**Reproducibility Guide for Event Study Analysis**

This guide explains how to run the provided Python script for an event study analysis of stock price data on your computer.

**Prerequisites**

* **Python**: Version 3.8 or higher (python.org).
* **pip**: Python package manager (included with Python).
* **Internet**: Required for downloading stock data via Yahoo Finance.

**Setup Instructions**

1. **Clone the Repository (Optional)**  
   If hosted on GitHub, clone it:

git clone <repository-url>

cd <repository-directory>

1. **Create a Virtual Environment**

python -m venv venv

Activate it:

* + Windows: venv\Scripts\activate
  + macOS/Linux: source venv/bin/activate

1. **Install Dependencies**  
   Install required libraries:

pip install yfinance pandas numpy matplotlib statsmodels scipy

1. **Directory Setup**  
   The script creates an outputs directory with plots and excel\_files subdirectories for results. To change the output location, modify BASE\_DIR in the script:

BASE\_DIR = "C:/path/to/your/project" # Example absolute path

Ensure write permissions in the specified directory.

**Running the Script**

1. Save the script as event\_study.py.
2. Run it:

python event\_study.py

The script will:

* + Download stock data for specified companies and the S&P 500 (^GSPC) from Yahoo Finance.
  + Perform event study analysis (abnormal returns, CAR, volume, volatility).
  + Save plots in outputs/plots and data in outputs and outputs/excel\_files as CSV/Excel files.

**Customizing the Analysis**

* **Windows**: Adjust estimation\_window, estimation\_gap, or event\_window for different analysis periods.

**Troubleshooting**

* **No Data**: Skipped tickers are logged (e.g., [SKIP] No data for {ticker}).
* **Permission Errors**: Verify write access to BASE\_DIR or change it.

**Outputs**

* **Plots**: Price series, AR/CAR, volume, and volatility in outputs/plots (PNG).
* **Data**: Merged data, AAR/CAR tables, and industry analysis in outputs (CSV) and outputs/excel\_files (Excel).
* **Console**: Logs progress and file locations.