

FINANCE & RISK ANALYTICS WITH PORTFOLIO MANAGEMENT

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(UOA-Sept)

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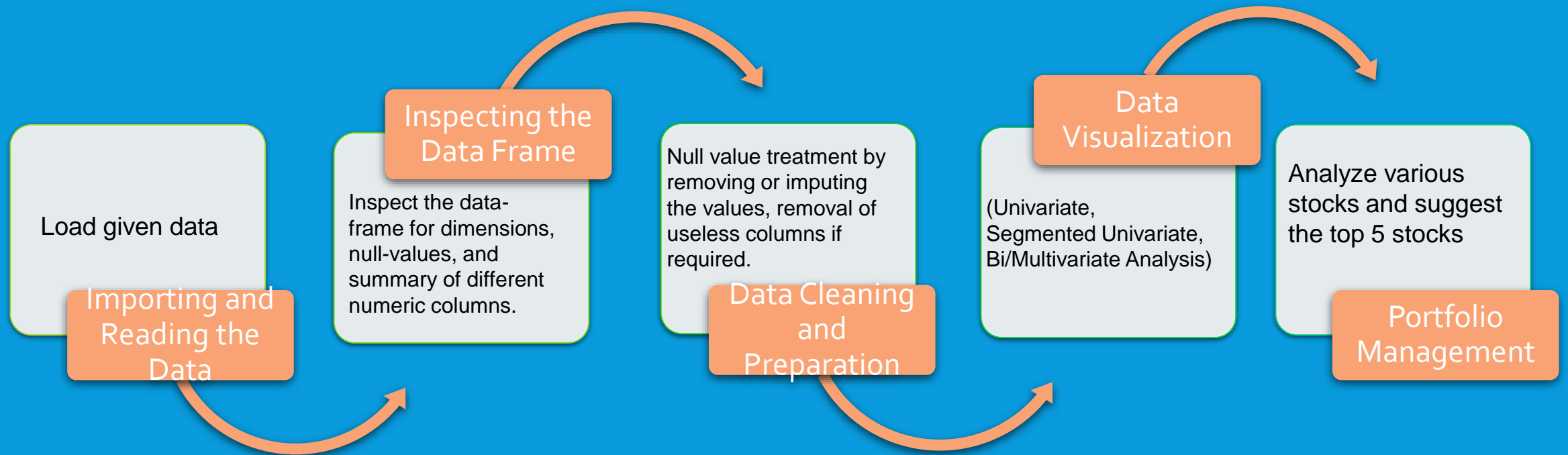
OBJECTIVE

- To read, understand the dataset, missing and null value treatment, and identify and rectify any other issues if any and keep the data in the relevant format.
- With the help of Exploratory Data analysis analyze the patterns of stocks available in the given datasets which helps to understand stock's closing price, normalize closing price, daily returns, comparison with other stocks, distribution of returns and few more.
- Manage Portfolio and suggest stocks to two different investor's as per their requirements based on the stock analysis.

AIM

- Provide consultation to two different investor's Mr. Patrick Jyenger and Mr. Peter Jyenger based on their requirements and Financial obectives.

ANALYSIS APPROACH



EXPLORATORY DATA ANALYSIS

CLOSING PRICE OF 'AAL' STOCK



Inferences:

- As per the graph it is clear that Closing Price of the stock is always varied and it is surprisingly following normal distribution.

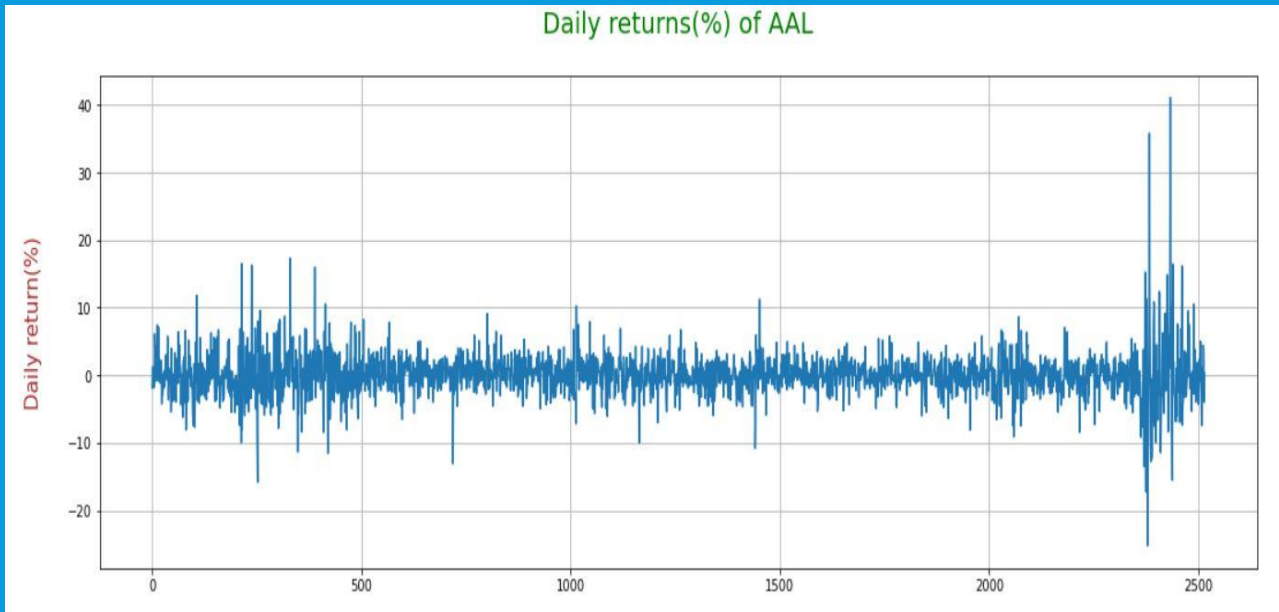
NORMALIZE CLOSING PRICE



Inferences:

- As per the graph it is clear that Normalized Closing Price of the stock also has almost the same pattern as actual closing price.

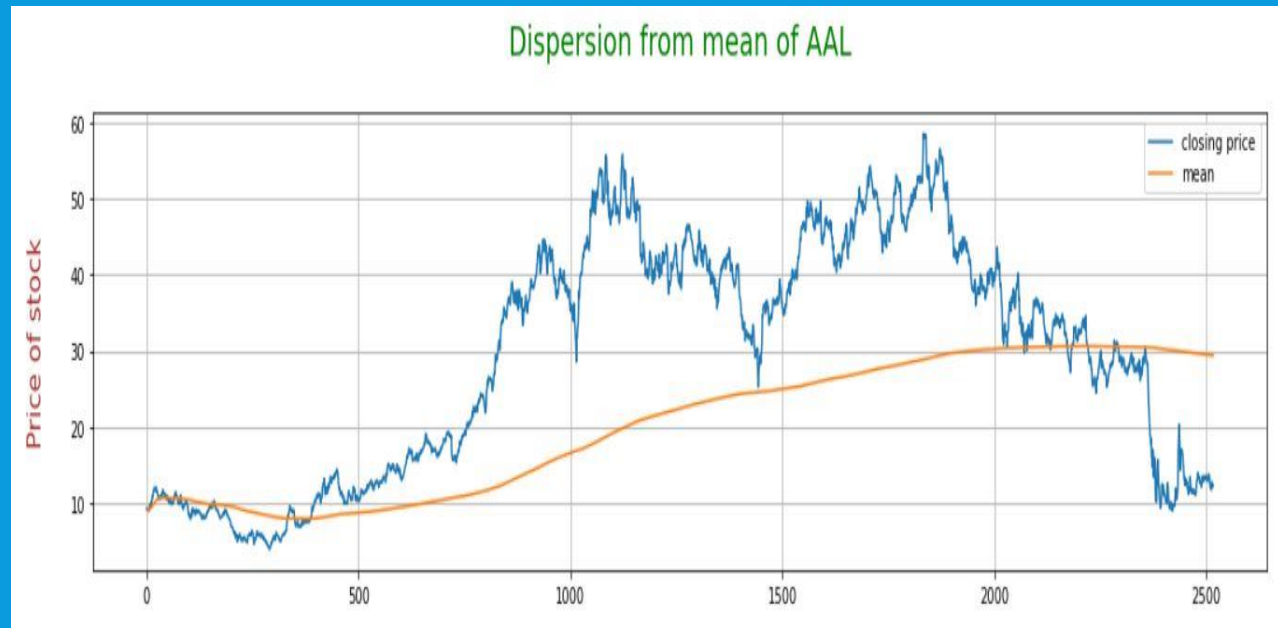
DAILY RETURN ANALYSIS



Inferences:

- This plot shows the % Daily Returns of the stock 'AAL'.
- Which varies between 45 and -30.
- However, maximum and minimum returns are between 2300 and 2400.

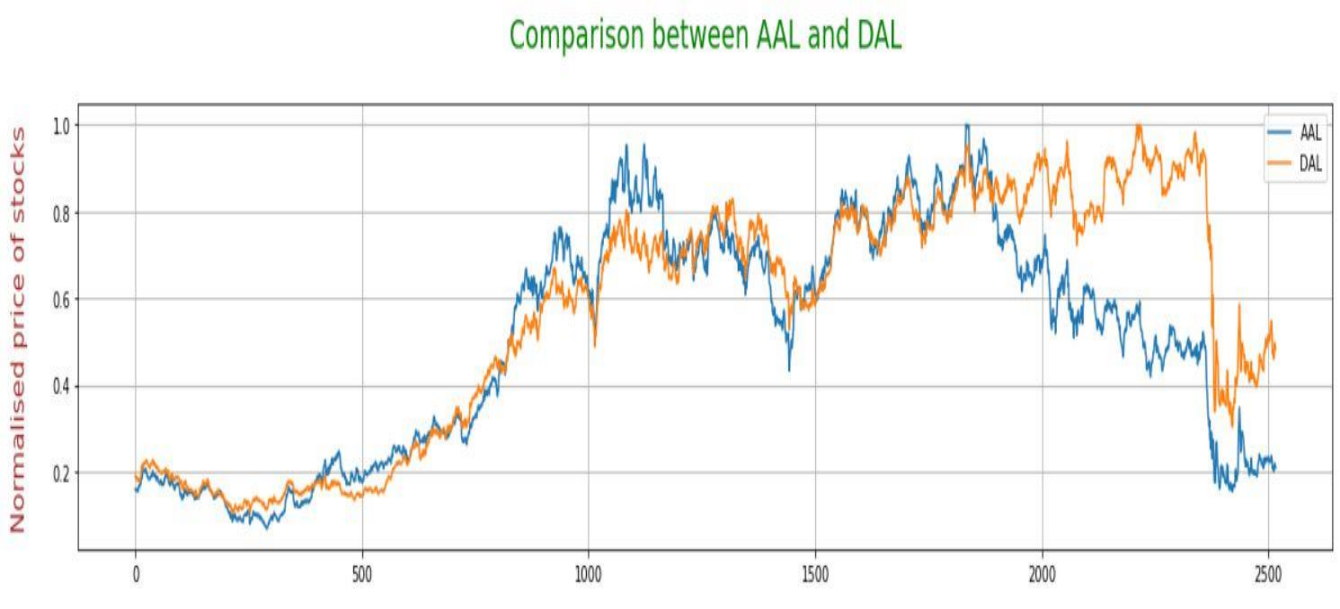
DISPERSION FROM MEAN



Inferences:

- This plot shows the Dispersion of 'AAL' stock closing price from the mean.
- Which shows that for some values it is very close to the closing price of the stock.
- At most of the points the closing price is higher than its' Mean.
- At few points closing price is lower than the mean.

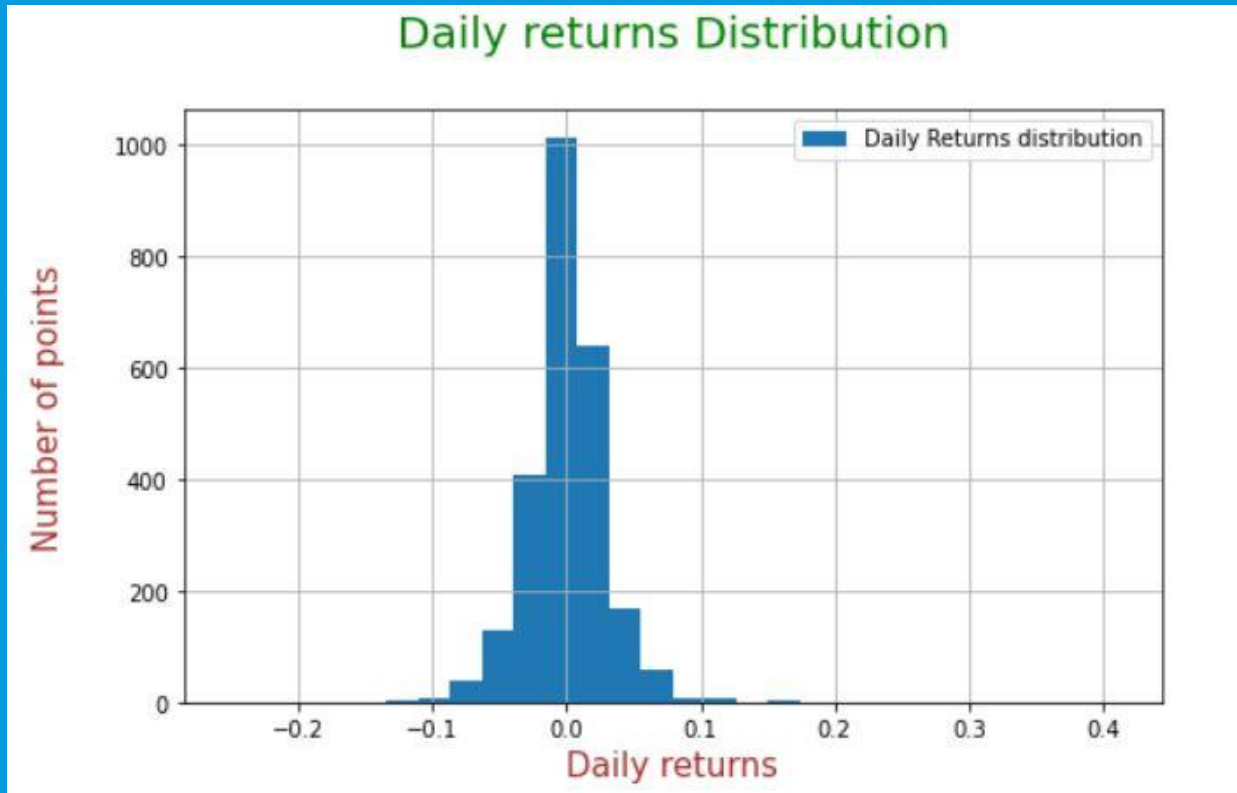
COMPARISON BETWEEN TWO STOCKS



Inferences:

- The attached line graph shows the comparison of two different stocks 'AAL' and 'DAL' and it shows that up-to point 1575 both are following almost same pattern.
- Whereas, after 1575 and before 2500 it is showing larger difference between both stock's price.

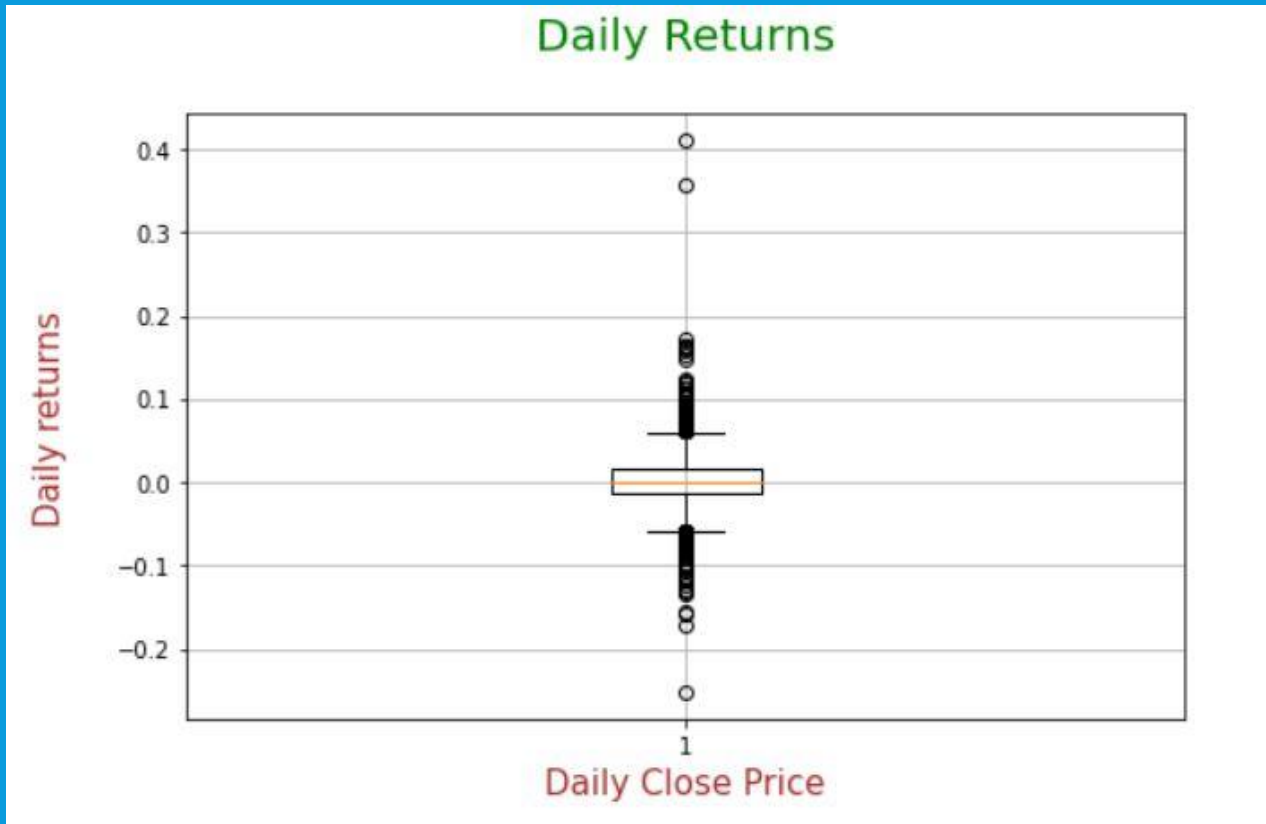
DAILY RETURNS DISTRIBUTION



Inferences:

- As per the attached Histogram Daily return distribution for the selected stock ('AAL') is tightly closed with the center .

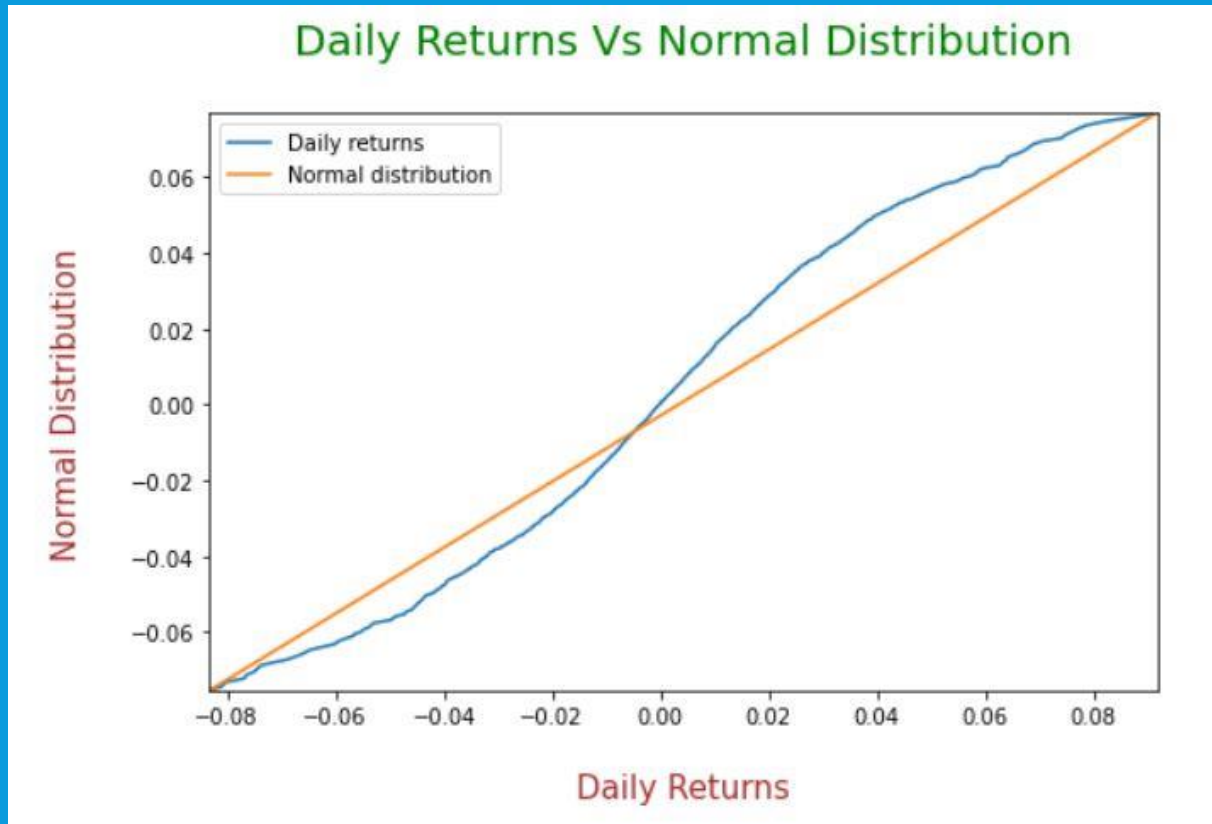
DAILY RETURNS BOX PLOT



Inferences:

- Box plot shows the outliers, min, max, and mean value for the selected stock ('AAL').
- Here, we can observe that very few daily returns of the stock are more than 0.2.

DAILY RETURNS VS NORMAL DISTRIBUTION



Inferences:

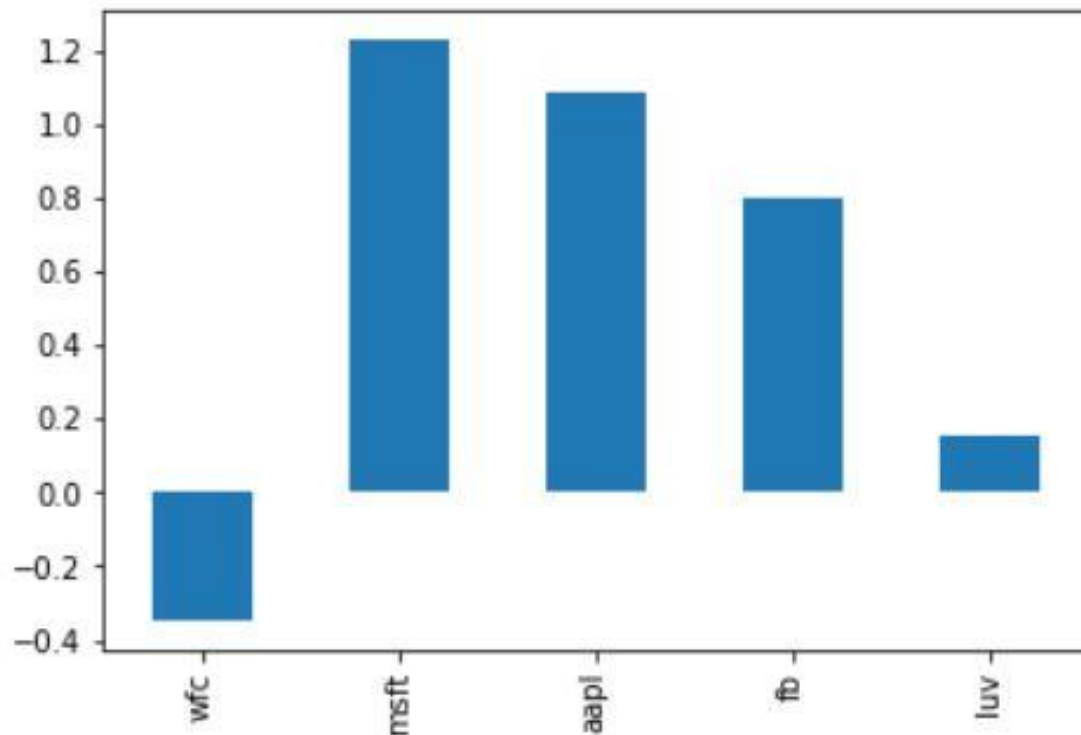
- As per the attached graph it is stated that Daily returns of a selected stock ('AAL') is very close to Normal distribution.
- However, towards positive direction it is little bit skewed.

FEW OTHER PARAMETERS

- We also calculated following few other parameters for the same stock 'AAL', that we have found as followings.
- Min. Price: \$4.63, Max. Price: \$12.07 (Between 05-10-2010 and 05-11-2011))
- Risk/Volatility of AAL: 10.94
- Correlation between two stocks 'AAL' and 'DAL' is 0.79.
- However, to see various visualization patterns of each stock and its' industry type , we need to refer interactive Dashboard which is prepared via Streamlit.

SHARP RATIO PLOT-A

Sharp Ratio Plotting

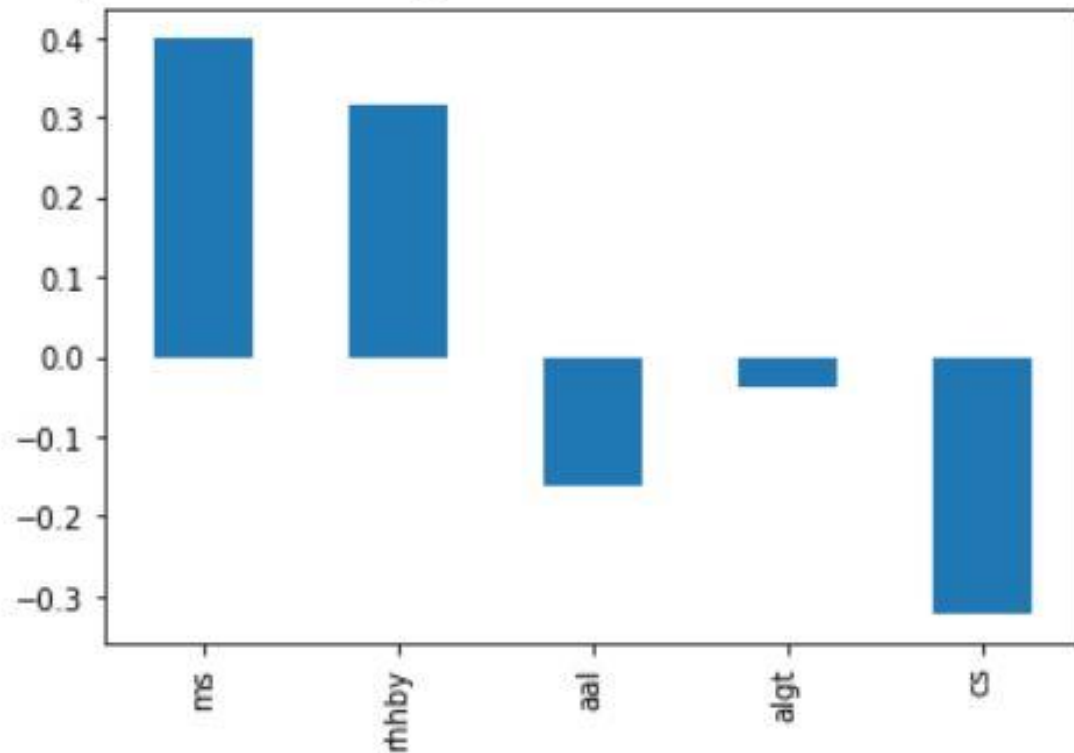


Inferences:

- Attached Bar graph shows the Sharp Ratio of 5 different stocks which are analyzed for Mr. Patrick Jyengar.
- It shows that 'WFC' has negative value whereas 'MSFT', 'AAPL', 'FB', and 'LUV' has decreasing Sharp Ratio.
- Sharpe Ratio adjusts the performance for the excess risk taken by an investor.
- Higher the Sharp Ratio better would be the portfolio return.

SHARP RATIO PLOT-B

Sharp Ratio Plotting



Inferences:

- Attached Bar graph shows the Sharp Ratio of 5 different stocks which are analyzed for Mr. Peter Jyengar.
- As per the chart 'CS', 'AAL', 'ALGT' has negative Sharp Ratio.
- Whereas, 'MS' and 'RHHBY' has positive Sharp Ratio.
- Here negative sharp ratio for 3 stocks out of 5 shows their higher Volatility and higher risk for this portfolio.

OUTCOMES/FINDINGS

- As per the analysis based on CAPM model and Sharp Ratio calculations we found out the expected returns and risk factor for each stock and accordingly maintain Portfolio for Mr. Patrick Jyenger and Mr. Peter Jyenger as per their interest.
- However, with average minimum risk of 6.11 and 2.04 times return, Mr. Patrick's investment could nearly doubled in next 5 years from \$500000 to \$1018299.28.
- Whereas, suggested stocks for Mr. Patrick are Aviation(LUV), Finance(WFC), Technology(MSFT, AAPL, FB).
- Suggested stocks for Mr. Peter Jyenger are Aviation (AAL, ALGT), Finance(MS, CS), and Pharma (RHHBY) by which he could earn \$2302309.36 return in 5 years, which is 2.3 times of his capital (\$ 1000000), with 21.11 times risk.

CONCLUSION

- After Portfolio management for both the investor's, we can say that the Stocks we found for **Mr. Petrik** are giving **2.04 times return** in the next 5 years but with very **low risk (6.11)**.
- However, selected stocks for **Mr. Peter** may give **2.3 times** return on his investment which is nearly **1.13 times higher** than **Mr. Petrick's** stock but simultaneously the **Avg. Risk** is nearly **15 times higher**.
- It means higher return may have higher risks.

THANKS VERY MUCH FOR YOUR
PATIENCE!