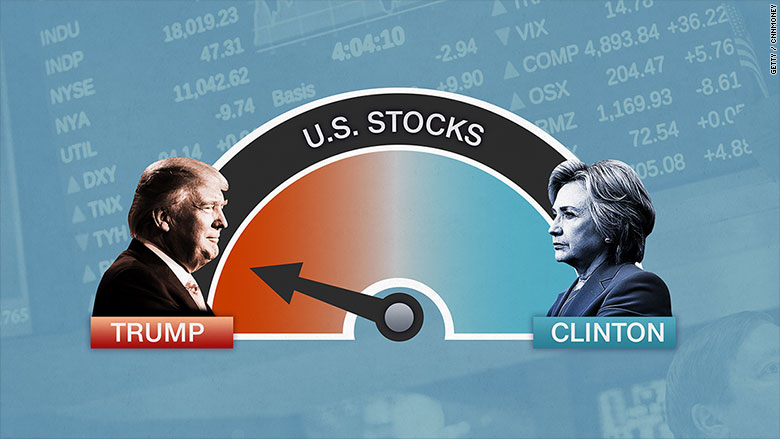
“TRUMP” EFFECT

A Statistical Analysis



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MOTIVATION AND BACKGROUND

The announcement of Donald Trump running for presidency has been extremely controversial in general. It has also been very tumultuous for the stock market. Thus, our investors have been nervous and have been looking to us to provide some amelioration. Take this quote for example (that our investor asked us about)

"… if Clinton wins it should be up about 3 percent and if Trump wins, it should go down 7 percent,"

[said Eric Zitzewitz, Economics Professor at Dartmouth (Domm, P)].

As the quote indicates, some renowned economists have speculated significant drops in the market - whereas other parties have expected markets to preform much better. Possibly, under the administration of a more business-friendly government. In fact, everyone with a voice has been making their own prediction as to how the market (including certain stocks) would perform, if Trump was elected. Unfortunately, as we often see, no matter how good the model and assumptions are, the resulting predictions are often wildly off. This is exactly what happened when the markets dipped but then rallied to reach an all-time high.

Since the date Trump became the republican nominee on July 19th, 2016 until he was elected president there has been a substantial effect on the stock markets. This is the date where we split our dataset into two.

Additionally, Trump has taken many jabs at specific companies such as Boeing (BA), which has caused speculation related swings in their stock prices. Other stocks such as Apple (AAPL) have been influenced by his foreign policy (Stewart, E). At times stocks move because of news of his future economic policies, otherwise they move based on his comments. We would like to further understand the impacts of the election and afore mentioned actions.

Due to the panic-inducing and controversial nature of this phenomenon (coined the “Trump” Effect), we have decided to carry out some in-depth statistical investigation and build an insight gathering application to present to investors and have them hopefully be assured that they have made the right decision to invest with us. (In fact, we’re sure they will rest assured. Are they going to get “panic-suppression-through-rational-analysis” tools elsewhere? We don’t think so.)

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## APPROACH AND TOOLS

As of today, we have some historical data about the Trump Effect. We would like to analyze the implications of the trump election on certain sectors of interest, benchmarking them against the market. In other words, we would like to adopt a “long horizon” event methodology to analyze the general market “pre-” and “post-” trump related news. The two timeframes we are investigating range from six months prior to July 19th, 2016 (absence of “Trump” effect) and from this date until the present (possible presence of Trump effect).

We are selecting the S&P 500 index to be representative of the market and allowing the client to select another stock of interest (from each major sector) to compare against.

We will be leveraging the following tools to analyze the data: histograms, quantile-quantile plots and regression plots. Once the data has been analyzed, we will be using the following: confidence interval computation, means comparison using two-tailed test statistics and regression (i.e. stock against index) plots. This will allow us see the correlations between stocks and the market as well as notice the change in returns of individual stocks, which in turn should shed some light on the encompassing sector as well.

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## DATASET

We have used the following stocks, assuming they are representative of their respective sectors:

Apple Inc. (AAPL),

Exxon Mobil Corporation (XOM),

Boeing Co (BA),

JP Morgan Chase & Co. (JPM)

Apple represents retail, Exxon – commodities, Boeing – manufacturing and JP Morgan – finance. Apple prices were expecting significant gains

**“Under Trump's plan, no business of any size would pay more than 15% of their business income in taxes …”**

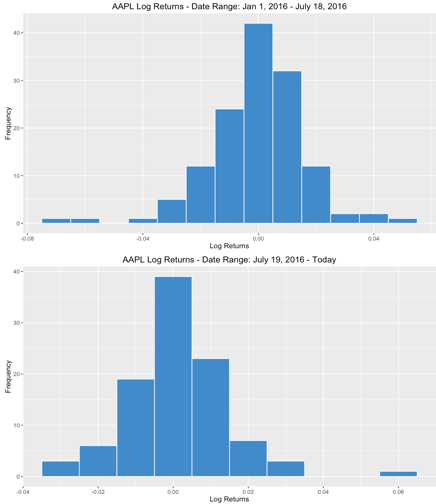
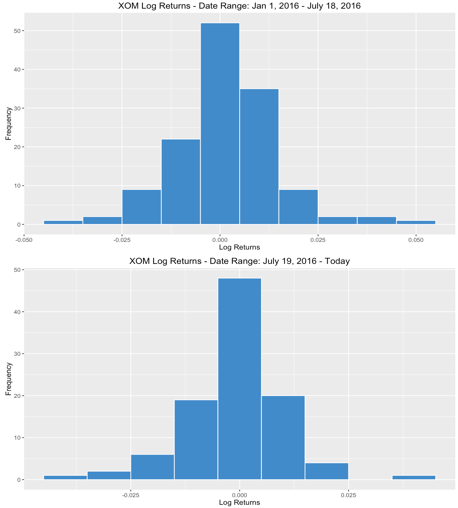
(Stewart, E). Boeing is also of interest because it was bashed heavily by Trump (owing to its manufacturing in Mexico) (La Monica).

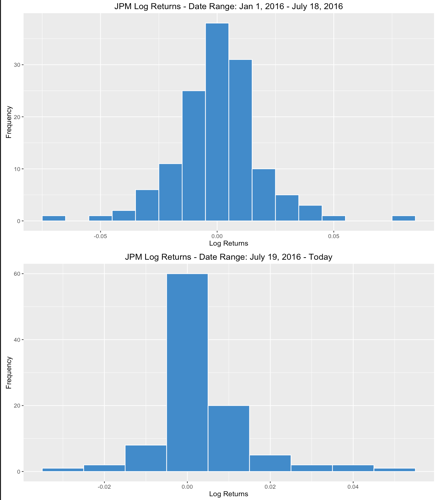
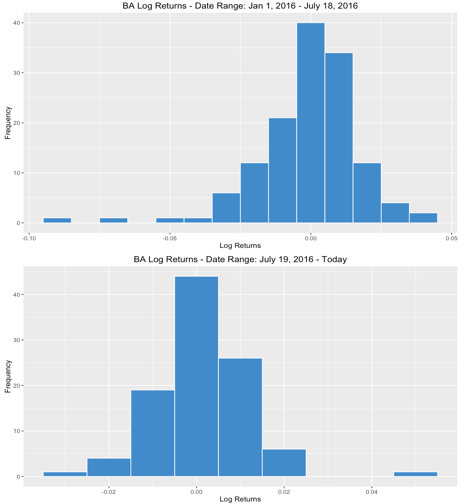
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## ANALYSIS AND INSIGHTS

### RETURNS

We first graphed log-returns of each of our symbols for the date ranges 01/01/2016 - 07/18/2016 and 07/19/2016 – 12/09/16 and noticed that they were all normally distributed. See below. We also noticed more interesting observations per stock. Apple’s returns did move from a more negative to positive skewness – “loosely” showing an increase in returns as predicted by (Stewart, E). Boeing, despite being bad-mouthed by Trump, showed an increase in returns – consistent with (La Monica). We say “loosely” because interpreting skewness is complicated and varies from situation to situation.

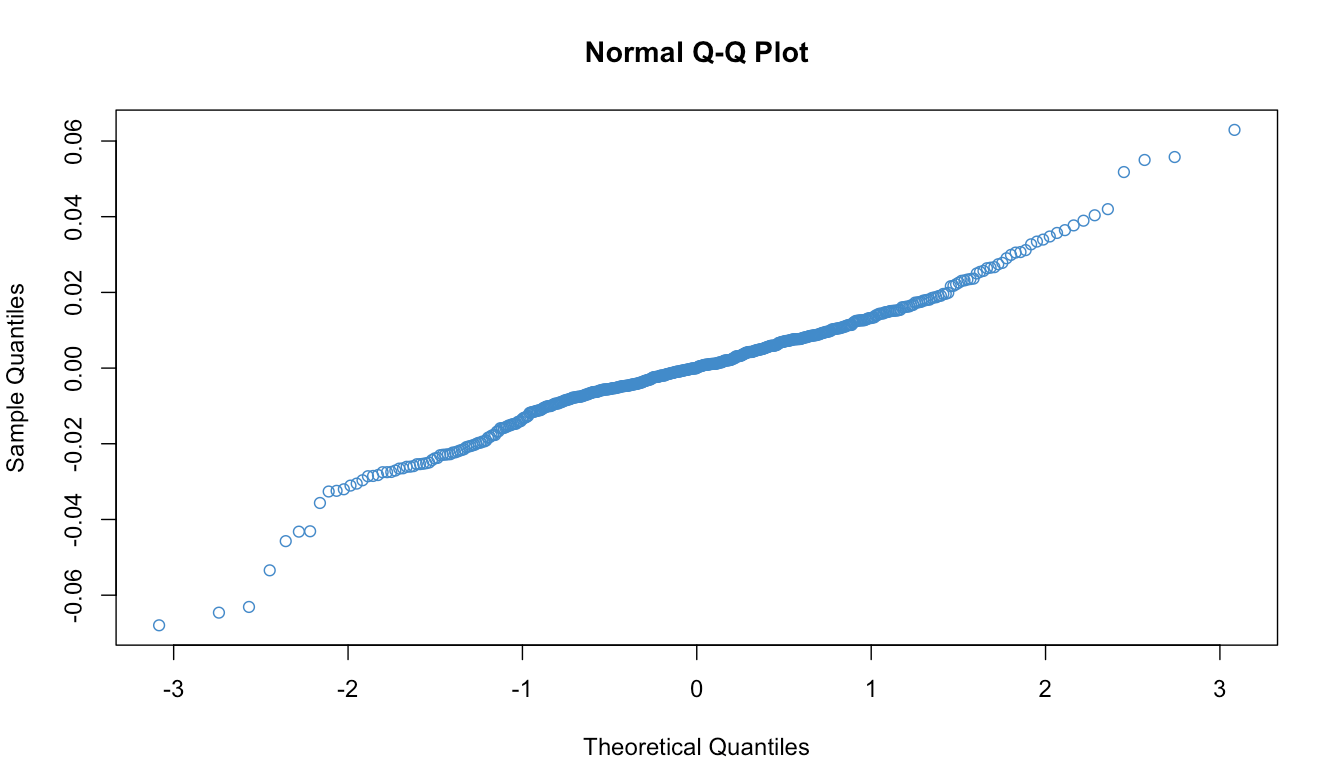
 

Exxon and JPM largely remain unchanged.

### QUANTILE–QUNATILE PLOTS

We then created quantile-quantile (probability) plots for each of our symbols, and we noticed that since the datasets followed an approximately straight line in all cases, we further confirmed that our price data was normally distributed. Here is an example of the AAPL Q-Q plot.



### REGRESSION AGAINST TIME

We then created a regression of stock prices against time and noticed that the regression was extremely noisy with R2 very close to 0 in all cases. Exact values are given in the table below.

|  |  |
| --- | --- |
| **Symbol** | **R2** |
| AAPL | 4.749578E-08 |
| XOM | 0.001669402 |
| JPM | 0.004031247 |
| BA | 0.0003160932 |

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