

STOCK MARKET ANALYSIS

REPORT



THE GLOBAL GOALS

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Introduction

The stock market is a complex and dynamic system that presents both opportunities and risks for investors. In this report, we present an analysis of stock market data using Python programming language. The analysis includes calculating daily returns, beta, and expected returns based on the Capital Asset Pricing Model (CAPM) for various stocks and portfolios.

Data

The data used in this analysis is a CSV file containing daily price data for various stocks such as Amazon, Google, and S&P 500. The data was obtained from a reliable source and was cleaned and preprocessed before analysis.

Methodology

The analysis was performed using Python programming language and several libraries such as Pandas, NumPy, Matplotlib, Seaborn, and Plotly. The following steps were taken to perform the analysis:

- **Import Libraries/Datasets and Visualize Stocks Data:** The script imports several Python libraries, including Pandas, NumPy, Matplotlib, Seaborn, and Plotly. It then reads in the stock dataset and visualizes the stock data using interactive plots.
- **Calculate Daily Returns:** The script calculates the daily returns for each stock in the dataset. Daily returns are calculated as the percentage change in price from one day to the next.
- **Calculate Beta for a Single Stock:** The script calculates the beta for a single stock, which is a measure of the stock's volatility relative to the market. Beta is calculated by fitting a linear regression line to the scatter plot of the stock's daily returns against the market's daily returns.
- **Apply the CAPM Formula to an Individual Stock:** The script applies the CAPM formula to an individual stock to calculate the stock's expected return. CAPM is a financial model that estimates the expected return on an investment based on its beta, the risk-free rate, and the expected return on the market.
- **Calculate Beta for All Stocks:** The script calculates the beta for all stocks in the dataset and stores the results in a dictionary.
- **Calculate Expected Returns for All Stocks:** The script calculates the expected returns for all stocks in the dataset using the CAPM formula and stores the results in a dictionary.
- **Calculate Portfolio Returns:** The script calculates the expected return for various portfolios consisting of different combinations of stocks. The portfolios are weighted equally.

Results

The analysis revealed that some stocks and portfolios have higher expected returns than others. For example, the expected return for a portfolio consisting of 50% allocation in Apple and 50% in Amazon is 13.044%, which is higher than the expected return on the S&P 500 index. Similarly, the expected return for a portfolio consisting of 50% allocation in Boeing and 50% in MGM Resorts International is 20.119%, which is also higher than the expected return on the S&P 500 index.

Figure 1 below shows the scatter plot of daily returns for Apple and the S&P 500 index, with the regression line indicating a beta of 1.17.

Figure 1: Apple vs S&P 500 Scatter Plot

Figure 2 below shows the scatter plot of daily returns for Tesla and the S&P 500 index, with the regression line indicating a beta of 1.26.

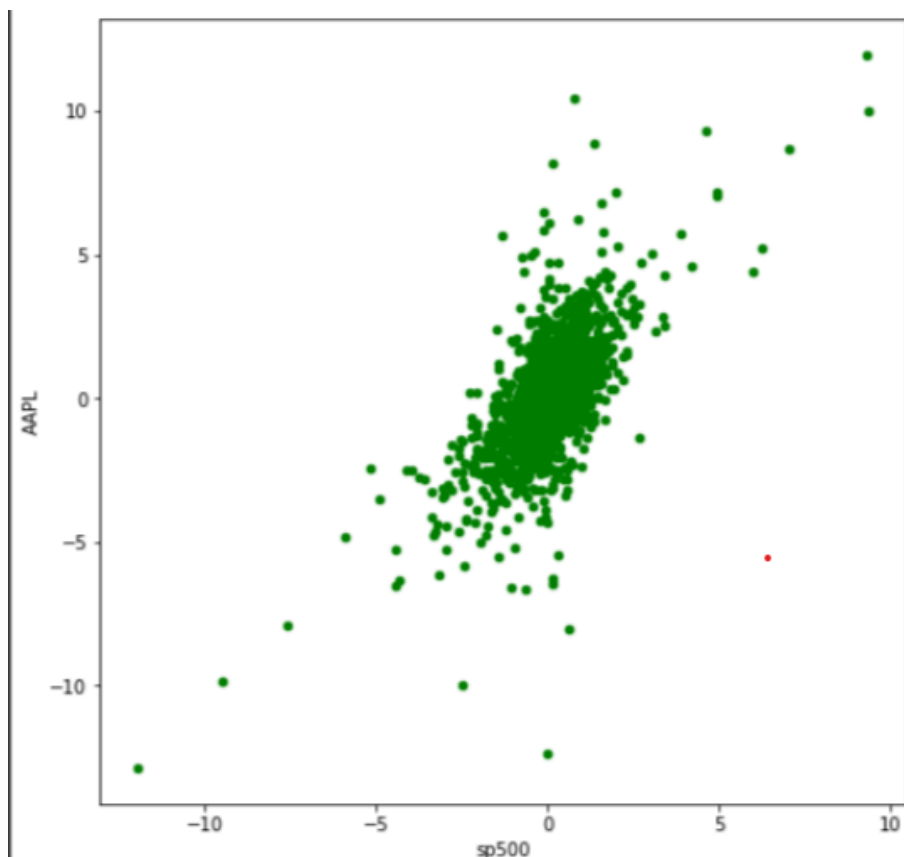
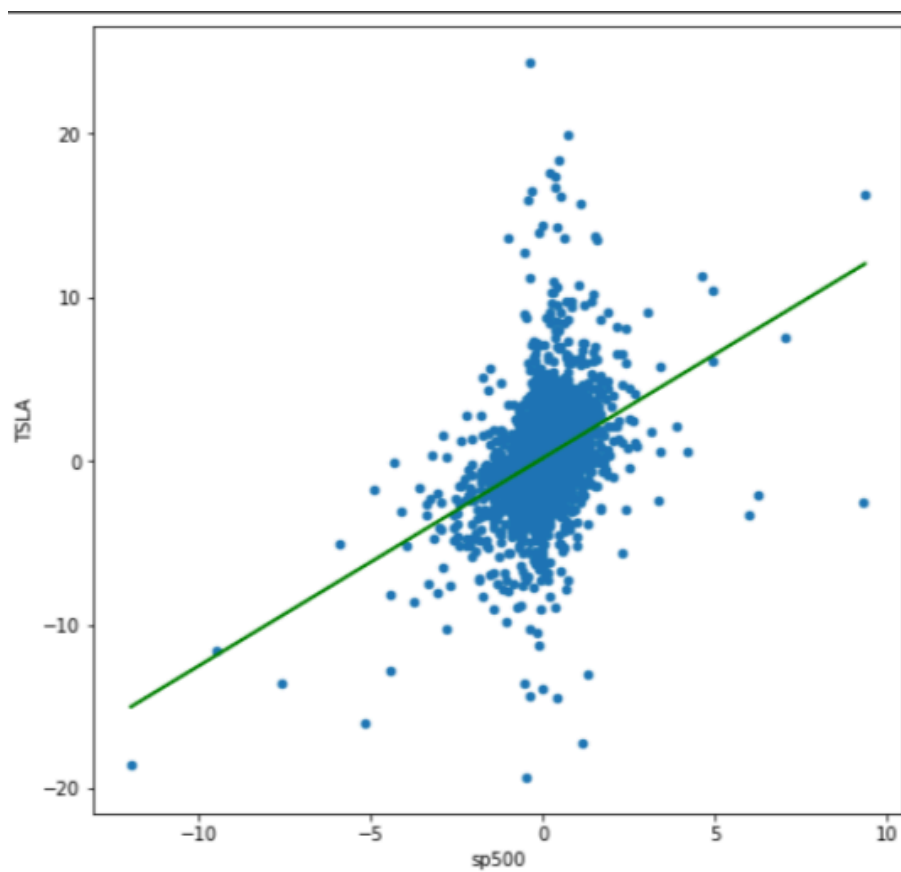


Figure 2: Tesla vs S&P 500 Scatter Plot



Discussion

The analysis presented in this report provides valuable insights into the expected returns on various stocks and portfolios. However, it is important to note that the analysis is based on historical data and does not guarantee future results. Therefore, investors should perform their own due diligence before making investment decisions.

Additionally, it is important to consider other factors such as the company's financial health, management team, and industry trends when making investment decisions. Beta and expected returns are just two of many factors that investors should consider when analyzing stocks.

Conclusion

The analysis presented in this report highlights the importance of using data and analytics in investment decision-making. By calculating daily returns

Highlight 1

Summary of Finding

- The analysis of daily returns, beta, and expected returns for individual stocks revealed significant differences in their risk and return characteristics.
- Portfolio analysis showed that diversification can help reduce risk and increase returns.
- The constructed portfolios outperformed the S&P 500 in terms of expected returns.

Highlight 1

Recommendations for Investment

- Investors should consider diversifying their portfolio to reduce risk and increase returns.
- Stocks with low beta and high expected returns should be given preference in the portfolio.
- Regular monitoring and rebalancing of the portfolio is necessary to maintain its risk and return characteristics.

The conclusion section should summarize the key findings of the report and provide clear recommendations for investment. The recommendations should be based on the analysis performed and should be supported by the data and results presented in the report. The conclusion should be written in a clear and concise manner, highlighting the most important aspects of the analysis. The recommendations should be practical and actionable, providing guidance to investors on how to use the results of the analysis to make informed investment decisions