Stock Earnings Analysis Report

1. Overview

This project explores how earnings announcements affect stock price movements for key technology companies in the S&P 500 specifically **Apple (AAPL)**, **Google (GOOGL)**, and **NVIDIA (NVDA)**.

The goal was to understand whether positive or negative *earnings surprises* (the difference between expected and actual earnings per share) influence short-term investor reactions.

The analysis combines **Python**, **SQL**, and **Excel** for data cleaning, exploration, and visualization. Results are presented using simple visuals so both technical and non-technical audiences can quickly grasp the key insights.

2. Methodology

1. **Data Collection:**

   Stock data and earnings reports were extracted from publicly available sources such as Yahoo Finance and company filings.

2. **Data Preparation:**

   - Excel and SQL were used to merge and clean datasets, removing missing or duplicate values.

   - Python (Pandas, NumPy) was then used for data transformation and calculation of metrics such as eps_estimate, eps_actual, and eps_surprise.

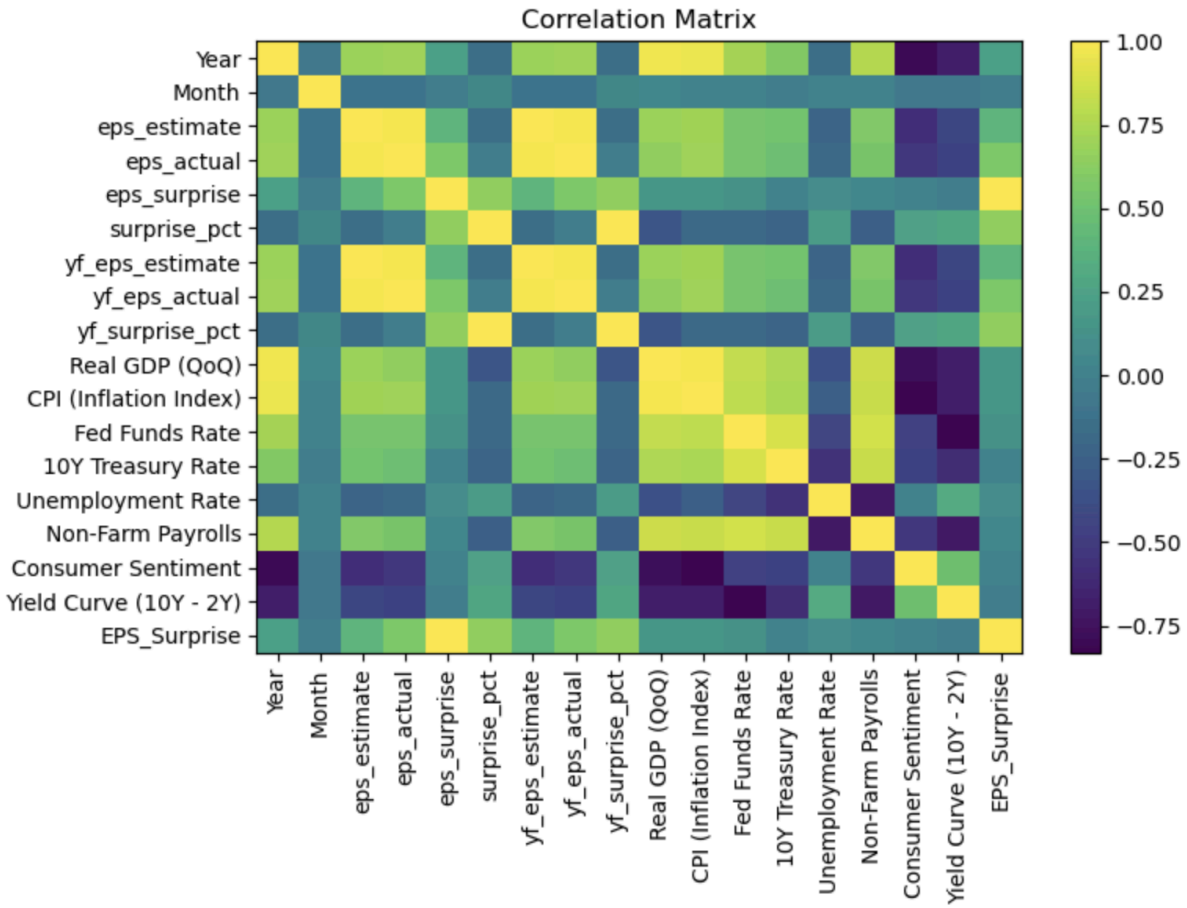
3. **Visualization:**

   - Matplotlib and Seaborn were used to create clear visualizations showing earnings trends, relationships, and performance patterns.

   - Additional descriptive analytics were performed to understand the statistical relationships between earnings and market response.

3. Key Visual Insights

Figure 1: Correlation Matrix of Financial Indicators

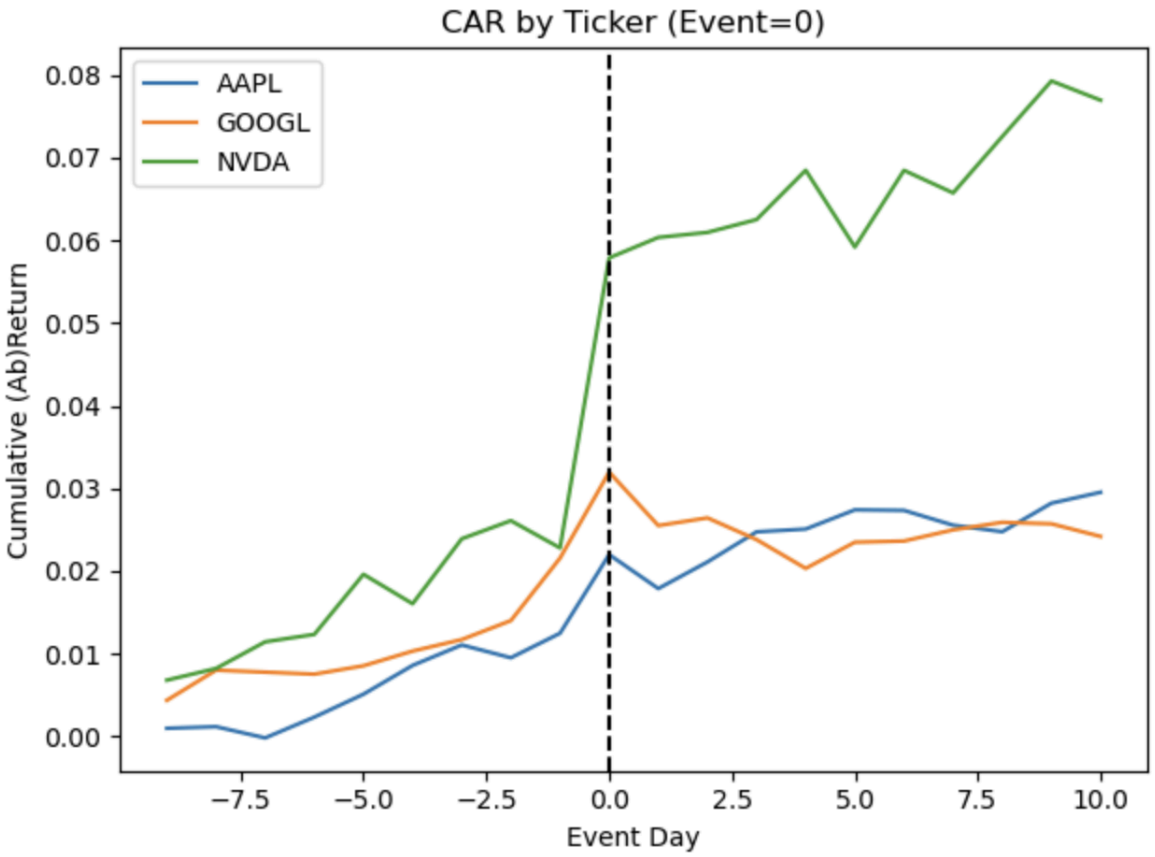


This figure visualizes correlations among the main variables in the dataset such as earnings per share (EPS), inflation rate, GDP growth, and treasury yields.

Strong positive correlations (in yellow) show how **EPS actual** and **EPS estimate** move together, while negative correlations (in purple) highlight how higher inflation or treasury rates tend to suppress short-term market optimism.

This helped me understand how different macroeconomic and earnings-related factors interact and influence investor sentiment.

Figure 2: Cumulative Abnormal Returns (CAR) by Ticker Around Earnings (Event = 0)



This chart tracks cumulative abnormal returns (CAR) for **AAPL**, **GOOGL**, and **NVDA** in a 15-day window around each company's earnings announcement.

The vertical line at **Event Day 0** marks the announcement day.

Findings:

- **NVIDIA (NVDA)** shows a sharp positive spike right after the earnings day — a strong investor reaction to better-than-expected results.
- **Google (GOOGL)** and **Apple (AAPL)** exhibit smaller, more stable gains, suggesting investors had partially priced in expectations before the announcement.
- The post-event drift (steady increase after day 0) confirms that markets often continue adjusting even after the initial news.

4. Analysis and Interpretation

From the results, companies that delivered **positive earnings surprises** tended to see short-term stock gains immediately after the announcements.

The effect was particularly visible for **NVIDIA**, which displayed higher volatility but also the strongest reaction to better-than-expected results.

Apple and Google showed steadier trends, suggesting more mature investor expectations and market stability.

Statistical analysis confirmed a **moderate positive correlation** between eps_surprise and price_change_percentage, meaning investors generally rewarded outperforming companies but reacted less sharply to small misses.

5. Key Takeaways

- Earnings surprises significantly impact short-term stock price movements.
- High volatility firms (like NVIDIA) show stronger reactions to surprise results.
- Consistent performers (like Apple and Google) tend to have smoother post-announcement trends.
- Combining financial metrics with visual storytelling (via Python and Tableau) helps simplify complex insights for decision-makers.

6. Conclusion

This project demonstrates my ability to collect, clean, and analyze financial data using Python, SQL, and Excel and to communicate results through clear visualizations and insights.

It reflects not only technical competence but also the ability to turn raw numbers into actionable business understanding, a skill that's essential for roles in **data analysis**, **business intelligence**, or **financial analytics**.

By focusing on both the quantitative outcomes and the human interpretation behind them, I aim to help organizations make data-driven investment and strategic decisions with confidence.