# Stock Market Analysis

Summary of the project:

Stock Market Comparison Analysis involves evaluating and comparing the performance of multiple stocks or financial instruments within the stock market. This analysis aims to provide insights into how different stocks have performed relative to each other and the broader market indices. By methodically examining multiple stocks or financial assets, it helps investors, financial analysts, and decision-makers understand their relative performance, thereby aiding in making informed investment decisions.

Steps Followed in the project:

1. Collect historical stock price data for the companies or financial instruments you want to analyze.
2. Clean and preprocess the collected data.
3. Create relevant features or variables to aid in the comparison.
4. Ensure that the data for different stocks is time-aligned.
5. Utilize data visualization techniques to effectively present the comparison.
6. Apply statistical methods to identify patterns or relationships between the stocks.
7. Compare the performance of the selected stocks or financial instruments against relevant benchmarks, such as market indices like the S&P 500.

Analysis:

Begin the Stock Market Comparison Analysis by gathering the stock price data for Apple and Google from the last quarter using the Yahoo Finance API. The provided code initializes the analysis by specifying the companies and the date range of interest, then retrieves the historical stock price data for Apple and Google during this period. This data will be used as the foundation for various financial analyses and comparisons, including calculating returns, volatility, and other metrics to evaluate the performance and risk of these stocks.

A screen shot of a computer program

Description automatically generated

Now, let's calculate and visualise the daily returns for Apple and Google in the stock market:

A computer code on a black background

Description automatically generated

A screen shot of a computer code

Description automatically generated

**Output:**

**A graph with lines and dots

Description automatically generated with medium confidence**

Now, let's examine the cumulative returns of Apple and Google for the past quarter

A screen shot of a computer code

Description automatically generated

A graph showing a line of a graph

Description automatically generated with medium confidence

First calculated the cumulative returns for both Apple and Google over the last quarter. Cumulative returns indicate the total percentage change in a stock's value over a period, accounting for the compounding of daily returns. We then compared the investment performance of Apple and Google during this timeframe, highlighting which stock achieved higher or lower cumulative returns. The results show that Google had higher cumulative returns than Apple over the last quarter.

A screen shot of a computer code

Description automatically generated

A blue and green squares

Description automatically generated

First calculated the historical volatility for both Apple and Google stocks, which measures the extent of price fluctuations over time. Specifically, we calculated the standard deviation of daily returns to gauge this volatility. Afterward, we visualized the results to compare the risk associated with Apple and Google stocks during the specified period. The analysis shows that Google's volatility is higher than Apple's.

This indicates that Google's stock experienced larger price fluctuations or greater price variability over the last quarter. Here's what this difference in volatility may suggest:

1. Google's stock is considered riskier compared to Apple. Higher volatility generally implies higher risk, as the stock price can change significantly in a short time.
2. Google's stock may be more sensitive to market conditions, economic factors, or company-specific news and events, leading to larger price swings.
3. Traders and investors with higher risk tolerance might find Google's stock appealing for short-term trading opportunities.

Now, let's compare the performance of Google and Apple stocks against the stock market benchmark.

A screen shot of a computer program

Description automatically generated

**Output**

A black background with white numbers

Description automatically generated

In the code above, we assess the sensitivity of Apple and Google stocks to overall market movements, offering insights into their relative volatility and risk compared to the broader U.S. stock market represented by the S&P 500 index.

The Standard & Poor’s 500 (S&P 500) is a widely recognized stock market index in the United States. It includes 500 of the largest publicly traded companies in the U.S., selected for their market capitalization, liquidity, and industry representation. These companies cover various sectors, providing a comprehensive view of the stock market's health and performance.

In the output, the beta value for Apple is approximately 0.91874, indicating that Apple’s stock is estimated to be about 22.57% more volatile or sensitive to market movements (as represented by the S&P 500 index) than the overall market. The beta value for Google is approximately 1.30816, suggesting that Google’s stock is estimated to be about 53.03% more volatile or sensitive to market movements.

A beta greater than 1 implies that a stock is more volatile than the market. Here, both Apple and Google have beta values greater than 1, indicating higher volatility and sensitivity to market movements. Google's higher beta value (1.30816) compared to Apple's (0.91874) suggests that Google’s stock has a higher degree of market sensitivity or risk. Investors should consider this information when making investment decisions, as higher-beta stocks can offer greater potential for returns but also carry a higher level of risk.