

Digital Tools Project-Effect of Interest Rate Changes on Cryptocurrencies.

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Introduction

In this project we aim to analyse the effect of FED rate changes on the price of BTC and also the price action.

We will look at multiple methods and see if there are any significant results with an aim to create a strategy we could use to successfully trade cryptocurrency markets.

Our Code

The code we have developed within Python, we have used a range of python packages as follows:

- ▶ Pandas
- ▶ Numpy
- ▶ matplotlib

The following were used for our data handling, data analysis and our data visualisation.

Findings, n day change

We ran multiple methods the first was an analysis of the price change n days after a FED rate change. We were looking to see if there is a significant move on a specific day.

	FED_change
FED_change	1.000000
0day	-0.121775
1day	-0.071150
2day	-0.137565
3day	-0.220316
4day	-0.156568
5day	-0.197437
6day	-0.272994

Findings, n day change

We see no significant evidence of a price change in a certain direction on a specific day. So we will now perform a moving average analysis.

Findings, Moving Average

As we observed no significant result we have moved onto Moving average in which we obtained the following data/results.



Dates	10MA_after	in C10	50MA_after	in C10	100MA_after	in C100
2016-12-15	832.159	1	907.1	1	1007.87	1
2017-03-16	1039.83	1	1182.86	1	1737.59	1
2017-06-15	2621.48	1	2562.62	1	3301.4	1
2017-12-14	16789.5	1	13934.8	1	11728.9	1
2018-03-22	7876.63	1	8304.66	1	7788.05	1
2018-06-14	6510.16	1	6917.66	1	6766.36	1
2018-09-27	6598.83	1	6428.51	1	5190.92	1
2018-12-20	3914.6	1	3714.32	1	3808.29	1
2019-05-02	6108.16	1	7841.82	1	9381.62	1
2019-08-01	11331.1	1	10518.1	1	9583.72	1
2019-09-19	9099.63	1	8689.59	1	8161.01	1
2019-10-31	9188.94	1	7956.84	1	8143.51	1
2020-01-30	9562.93	1	8648.74	1	8031.78	1
2020-03-04	7586.75	1	6816.72	1	7991.54	1
2020-03-16	6039.31	1	7045.8	1	8233.25	1
2021-06-17	34199.7	1	35099.9	1	40917.5	1
2022-03-17	42922.9	1	41754.3	1	34800.7	1
2022-05-05	32015.5	1	28167	1	25075	1

Findings, Moving Average

Once again we see nothing significance so we will move onto volatility analysis.

Findings, Volatility

We now chose to analyse if there is any effect on the volatility and daily change of the BTC price data when there is a FED rate change.

Dates	VAR5_after	in CI5	VAR10_after	in CI10	VAR20_after	in CI20
2016-12-15	58.7501	1	2879.67	1	10397.7	1
2017-03-16	5495.71	1	5703.06	1	4116.18	1
2017-06-15	8799.64	1	8087.16	1	7507.3	1
2017-12-14	1.28859e+06	1	4.24513e+06	1	3.77894e+06	1
2018-03-22	149627	1	621939	1	565757	1
2018-06-14	16939.5	1	68529.4	1	68476.3	1
2018-09-27	1810.74	1	2119.79	1	18416.3	1
2018-12-20	13713.1	1	18449.9	1	15011.3	1
2019-05-02	15027.7	1	290445	1	970608	1
2019-08-01	300588	1	326216	1	408592	1
2019-09-19	375869	1	872259	1	627497	1
2019-10-31	6155.87	1	44146.8	1	170059	1
2020-01-30	11754.9	1	82583.4	1	124992	1
2020-03-04	261404	1	2.49269e+06	1	2.19922e+06	1
2020-03-16	325954	1	396339	1	299765	1
2021-06-17	5.60069e+06	0	4.21199e+06	1	2.3778e+06	1
2022-03-17	356444	1	3.30016e+06	1	4.99017e+06	1
2022-05-05	7.11792e+06	0	8.71889e+06	1	5.96133e+06	1
2022-06-16	400450	1	458997	1	466011	1
2022-07-28	113644	1	154663	1	279407	1
2022-09-22	52446.5	1	55977.4	1	147491	1
2022-11-03	1.02615e+06	1	4.2326e+06	1	4.2326e+06	1

Findings, Volatility

	0	1	2	3	4	5
Dates						
2016-12-15	False	False	False	False	False	False
2017-03-16	False	False	False	False	False	False
2017-06-15	False	False	False	False	False	False
2017-12-14	False	False	False	False	False	False
2018-03-22	False	False	False	False	False	False
2018-06-14	False	False	False	False	False	False
2018-09-27	False	False	False	False	False	False
2018-12-20	False	False	False	False	False	False
2019-05-02	False	False	False	False	False	False
2019-08-01	False	False	False	False	False	False
2019-09-19	False	False	False	False	False	False
2019-10-31	False	False	False	False	False	False
2020-01-30	False	False	False	False	False	False
2020-03-04	False	False	False	False	False	False
2020-03-16	False	False	False	False	False	False
2021-06-17	False	False	False	False	True	True
2022-03-17	False	False	False	False	False	False
2022-05-05	False	False	False	False	False	False
2022-06-16	False	False	False	False	False	False
2022-07-28	False	False	False	False	False	False
2022-09-22	False	False	False	False	False	False
2022-11-03	False	False	False	False	False	False

Findings, Volatility

Once again we see the FED rate change has no significant effect of the BTC price change or price Action, we see some significant results but we do not believe this is due to the FED changing the rate and more likely because of something else happening in the world and the market.

Conclusion

In conclusion we do not believe, there is a significant effect of FED rate changes on the price of BTC. So we are unable to come up with a profitable trading strategy based on FED rate change and FED announcements alone.