



# Using Macroeconomic Data for Tactical Asset Allocation

Exploring the financial and economic datasets.

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# Non-Technical Overview

The goal of this project is to better understand the relationship between economic indicators and asset class returns.

The hope is to identify patterns and trends that can inform investment strategies.

The impact would be to allow sophisticated investment models

## Dataset & Preprocessing Overview:

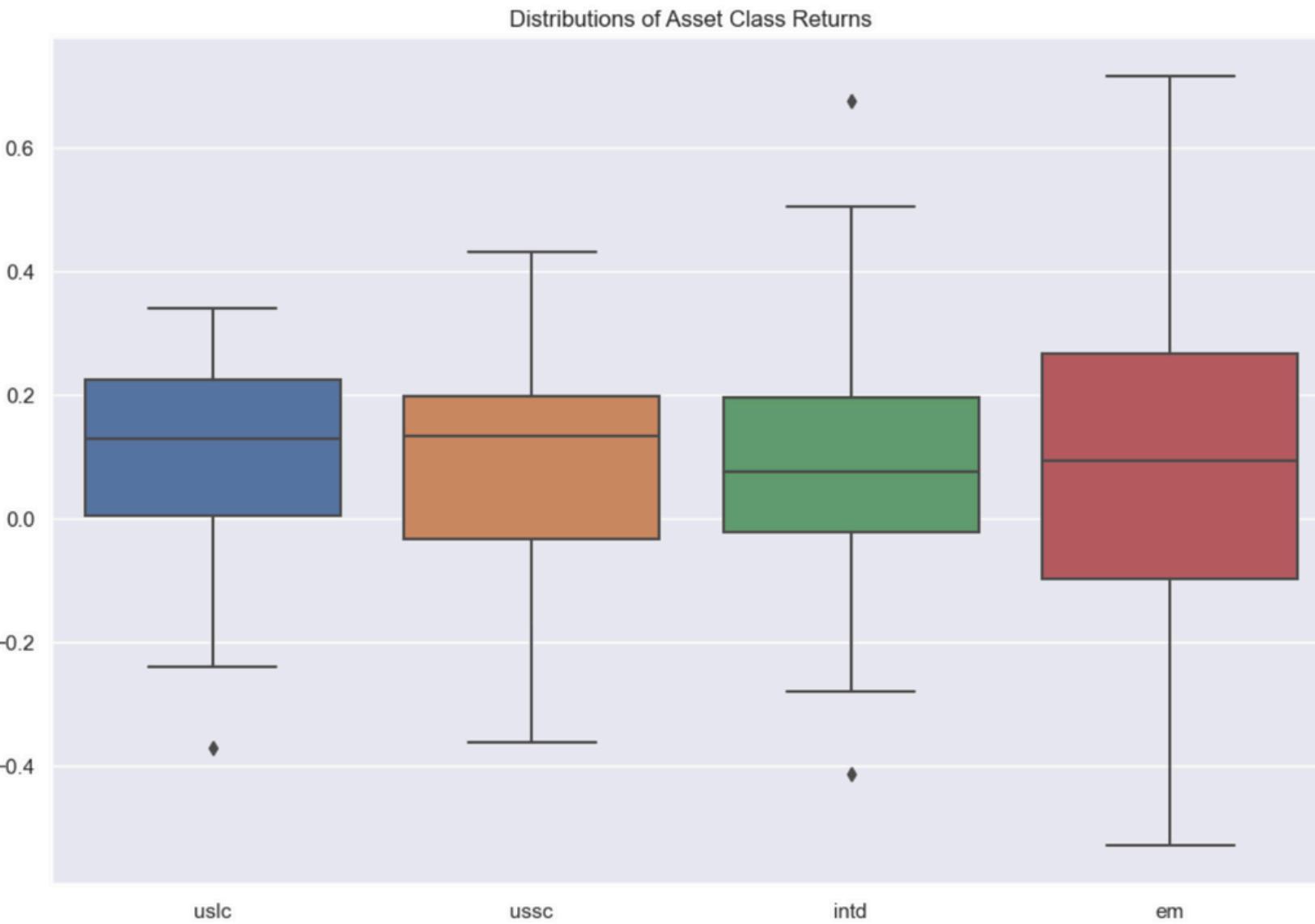
- Macroeconomic variables such as GDP, unemployment rate, etc.
- Asset class returns.
- Time period: 1985 to 2024.

## Preprocessing:

- Ensuring there were no null values
- Converting asset class returns to percentages
- Converting data to datetime
- Standard scaling of features

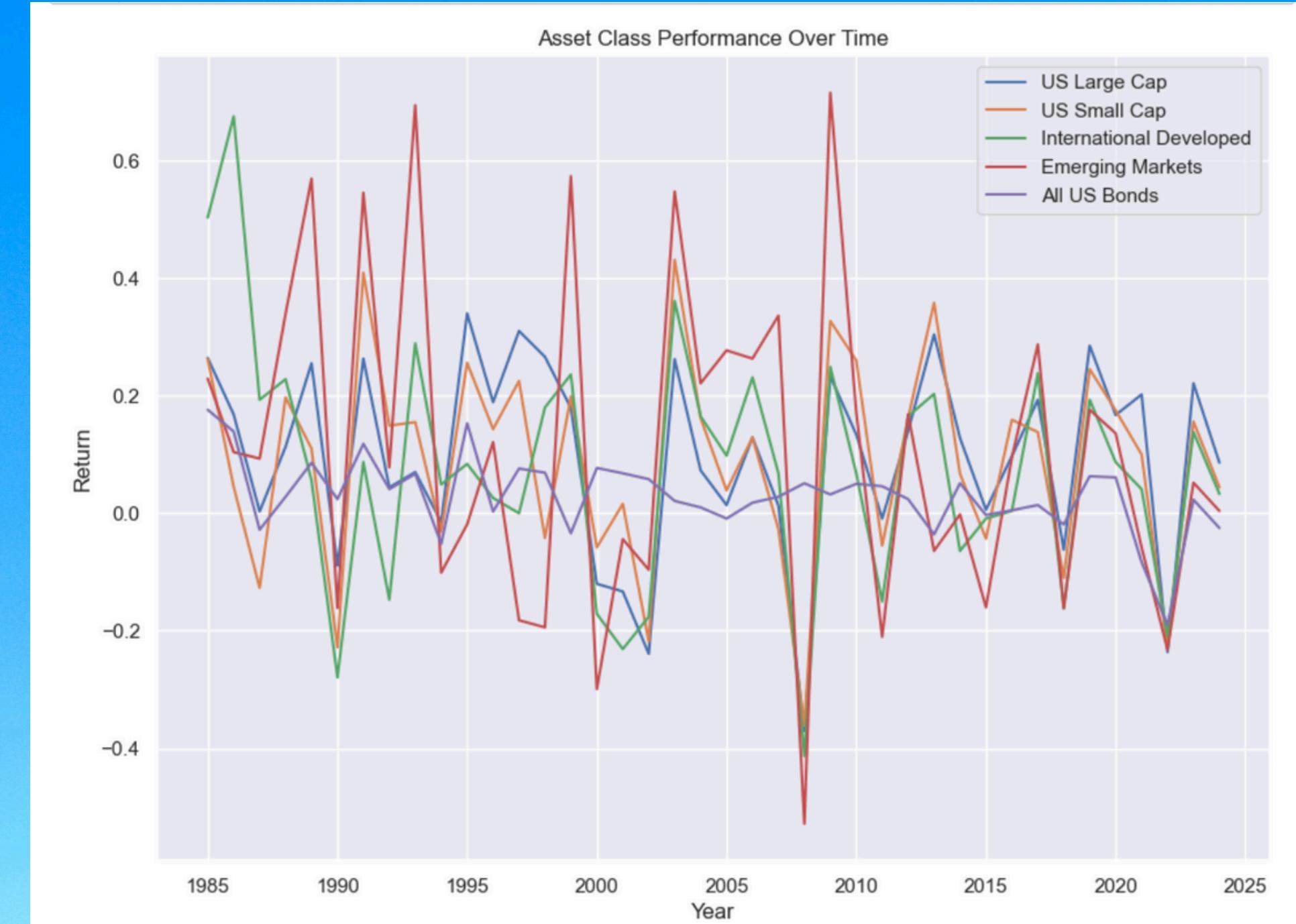
- Findings from EDA:

- More speculative equities have a larger distribution of returns



We can see here that international developed stocks and emerging market stocks tend to be more volatile and have a wider range of returns. These assets are often seen as more speculative than US large cap stocks.

- Asset prices in general vary greatly year over year



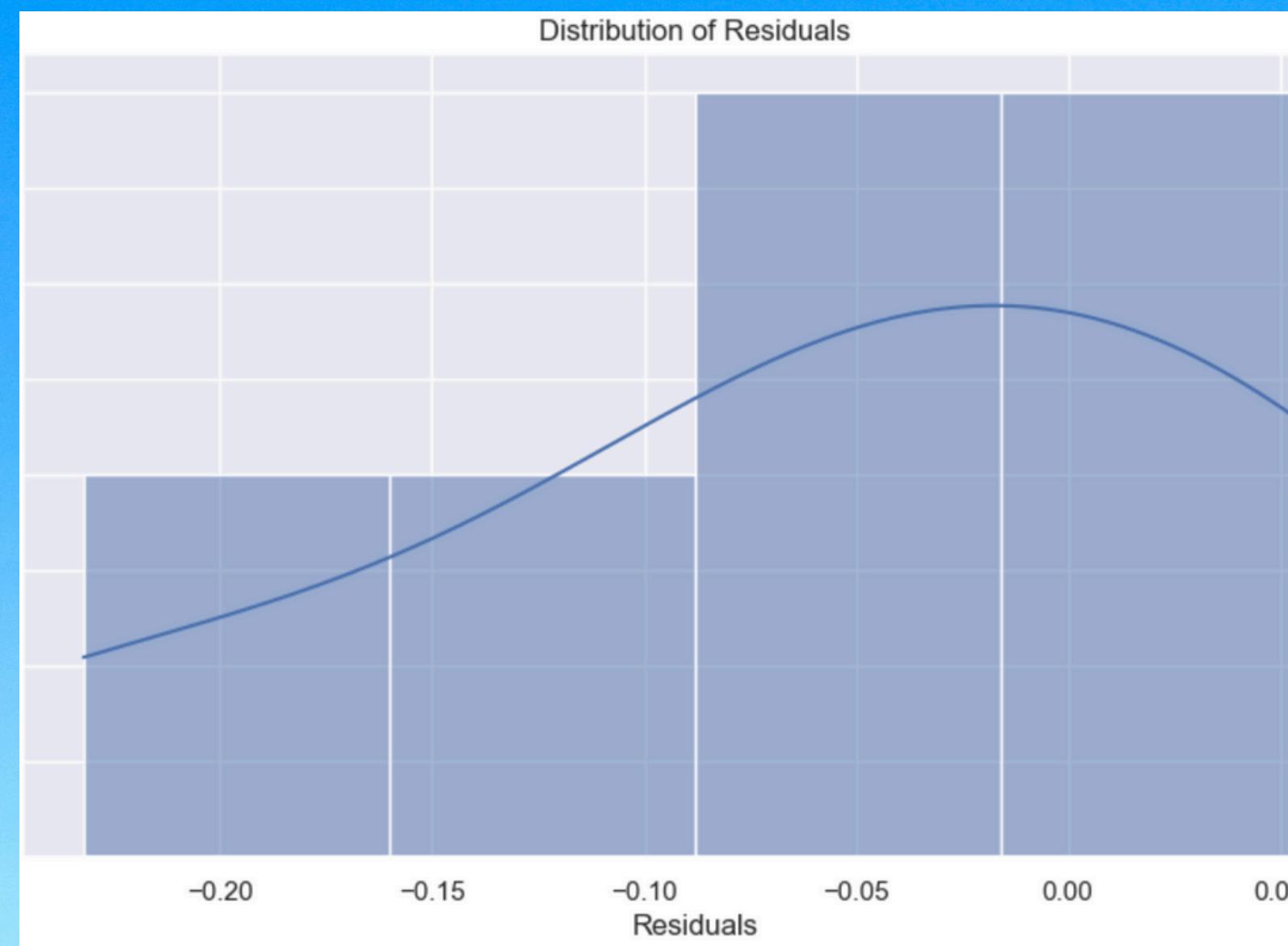
## Baseline Linear Regression Model

Mean Squared Error: 0.01242671282472718

R-squared: 0.6302955065648597

The R-squared value indicates that approximately 63.03% of the variance in the 'US Large Cap' returns can be explained by the model.

We can also see that residuals are centered around zero.



# Next Steps:

- Moving forward I will look into using things like lagged variables, time series decomposition, and other techniques to improve the model.
- Explore more advanced algorithms like gradient boosting and neural networks.

Thank You!