

PORTFOLIO ANALYSIS PROJECT



Quantitative Finance – ECO 43000 (Fall 2025)

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1. Introduction

- Goal: Create a portfolio of 7 NYSE stocks and compare it to DIA, SPY, IWM.
- Tools: Pandas & yfinance
- Metrics: Volatility, Beta, Tracking Error, Sharpe Ratio

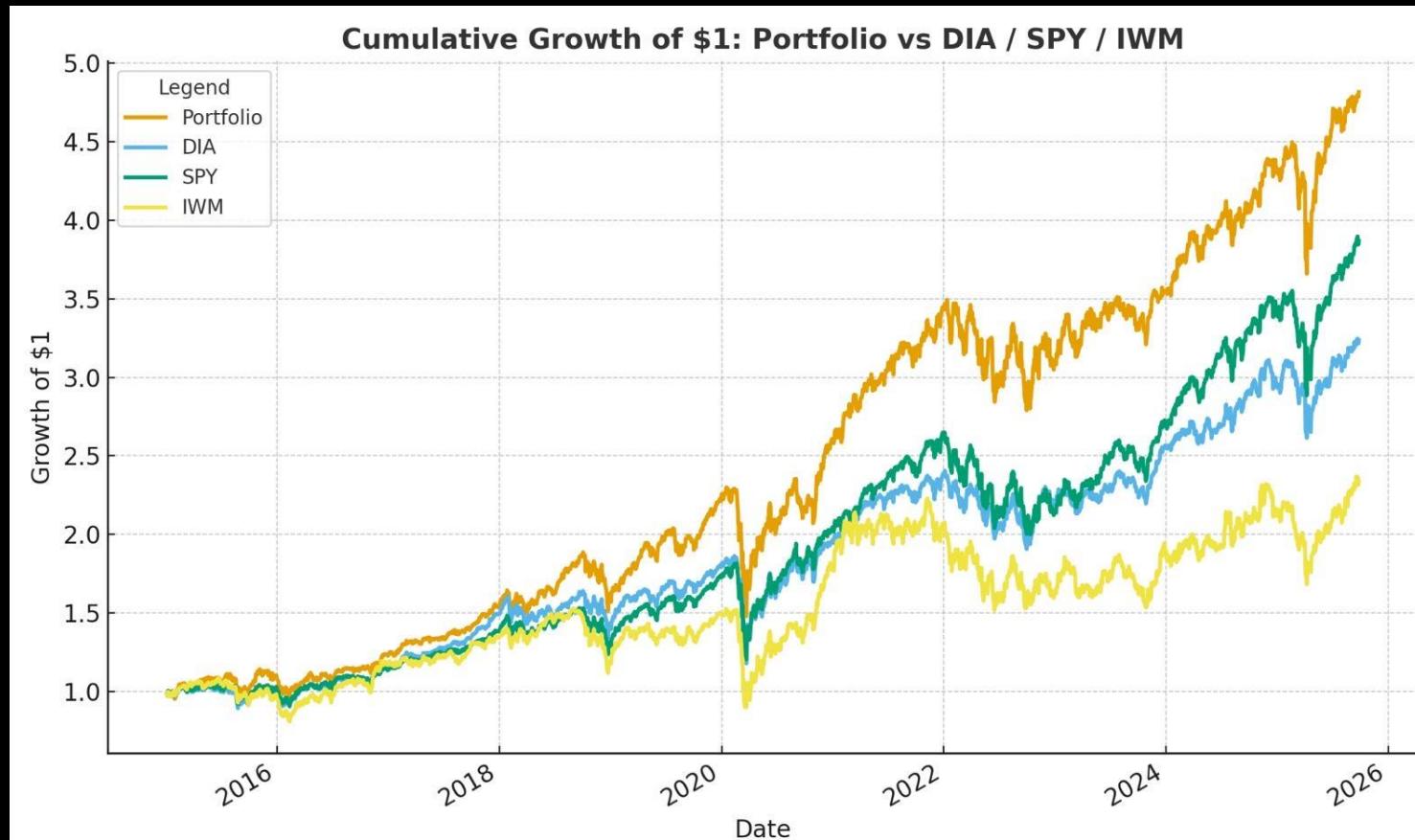
Data & Methodology

- Data source: Yahoo Finance (via yfinance)
- Period: 2015–2025
- Portfolio: AAPL, MSFT, JPM, XOM, V, PFE, DIS
- Benchmarks: DIA, SPY, IWM
- Calculations:
 - - Volatility
 - - Beta
 - - Tracking Error
 - - Sharpe Ratio

Results – Table 1: Asset Factors

Sample metrics for each stock:

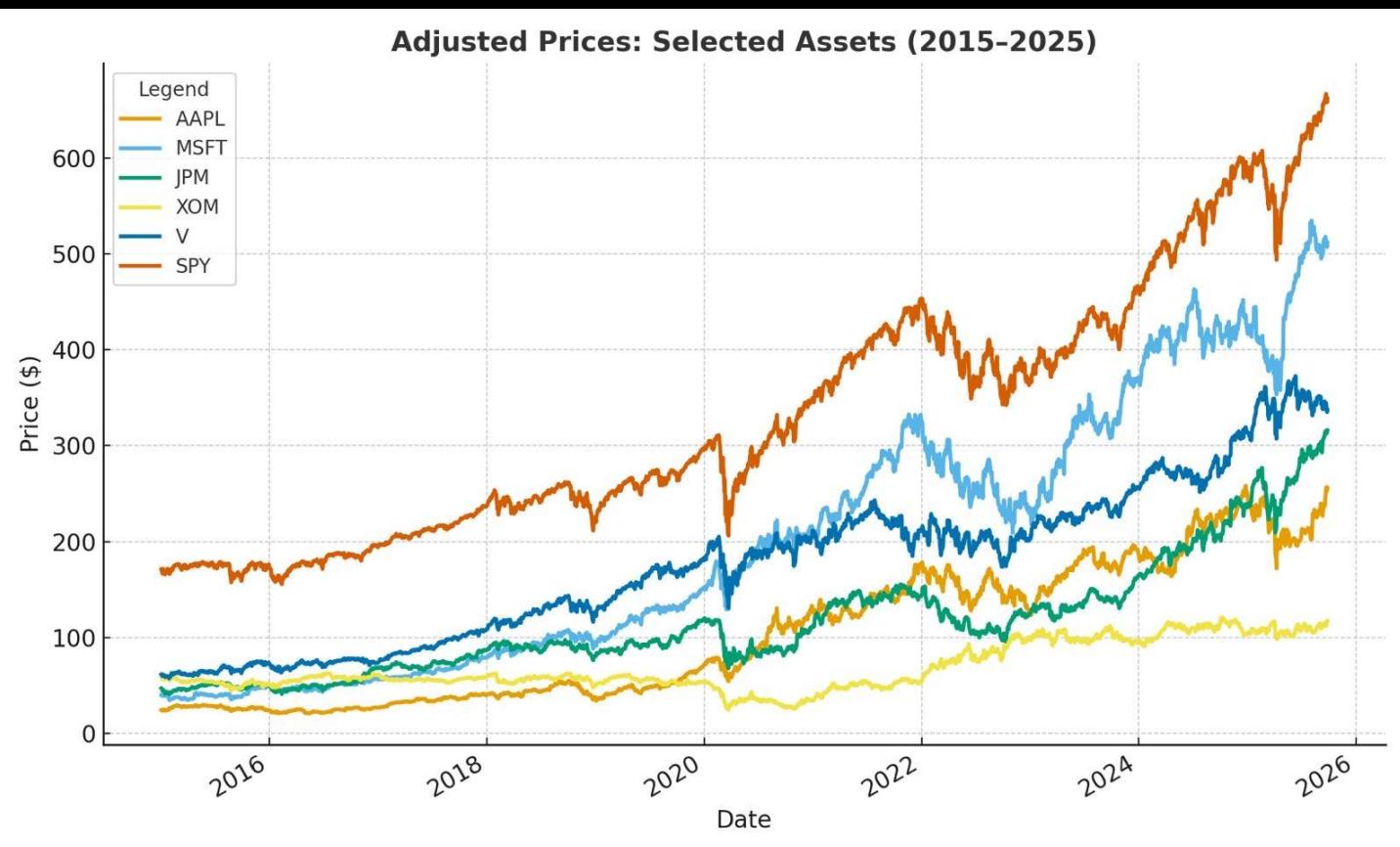
- Annual Volatility
- Beta vs SPY, IWM, DIA
- Returns (1Y, 3Y)



Results – Table 2: Portfolio vs ETF

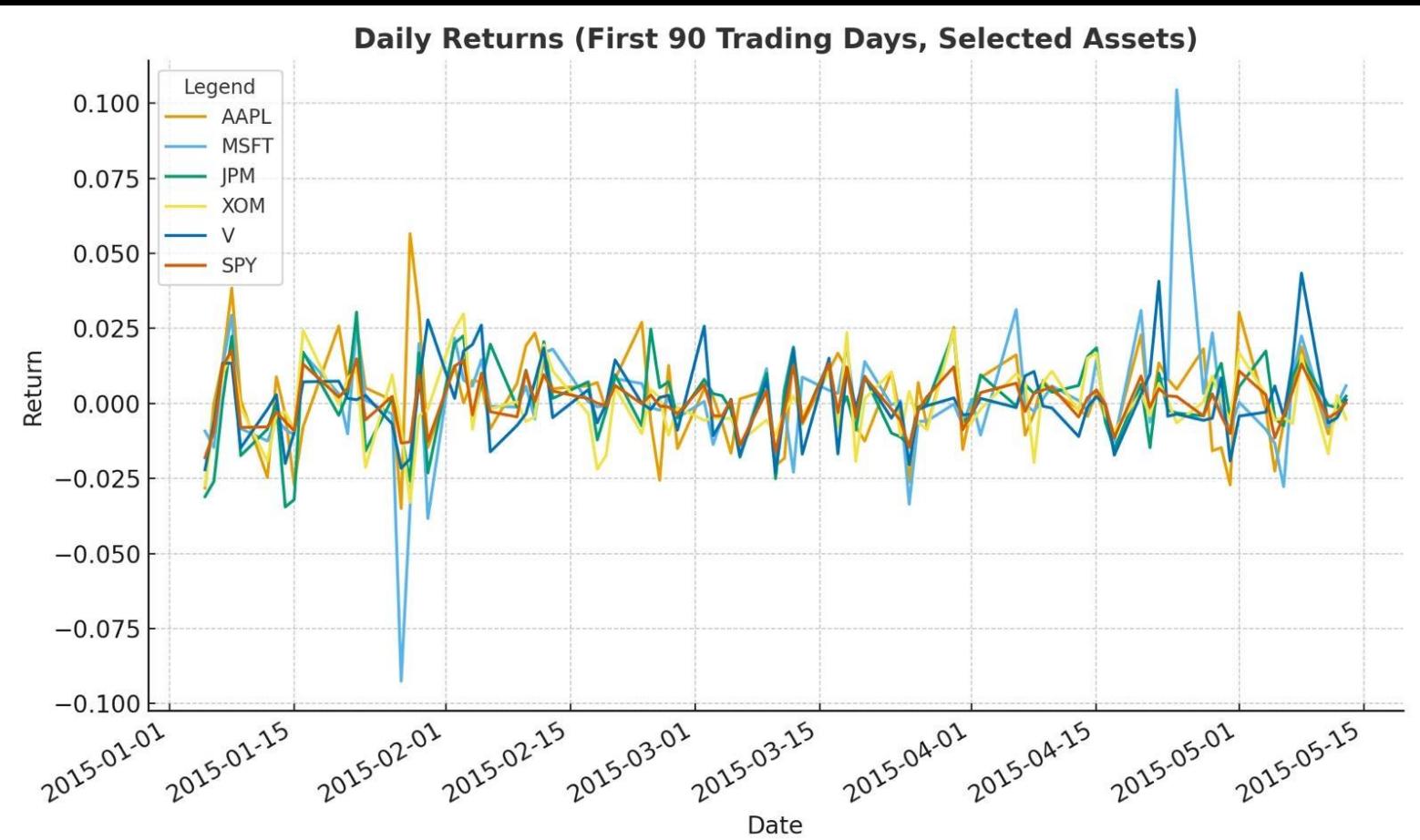
Portfolio vs DIA, SPY, IWM:

- Correlation
- Covariance
- Tracking Error
- Sharpe Ratio
- Volatility Spread



Results – Chart: Cumulative Returns

- Cumulative performance of:
- Portfolio
- DIA
- SPY
- IWM



Discussion

- Portfolio closely tracks SPY
- Higher beta vs large-cap ETFs
- PFE underperformed, dragging returns
- Tracking error vs SPY is low

Conclusion

Portfolio built using Pandas & yfinance

Performance competitive with SPY

Lacked small-cap diversification

Future: optimize weights & expand factors

Code

VSc and python to get the data