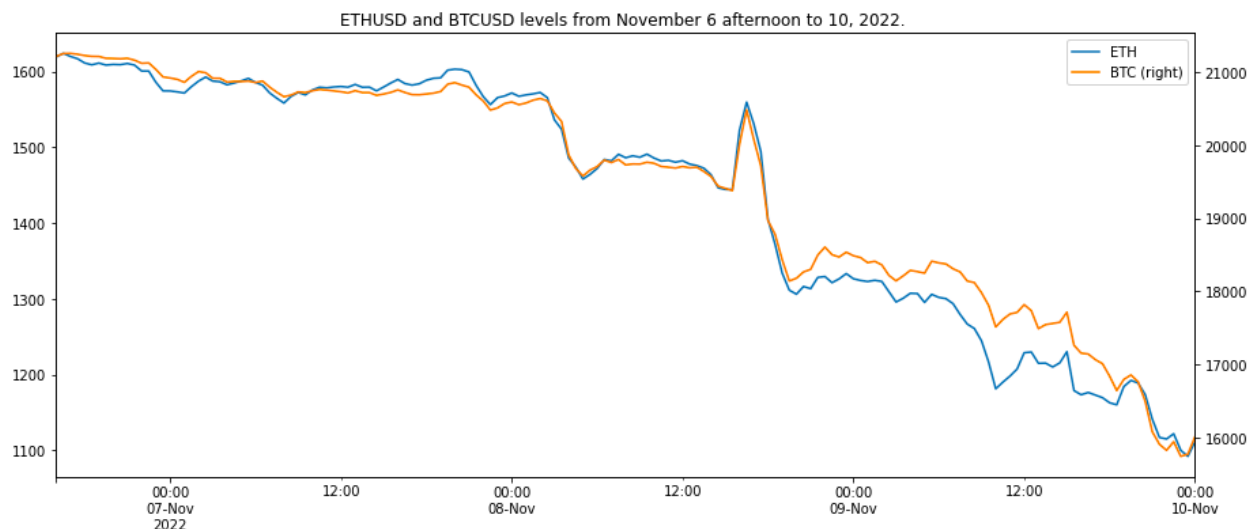


Figure 2: ETHUSD and BTCUSD levels during crash

<sup>1</sup> From November 1 2022 00:00 UTC to November 6 2022 16:00 UTC

<sup>2</sup> From November 6 2022 16:00 UTC to November 10 2022 00:00 UTC

## What about volatilities?

November started calm and volatilities initially had a tendency to go down after FED's interest rate decision. On November 3, EVIV and BVIV reached their lowest points, 72.86 for EVIV and 54.03 for BVIV, although they kept fluctuating in a 10% range as shown in Figure 3 below.

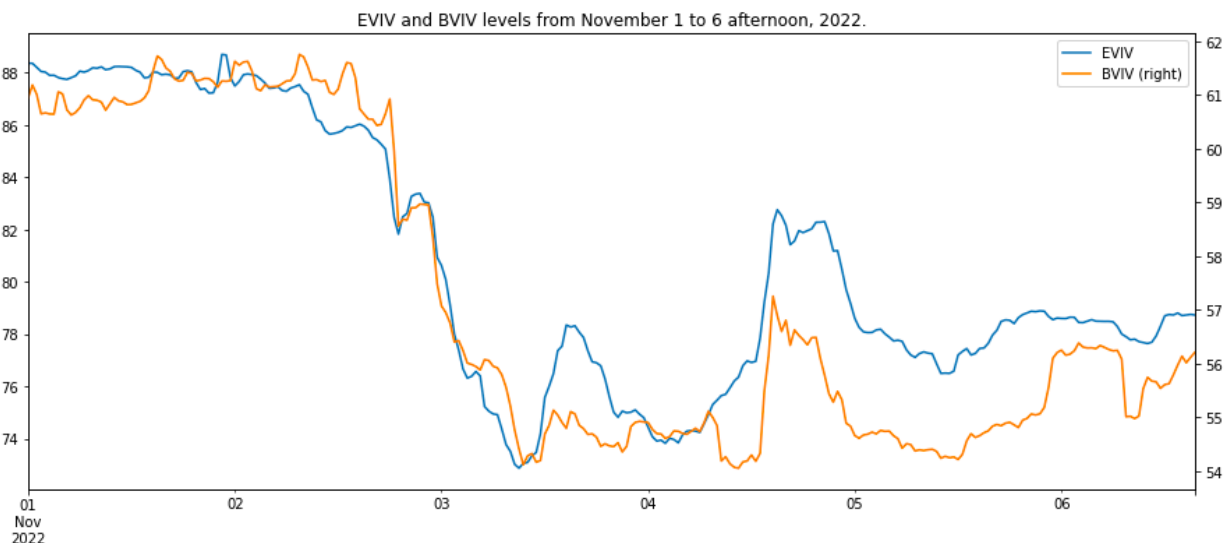


Figure 3: Pre-crash EVIV and BVIV levels

As concerns over FTX grew, EVIV and BVIV gradually increased. On November 8 and 9, Volmex Implied Volatility indices experienced major upward moves. EVIV jumped up 89.43% and similarly BVIV was up 86.47% within a short period of time as Figure 4 below shows.

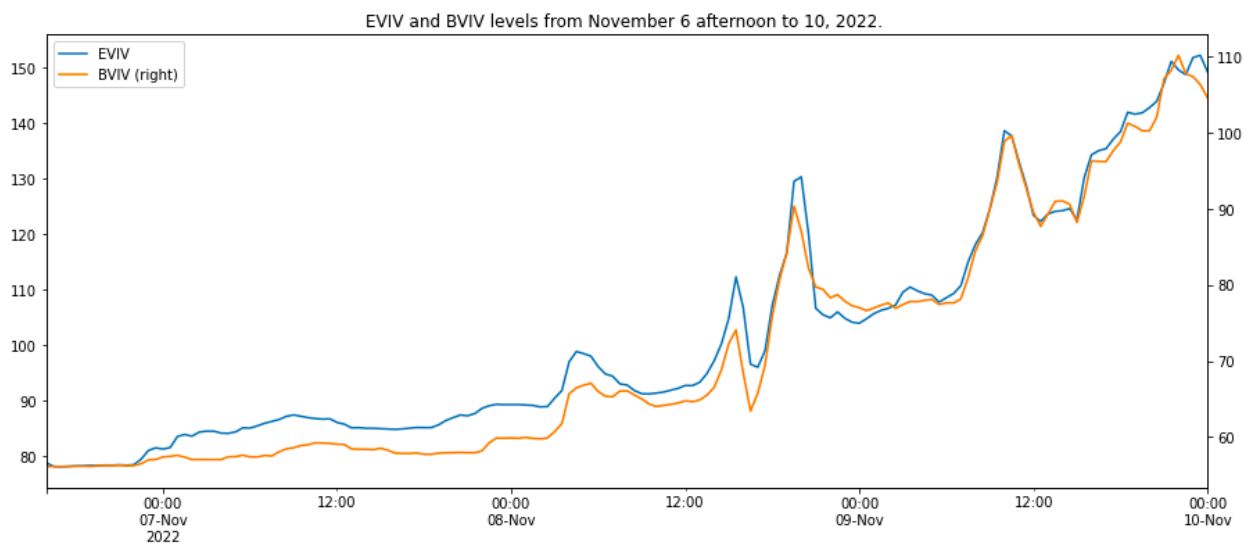


Figure 4: EVIV and BVIV levels during crash

## Correlations between price level and volatility

Changes in volatility are typically negatively correlated with the changes in price levels, especially during market turmoil in which uncertainty about future increases and assets lose their value. We observe this phenomenon during the FTX crash period as well: changes in ETH and EVIV had -65.07% correlation, same for BTC and BVIV was -77.46%.

Given that the changes in EVIV and BVIV are negatively correlated with the changes in the underlying asset price levels, tradable volatility products could be used to hedge ETH and BTC exposures. Next section investigates the performance of volatility-hedged exposures during the FTX crash.

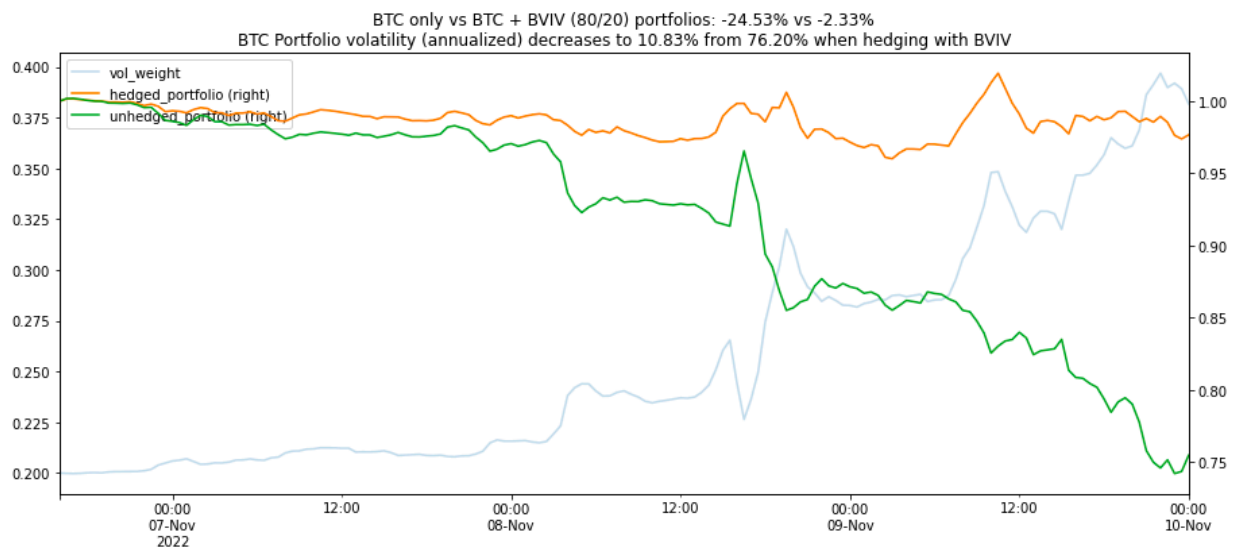
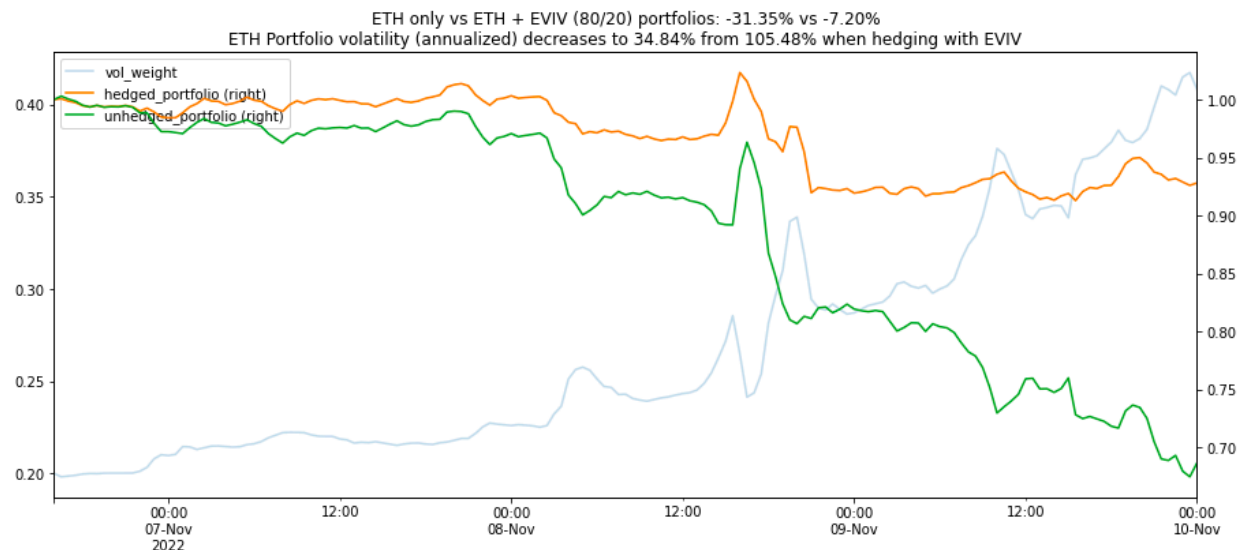
### Hedging ETH and BTC exposure with EVIV and BVIV

Assume an hodler keeps \$1000 worth of either ETH-only (BTC-only) portfolio or ETH and EVIV (BTC and BVIV) portfolio. The ETH-only portfolio during the crash would lose 31.35% and BTC-only portfolio 24.53% of its value by November 10. The fluctuations in ETH-only (BTC-only) portfolio corresponds to an annualized volatility of 105.48% (76.20%) during the same period.

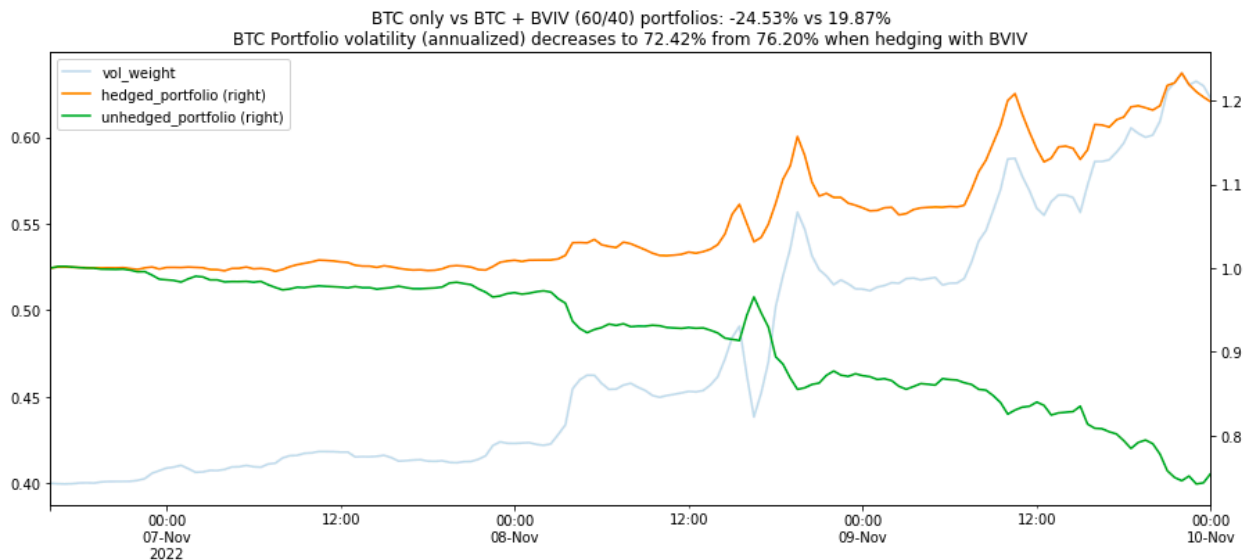
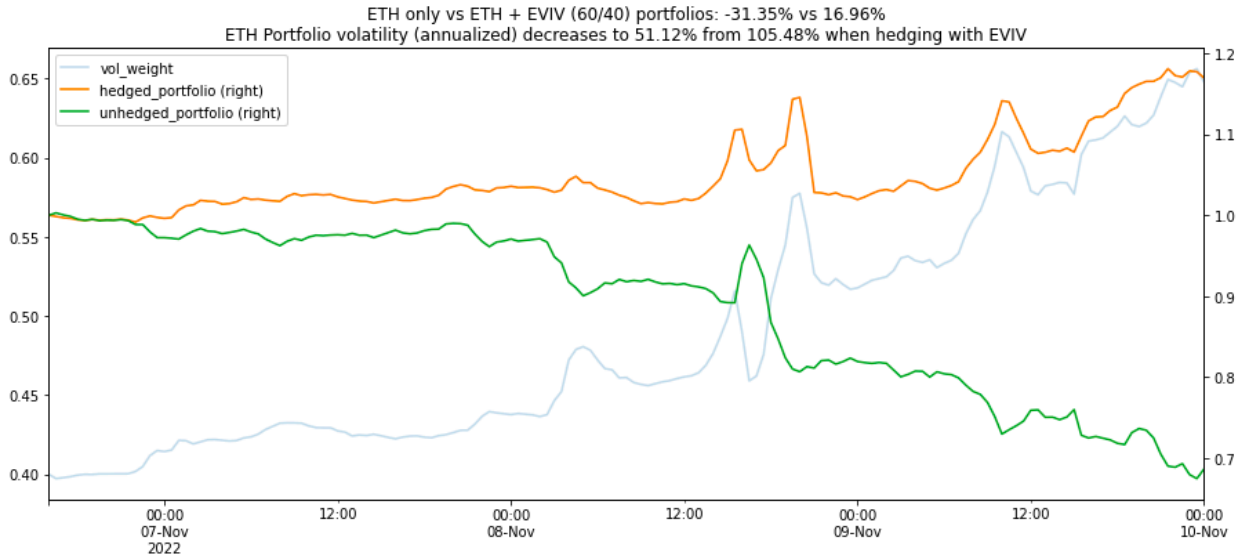
Let's check what happens to the volatility-hedged portfolios. Consider two scenarios:

1. 80/20 Portfolio: \$800 worth of ETH (BTC) and \$200 worth of EVIV (BVIV)
2. 60/40 Portfolio: \$600 worth of ETH (BTC) and \$400 worth of EVIV (BVIV)

**80/20 Portfolio:** The losses are only 7.20% for ETH+EVIV portfolio and 2.33% for BTC+BVIV portfolio, in addition to a huge reduction in portfolio volatility where it decreases to an annualized value of 34.84% from 105.48% for ETH+EVIV, and to 10.83% from 76.20% for BTC+BVIV portfolio.



**60/40 Portfolio:** The weight of volatility as an asset is doubled in the 60/40 portfolio. Therefore we see higher returns and higher volatility than those of the 80/20 portfolio. ETH+EVIV portfolio performed well and scored a 16.96% return with 51.12% annualized volatility, whereas BTC+BVIV portfolio increased 19.87% and its volatility was 72.42% as can be seen in the figures below.



## Conclusion

The levels of EVIV and BVIV increased during FTX collapse while the prices of ETH, BTC and other crypto assets decreased. This negatively correlated behavior during a market crash could be exploited to hedge against tail-events that could otherwise cause large losses. We showed two example portfolios that performed differently and did not suffer from significant losses. 80/20 hedge was able to reduce the portfolio volatility while 60/40 hedge provided positive returns during market turmoil.

## APPENDIX

### Pre-crash data:

Start	: ETH = 1572.35	EVIV = 88.37	at 2022-11-01 00:00
End	: ETH = 1629.16	EVIV = 78.73	at 2022-11-06 15:30
Returns:	ETH = 3.61%	EVIV = -10.91%	
Start	: BTC = 20473.64	BVIV = 60.94	at 2022-11-01 00:00
End	: BTC = 21271.34	BVIV = 56.21	at 2022-11-06 15:30
Returns:	BTC = 3.90%	BVIV = -7.77%	

### Crash data:

Start	: ETH = 1619.11	EVIV = 78.77	at 2022-11-06 16:00
End	: ETH = 1111.46	EVIV = 149.21	at 2022-11-10 00:00
Returns:	ETH = -31.35%	EVIV = 89.43%	
Start	: BTC = 21216.62	BVIV = 56.10	at 2022-11-06 16:00
End	: BTC = 16012.43	BVIV = 104.60	at 2022-11-10 00:00
Returns:	BTC = -24.53%	BVIV = 86.47%	

### Links:

[1] Coindesk report:

<https://www.coindesk.com/business/2022/11/02/divisions-in-sam-bankman-frieds-crypto-empire-blur-on-his-trading-titan-alamedas-balance-sheet/>

[2] Alameda CEO's tweet: <https://twitter.com/carolinecapital/status/1589264375042707458>

[3] Binance CEO's tweet: [https://twitter.com/cz\\_binance/status/1589283421704290306](https://twitter.com/cz_binance/status/1589283421704290306)

[4] Timeline: <https://www.coindesk.com/markets/2022/11/12/the-epic-collapse-of-sam-bankman-frieds-ftx-exchange-a-crypto-markets-timeline/>

### Timeline:

