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Analysis of JP Morgan Stock

Introduction

J.P. Morgan is a name that is synonymous with the world of finance. J.P. Morgan quickly became one of the most powerful financial institutions in the world. This report will analyze the stock data from 5 years ago and then predict future prices using Python programming language. Some of the techniques used are data scrapping, data visualization, data cleaning, and prediction modeling.

Data Scrapping

The first technique used was data scrapping. I started scraping the historical stock data of J.P. Morgan from Yahoo finance. This was done using the yfinance module. I then specified the 5-year period I wanted to analyze. This gave me back the opening stock price, high of the day, low of the day, closing price, and volume for each day within the 5-year history.

Data Cleaning

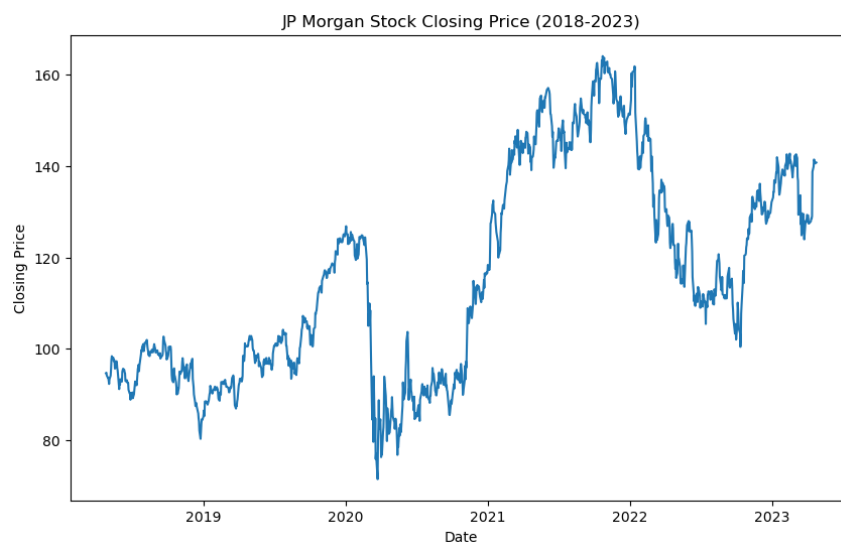
After scrapping the data, I had to clean all the data to make it possible to work with. I cleaned the data by removing all null and missing values as well as checking for outliers. Luckily since I used Yahoo Finance there were no missing values in the dataset.

Data Analysis

After cleaning the data, I wanted to find the mean daily return, standard deviation of daily returns and the Sharpe ratio. I found the mean daily return to be 0.0698% which would translate to an annual return of 25.5%. For example, a \$10,000 investment would expect to generate a \$6.98 increase every day. The next thing I found was the standard deviation of daily returns which measures the stocks volatility by analyzing the stocks returns day to day. In this case, the standard deviation of daily return was found to be 2.25%. That number is on the higher end, so the stock is seen as more high risk and volatile. The final calculation made was for the Sharpe Ratio. This a measure of the risk-adjusted return of a stock, which considers the stock's returns and the risk of those returns. The higher the ratio is indicating a higher risk-adjusted return. J.P. Morgan stock is a 0.031 which is relatively low.

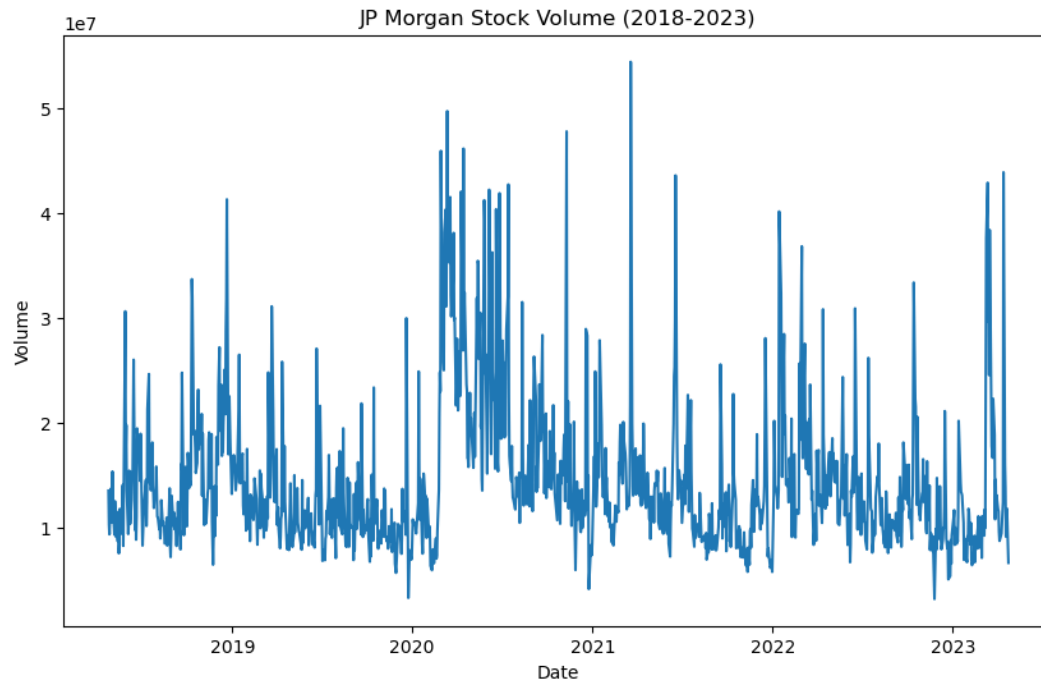
Data Visualization

The first visualization made plotted the daily closing price for J.P. Morgan over the course of 5 years.

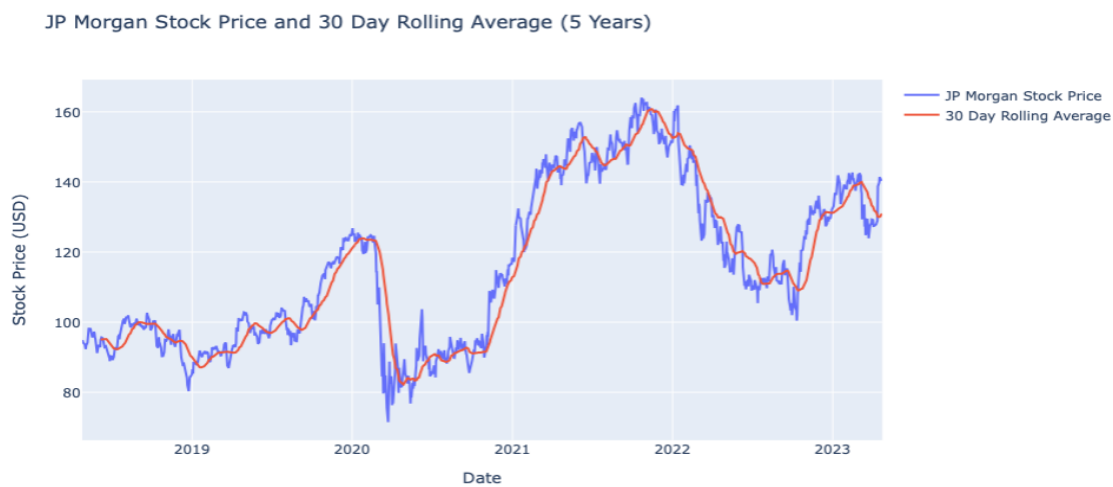


As we can see, J.P. Morgan struggled heavily in 2020, hitting its 5-year low. It is also worth noting that many companies struggled during 2020 due to the pandemic. We

can also see they greatly recovered and by late 2021 they were at their 5-year high. Next, we will look at the stock volume.



This graph shows how often the stock is being traded. The higher the volume the more the stock is being traded. After plotting the stock volume, we can look at the 30-day rolling average.



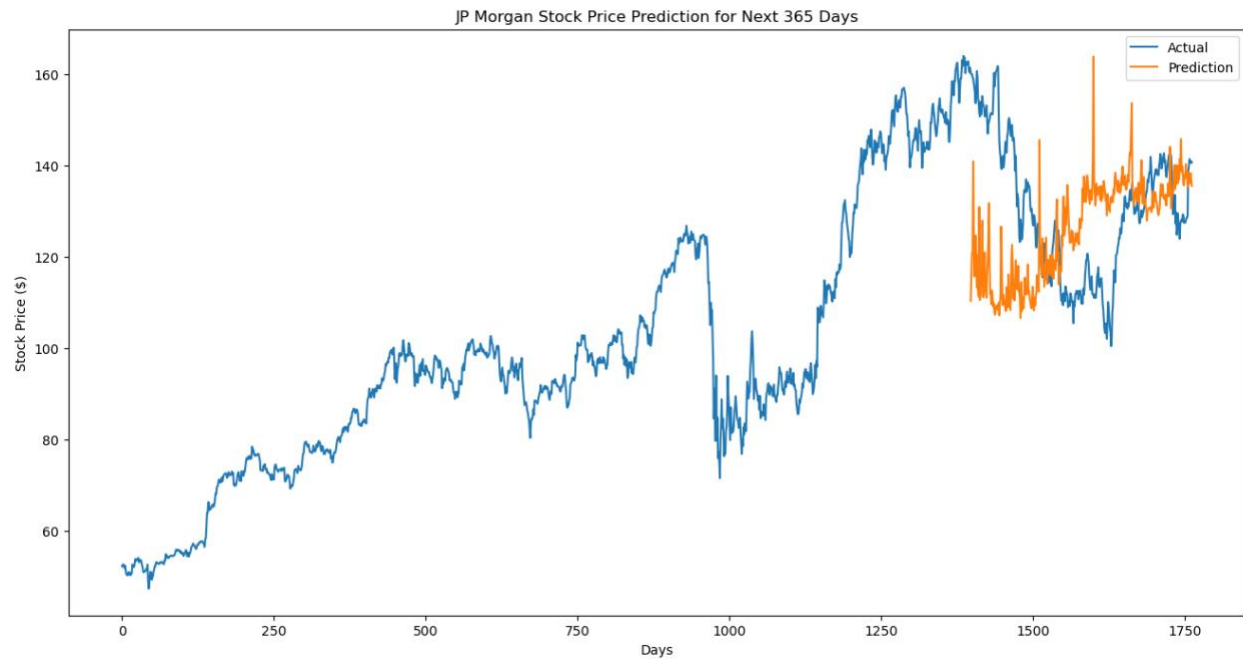
The 30-day rolling average is used to smooth out any short-term fluctuations and show more of the underlying trend. Next, we will look at a candlestick chart. The candlestick chart is like the previous closing price chart but gives a more in depth look of how the stock closed for the day. The green bodies of the plot indicate that the stock's closing price was higher than the opening price, indicating a bullish trend. The red bodies indicate that the stock's closing price was lower than the opening price, indicating a bearish trend.



Prediction Model

Finally, I built a prediction model using linear regression to predict the future closing prices.

Using the daily closing prices from the past 5-years I was able to train the model and make predictions for the following year. The x-axis is sorted by days because the graph is analyzing each daily closing price.



Conclusion

This stock analysis analyzed the historical stock data of J.P. Morgan using various techniques and achieved insights into the performance and risk associated with the stock. Based on the analysis findings, we can conclude that J.P. Morgan is a good stock for someone looking to hold long term. A prediction model was also made using linear regression to try to predict future stock prices. This analysis can be useful for an investor looking to invest in J.P. Morgan stock and provide insight into the future performance of the stock.