

### Summary :

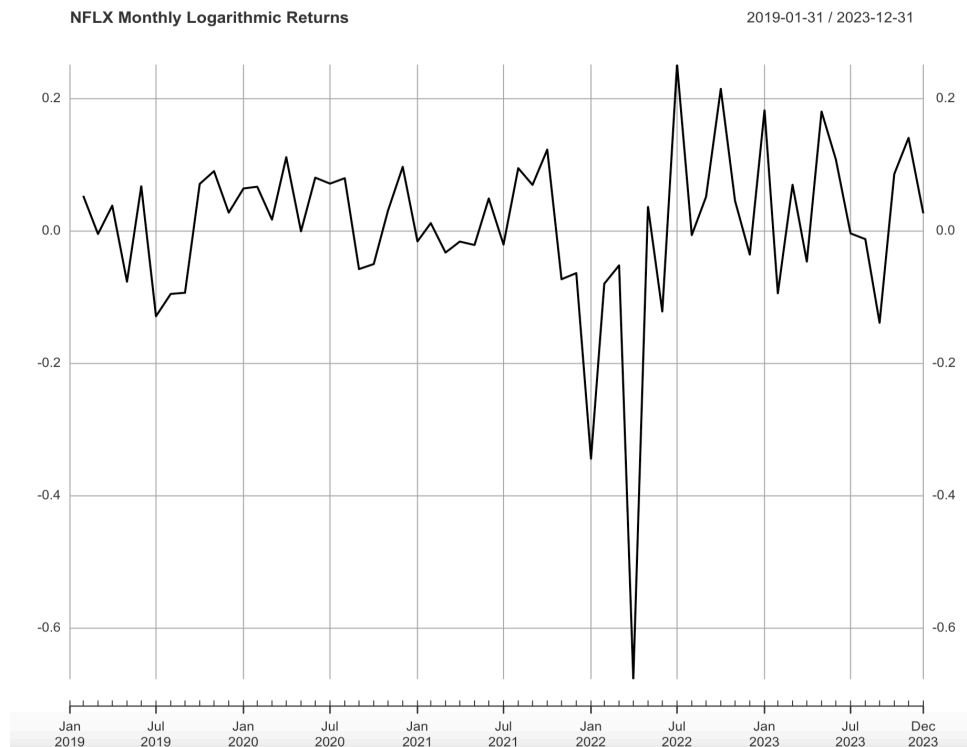
Step 1 : The portfolio consists of the four securities: 3 stocks and one cryptocurrency.

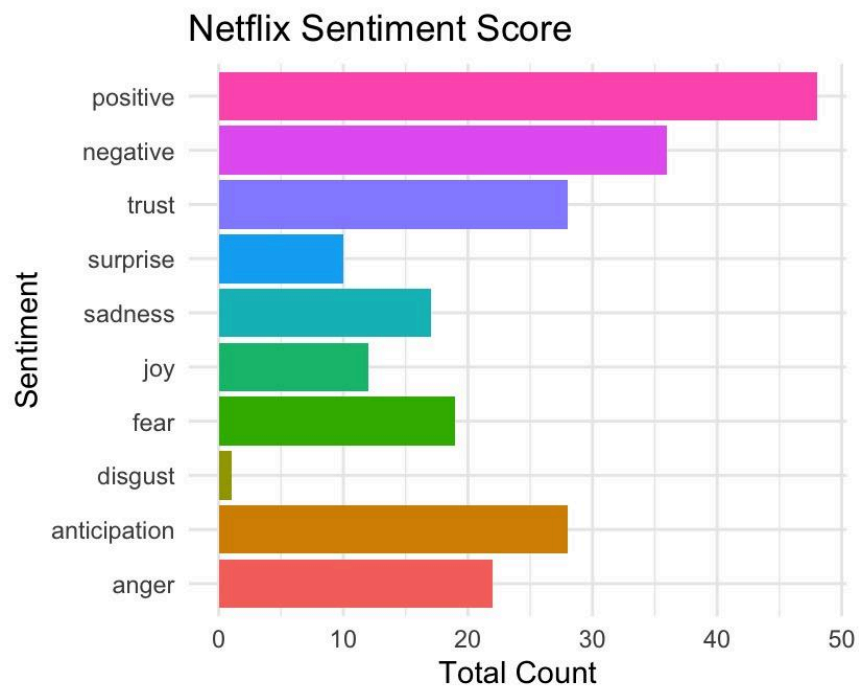
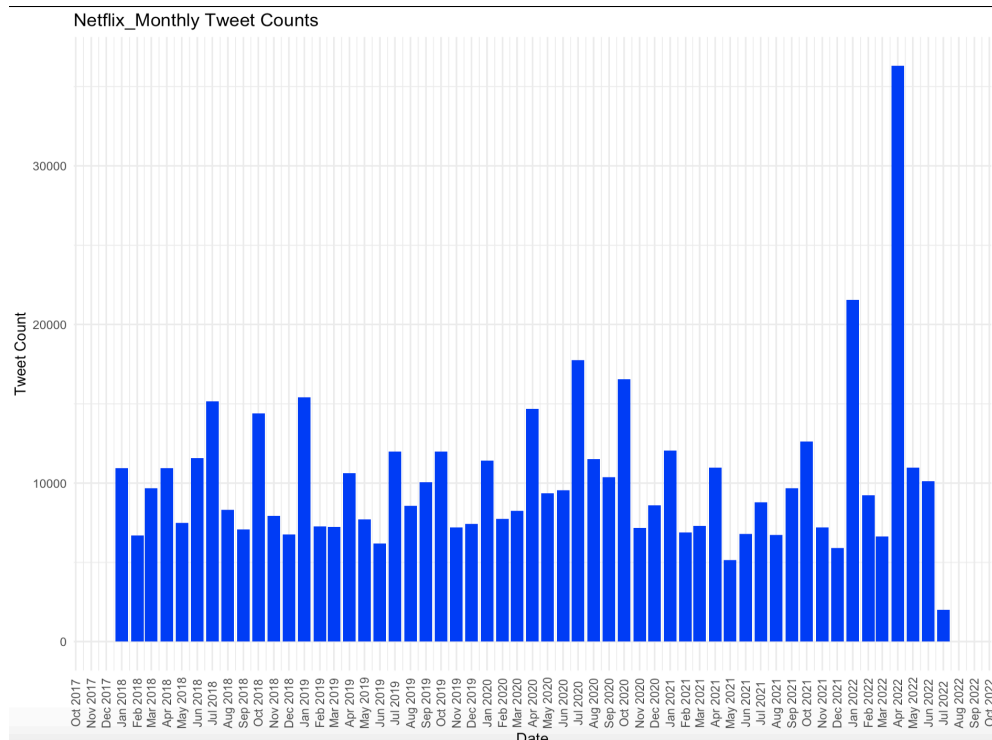
The selected securities are listed as follows:

- AAPL or Apple
- NVDA or Nvidia
- NFLX or Netflix
- BTC or Bitcoin

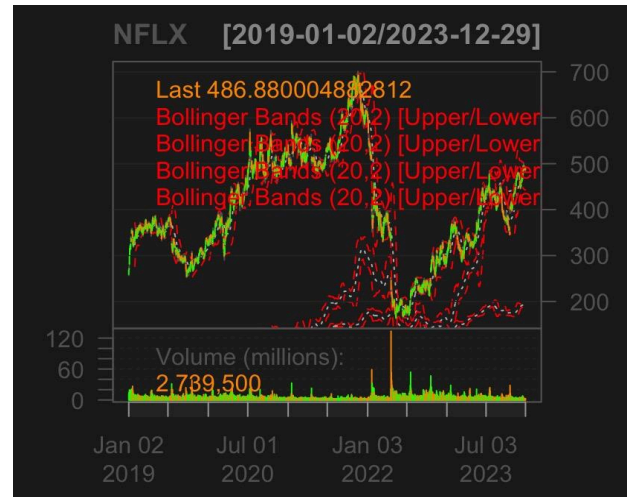
## Step 2 : Data Retrieval

NFLX (Netflix) : We analyzed Netflix Log returns(Monthly and Daily) from 1st Jan 2019 to 31st Dec 2023. It can be observed in the figure below that there is a big drop in the stock return between January 2022 to July 2022.





After conducting a sentiment analysis and counting the number of tweets we can see there is a jump in April 2022 and the sentiment associated with these tweets is a mix of negative, anger. In our data we can clearly see reddit chats related to Netflix losing around 200k subscribers during this time period.



The above figures depict the Bollinger Bands and the simple moving averages for Netflix. Here we can again see a huge drop in the closing price between January 2022 to July 2022 and a significant increase in the volume of trading

### Important Factors

We built a correlation matrix with different factors with  $\log(\text{closing price})$

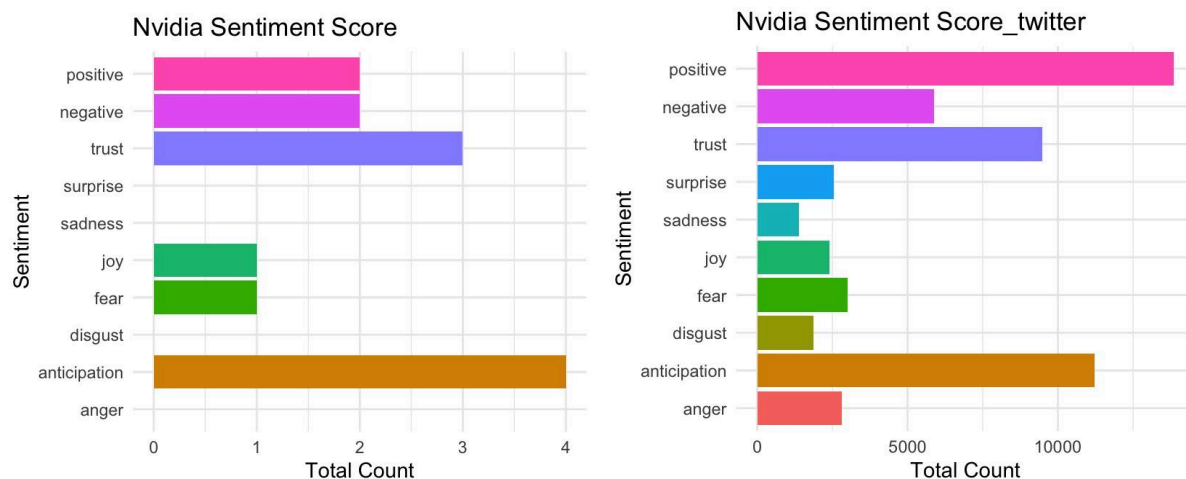
1. Diluted Earnings per share : -5.8%
2. Gross Margin : -7.9%
3. Revenue: -4.4%

### NVDA(NVIDIA) : Trading, Fundamentals Analysis





As we can see from the the Bollinger Bands and the simple moving averages trading and the returns for NVIDIA remain consistent and the trading volume is also pretty consistent



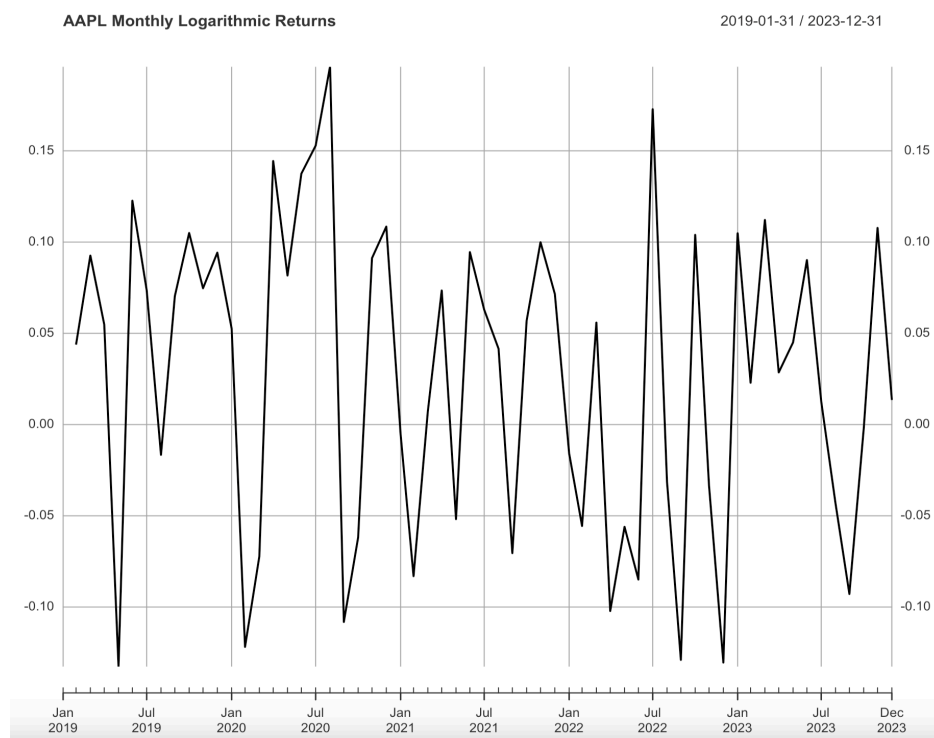
We can see this with the sentiment score for NVIDIA on Reddit and Twitter. There is huge anticipation alongside mostly positivity associated with the stock.

## Important Factors

We built a correlation matrix with different factors with  $\log(\text{closing price})$

1. Diluted Earnings per share : -2.5%
2. Gross Margin : -1.05%
3. Revenue: -2.5%

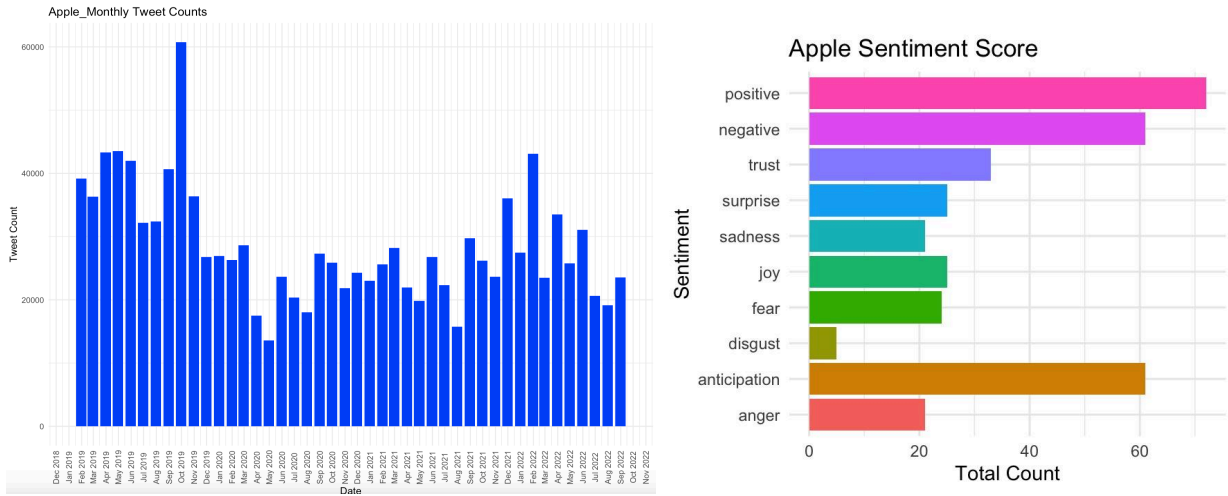
## APPLE(AAPL) : Trading, Fundamentals and other Data



Returns on Apple during this time period follow a volatile pattern. The returns and the losses are spread out. However if we look at the Bollinger Bands and the simple moving averages we can see that there is a clear growth in the closing stock price.



Looking at the Monthly tweet count and the trading volume, it can be observed that the trading volume is at its peak during the same time period as the monthly tweets peak. Moreover, if we see the sentiment score we can see that for Apple stock there is a mix of positive, anticipation and



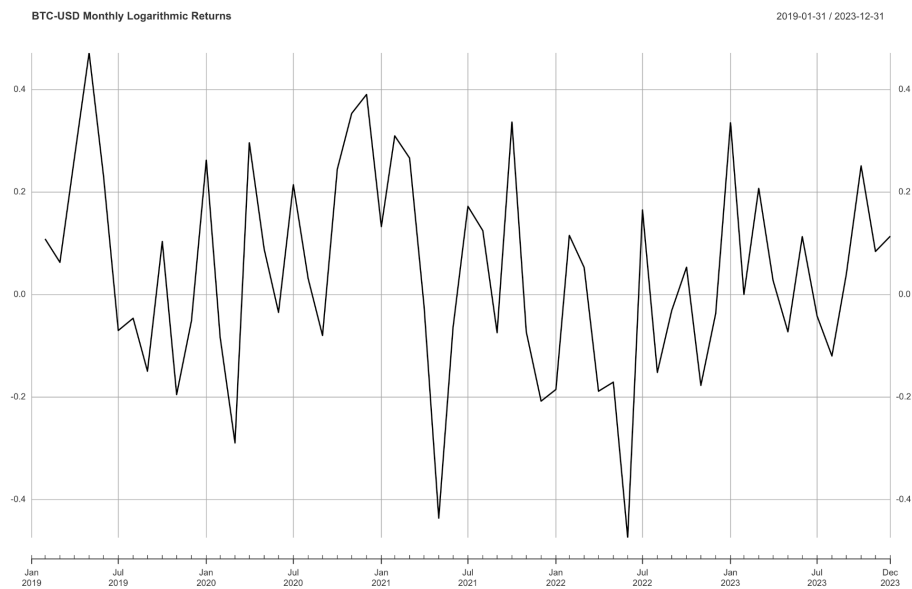
## Important Factors

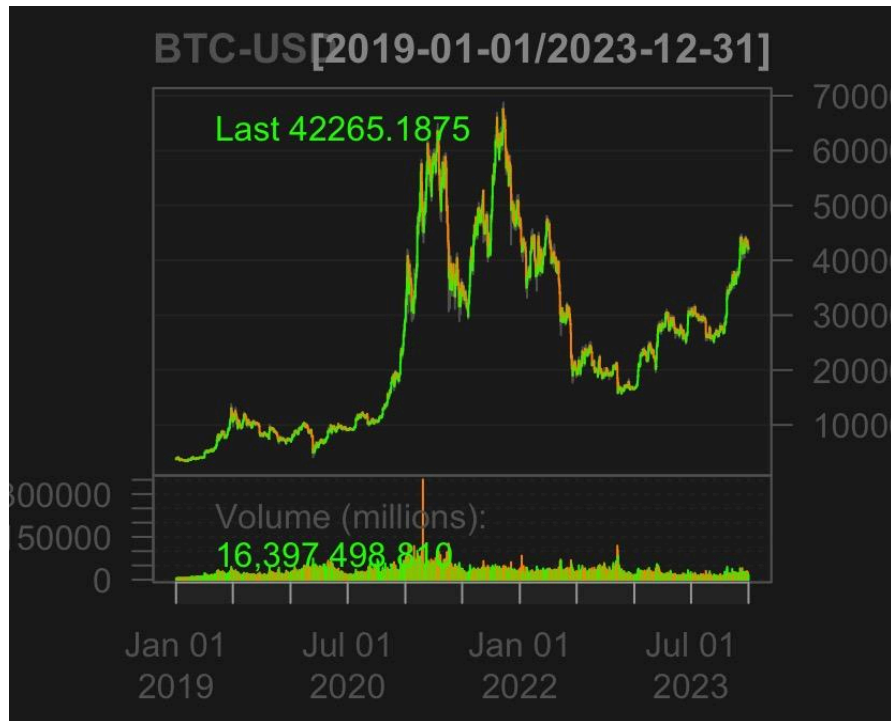
We built a correlation matrix with different factors with  $\log(\text{closing price})$

1. Diluted Earnings per share : -3.9%
2. Gross Margin : -6.7%

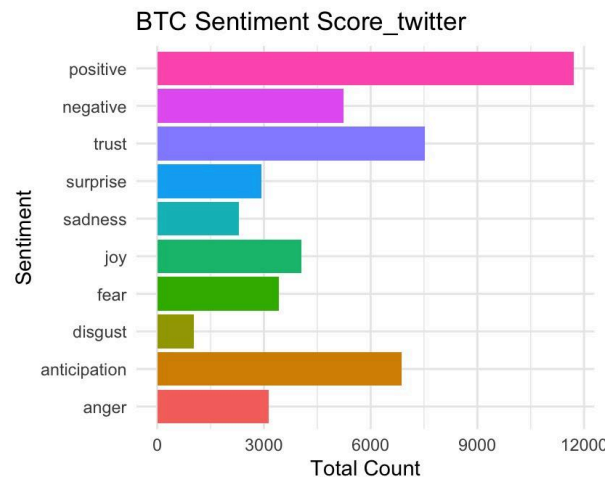
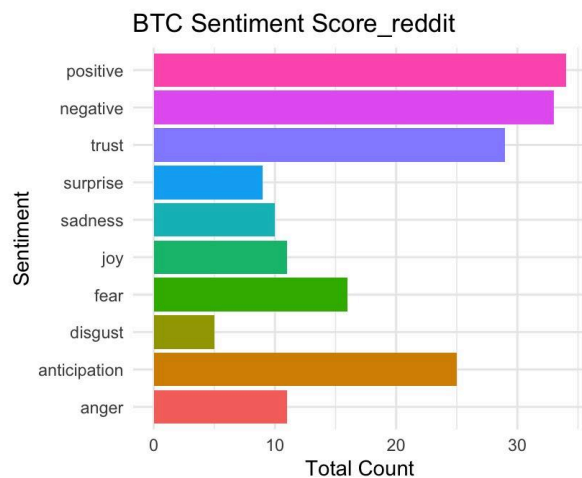
## BTC (Bitcoin) : Trading, Fundamentals and Other Data

For BTC we observe a similar pattern as Apple where there is a big drop in the summer of 2021 and the summer of 2022.





If we observe BTC's Bollinger bands and moving averages we can see a peak in 2021 and a big drop in 2022. This has coincided with the increase in Interest rates in the US where Blockchain being a rather new technology experienced a crash as the interest rates increased.





## Big Data Alpha Model

We ran a Fama French Three-Factor Model to calculate the excess returns on our portfolio.

### Steps to run the model

1. Using the quarterly returns data we calculated the portfolio returns
2. Then we added the FAMA French Factor Model data from the last 2 years
3. We ran a regression and below are the results

### Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.7288	0.4573	1.594	0.117
RmxRf	4.2061	3.0833	1.364	0.178
SMB	4.0120	3.8534	1.041	0.302
HML	2.5977	2.9906	0.869	0.389
Rf	-607.7491	449.6934	-1.351	0.182

Residual standard error: 0.4027 on 54 degrees of freedom

Multiple R-squared: 0.126, Adjusted R-squared: 0.06126

F-statistic: 1.946 on 4 and 54 DF, p-value: 0.116