Portfolio Analysis:

Asset Allocation, Diversification and Performance

Presented By:

Ou Hai

Motivation

- Investors rarely hold a single asset
- Different assets offer different risk and return profiles
- Portfolio construction aims to balance risk and return

Investment Universe

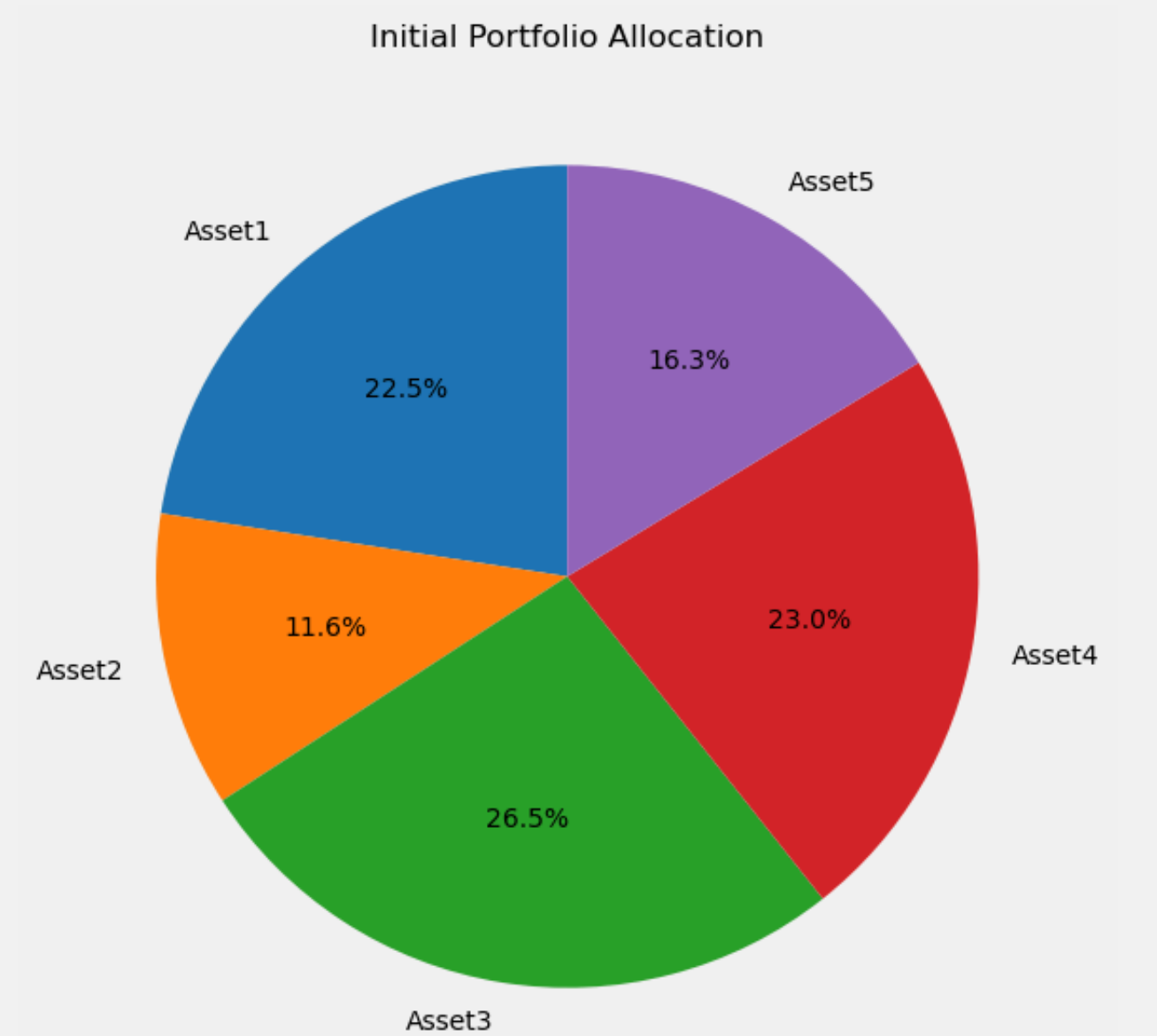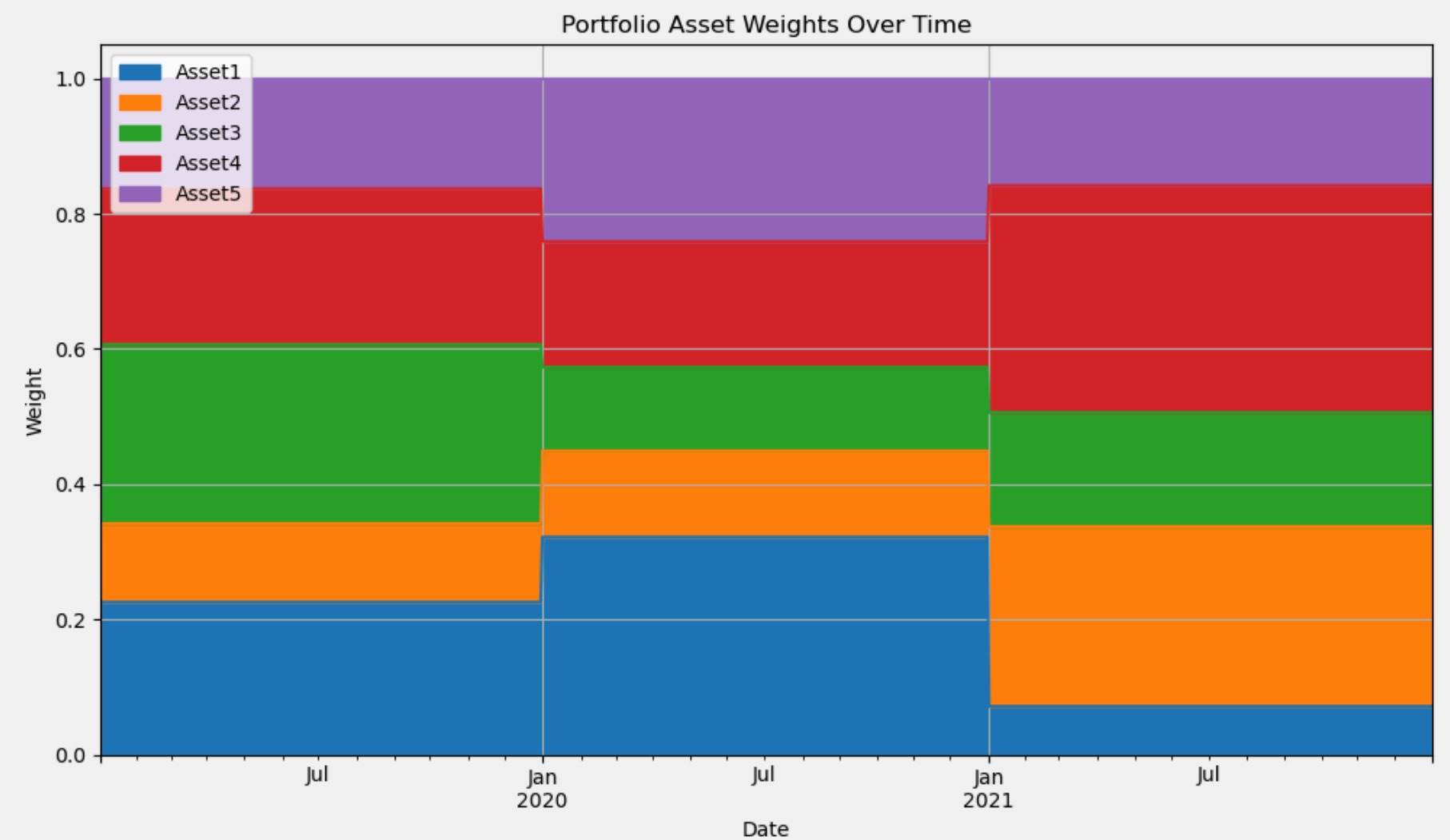**Fixed Income**

stability and income

Equity

long-term growth

Alternative

diversification

Portfolio Structure

Initial Portfolio Allocation
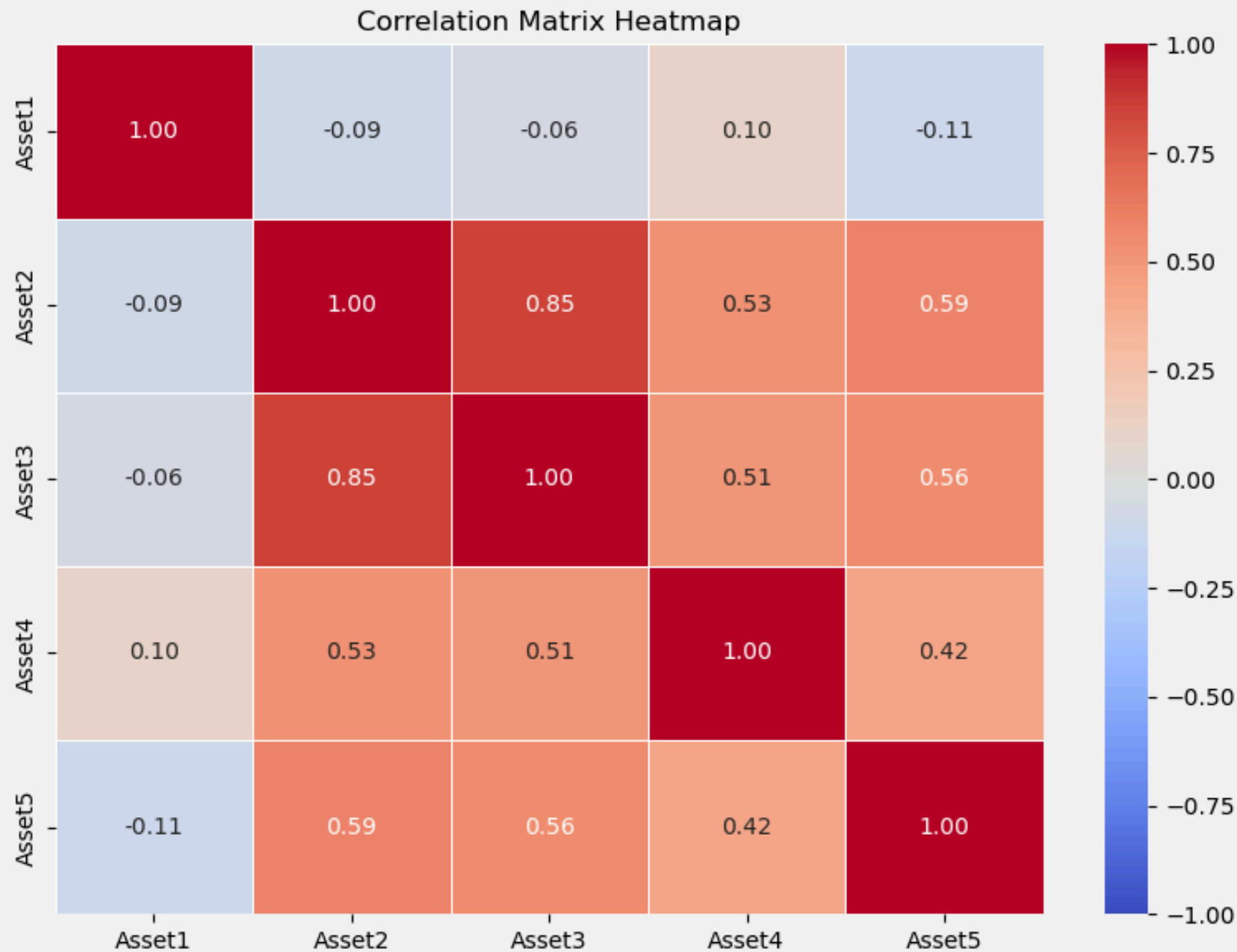

Portfolio Asset Weights Over Time

- **Portfolio weights represent capital allocation**
- **Weights are strategy-driven, not price-driven**
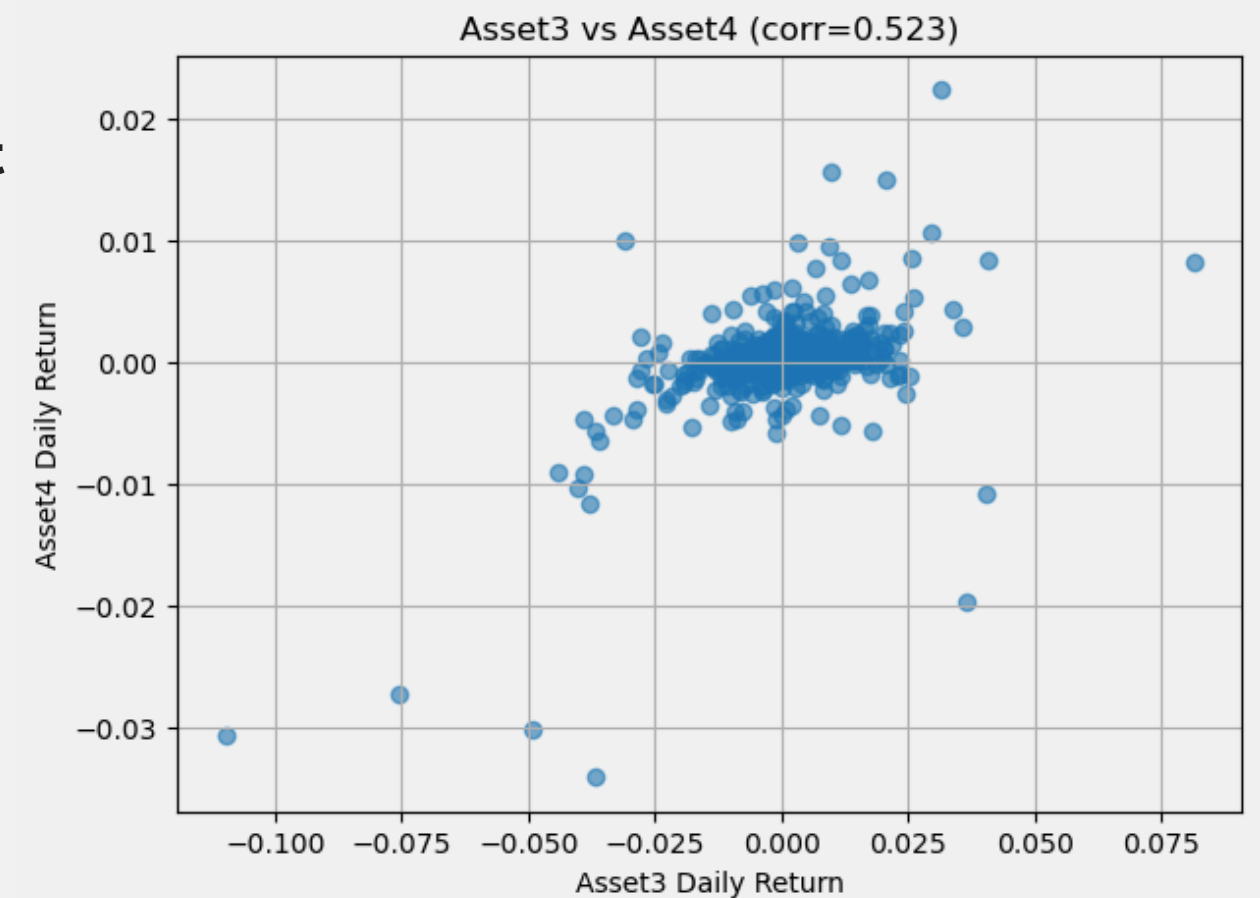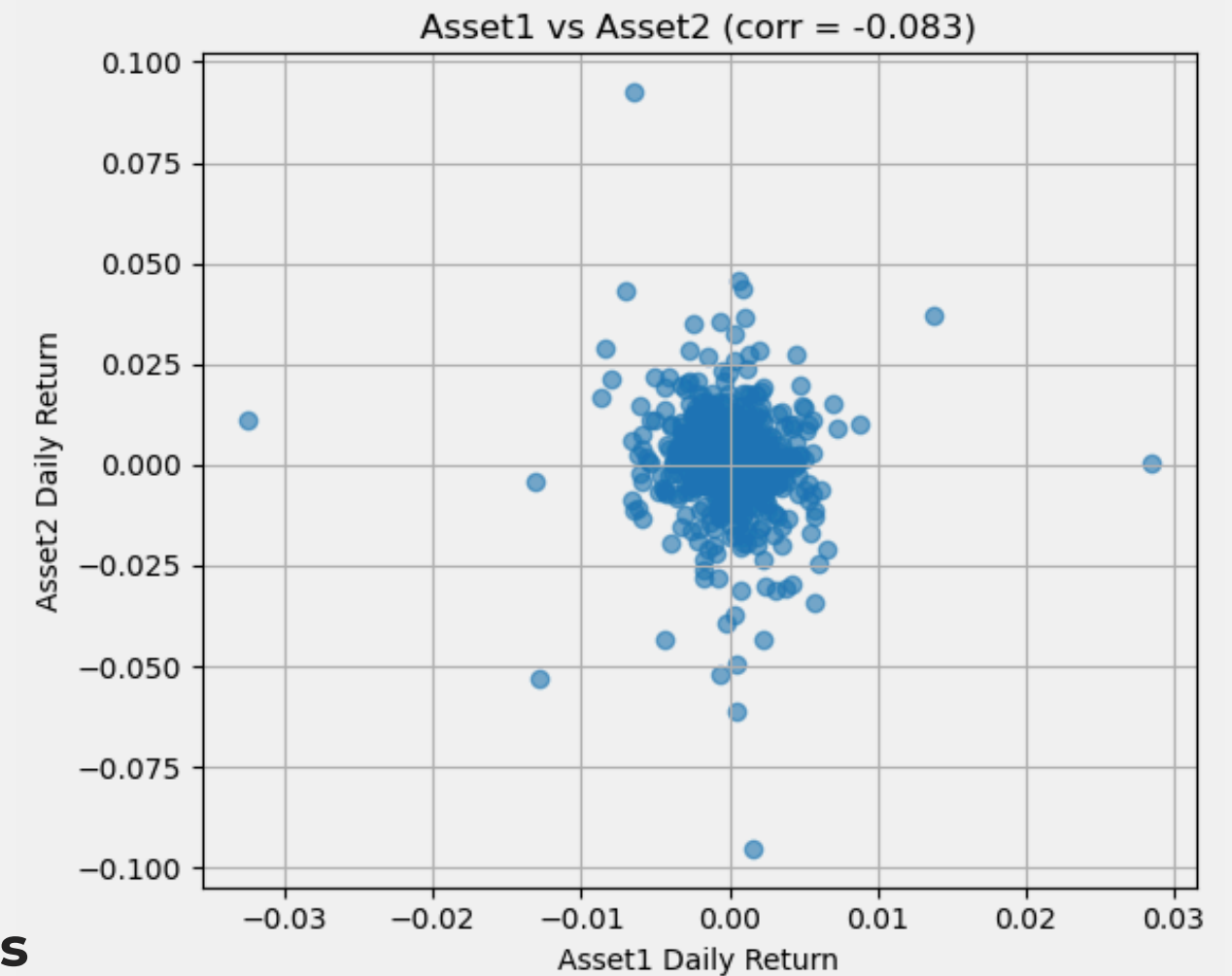- **Fully invested portfolio**

- **Annual rebalancing**
- **Strategic asset allocation**
- **Long-term focus rather than market timing**

Why Diversification Works: The Role of Correlation

Correlation Matrix Heatmap

Asset1 vs Asset2 (corr = -0.083)
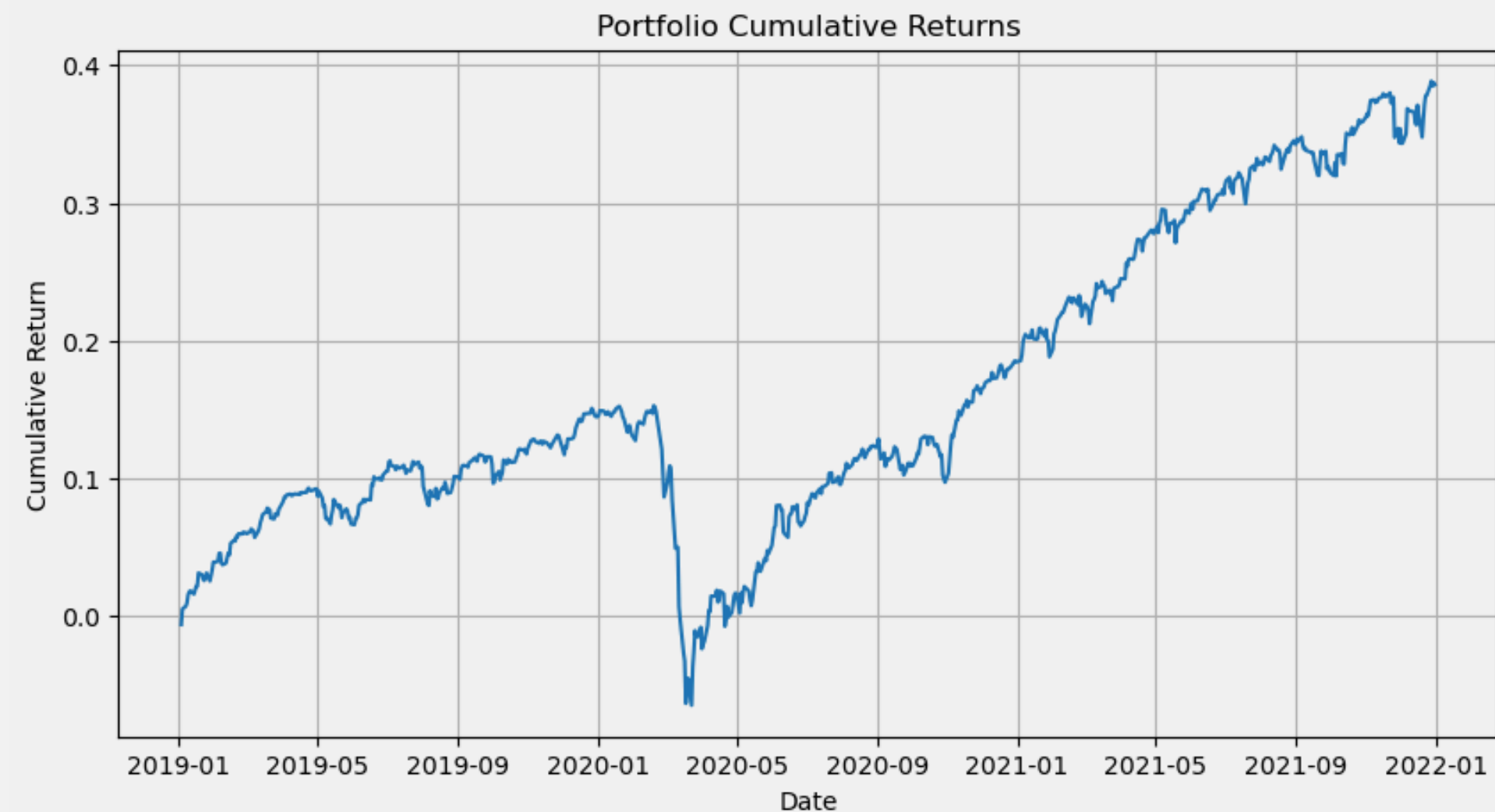

Asset3 vs Asset4 (corr=0.523)

- Low correlation reduces portfolio risk
- Some assets move together, others do not
- Diversification is not guaranteed by asset count alone

From Individual Assets to Portfolio Returns

$$R_t{}^{portfolio} = \sum_i w_i, t, r_i, t$$

Portfolio return = weighted sum of individual asset returns

Asset allocation determines each asset's contribution to total returns

Portfolio Cumulative Returns

- Positive long-term performance despite short-term volatility
- Drawdowns occur during market stress
- Recovery highlights portfolio resilience

Portfolio Risk-Return Profile

Annualized Return

Annualized Volatility

11.5%

8.5%

- Attractive returns achieved with moderate volatility
- Diversification helps control overall portfolio risk

Real-World Considerations

Simplified assumptions

The model assumes stable returns, correlations, and risk over time.
In practice, market conditions change and parameters are time-varying.

No transaction costs

Rebalancing is assumed to be costless.
In reality, transaction costs and taxes reduce net returns.

Annual rebalancing vs dynamic strategies

The portfolio is rebalanced annually using fixed weights.
More frequent or dynamic rebalancing may lead to different risk–return outcomes.

Key Conclusions

- Asset **allocation,** rather than individual asset selection, is the primary driver of portfolio performance

- **Diversification** enhances resilience by reducing overall portfolio risk

- Strategic **rebalancing** helps maintain alignment with long-term investment objectives

- This portfolio is **reasonable** under the given assumptions and objectives

- Portfolio construction should always be aligned with **investor goals, risk tolerance, and market conditions**.

Thank You