Lighthouse Macro

# Historical Asset Class Returns and Economic Indicator Data

Exploring the financial and economic datasets.

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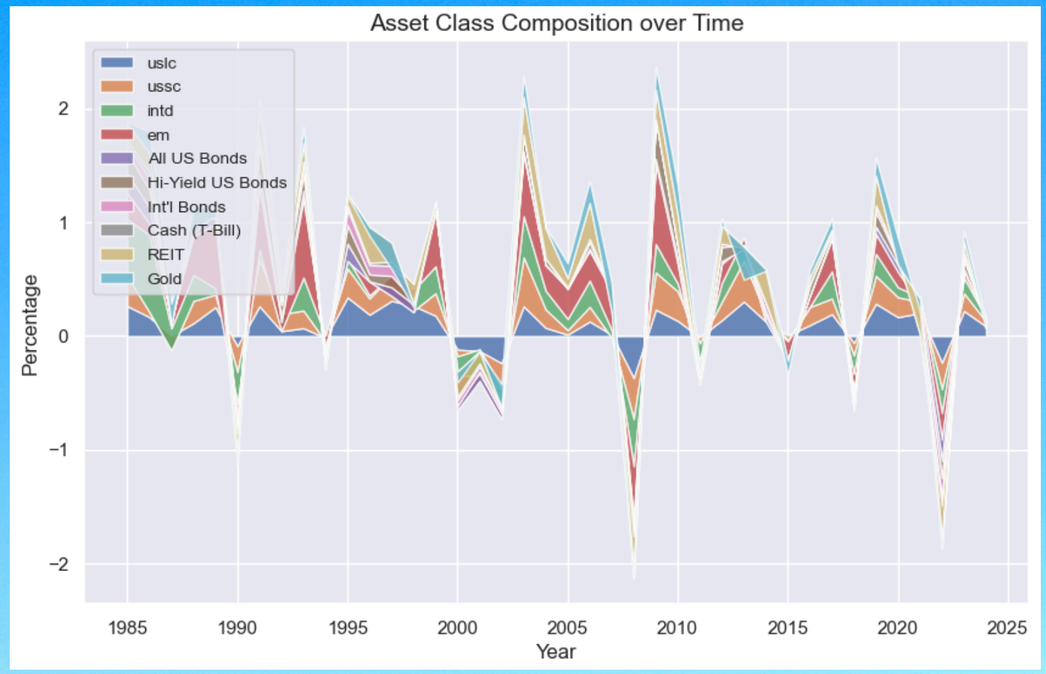
Data Science at BrainStation

# Problem Statment & Background

Understanding the relationship between economic indicators and asset class returns. Identifying patterns and trends that can inform investment strategies.

Economic indicators and asset class returns from 1985 to 2024. Importance of analyzing these relationships for economic forecasting and investment decisions.

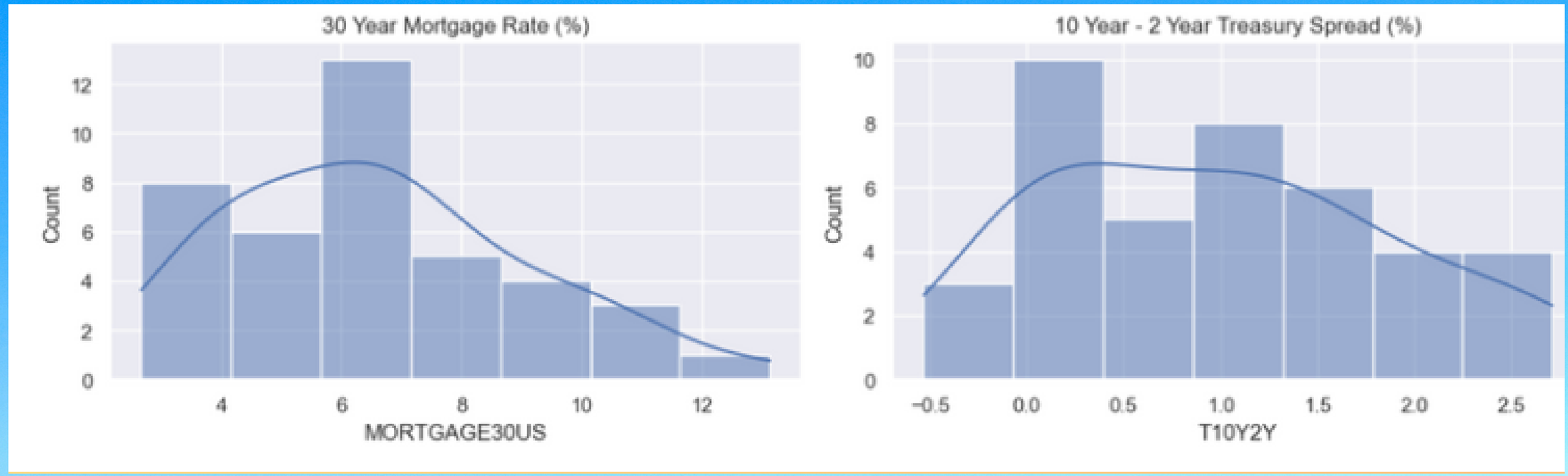


## Key variables:

- GDP
- Unemployment Rate (UNRATE)
- 30-Year Mortgage Rate (MORTGAGE30US)
- 10-Year/2-Year Treasury Spread (T10Y2Y)
- Asset class returns.
- Time period: 1985 to 2024.
- Summary Statistics:
  - Mean
  - Median
  - Standard deviation

## Distribution of Key Variables :

- **Asset Class Returns:** Right-skewed distributions with a few years of very high returns.
- **GDP & Unemployment rate:** Bimodal distribution – indicating two distinct economic regimes.
- **30-Year Mtg Rate & 10Y-2Y Spread:** More normally distributed.

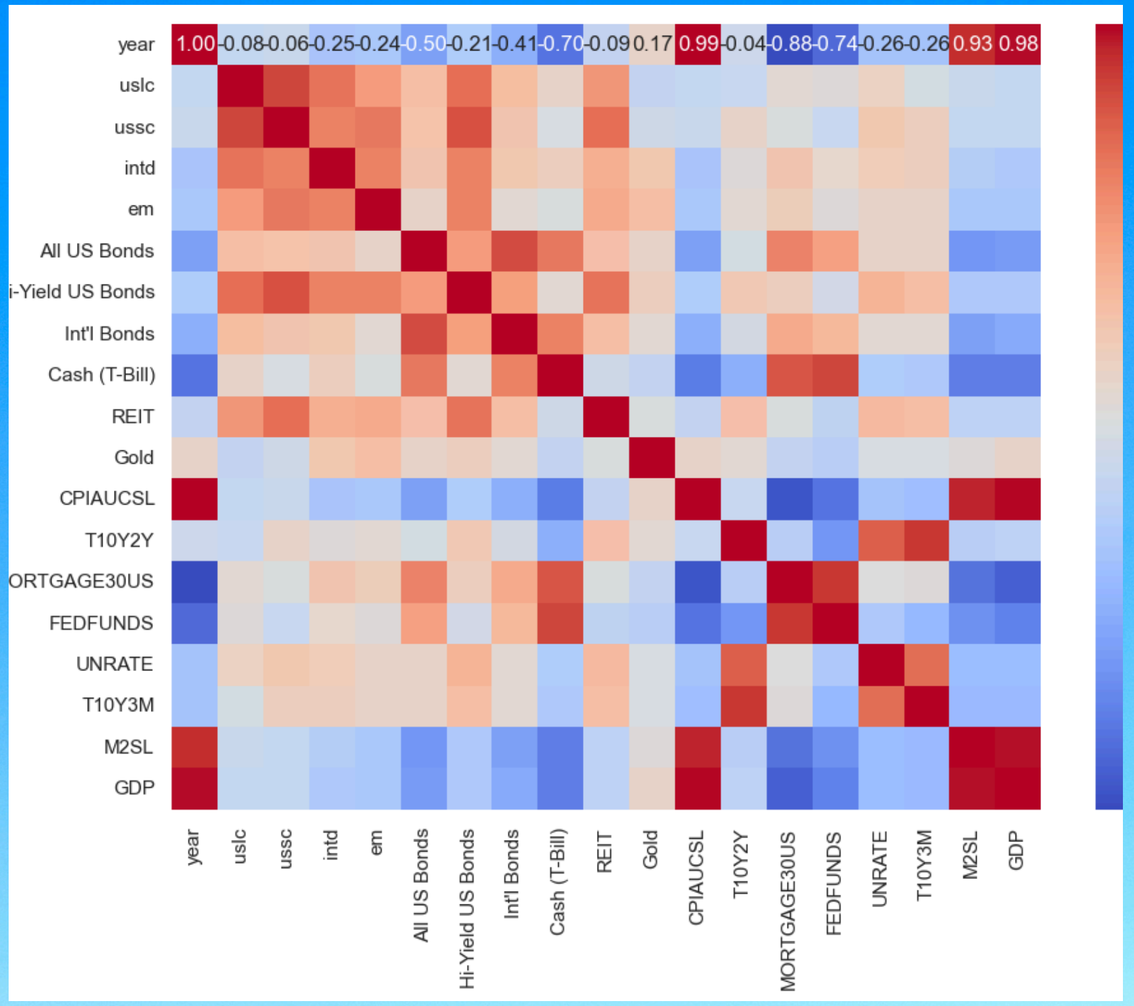


# Correlation Matrix:

Strong positive correlation between GDP and M2 money supply.

Negative correlation between unemployment rate and GDP.

Positive correlation between asset class returns and economic growth indicators.

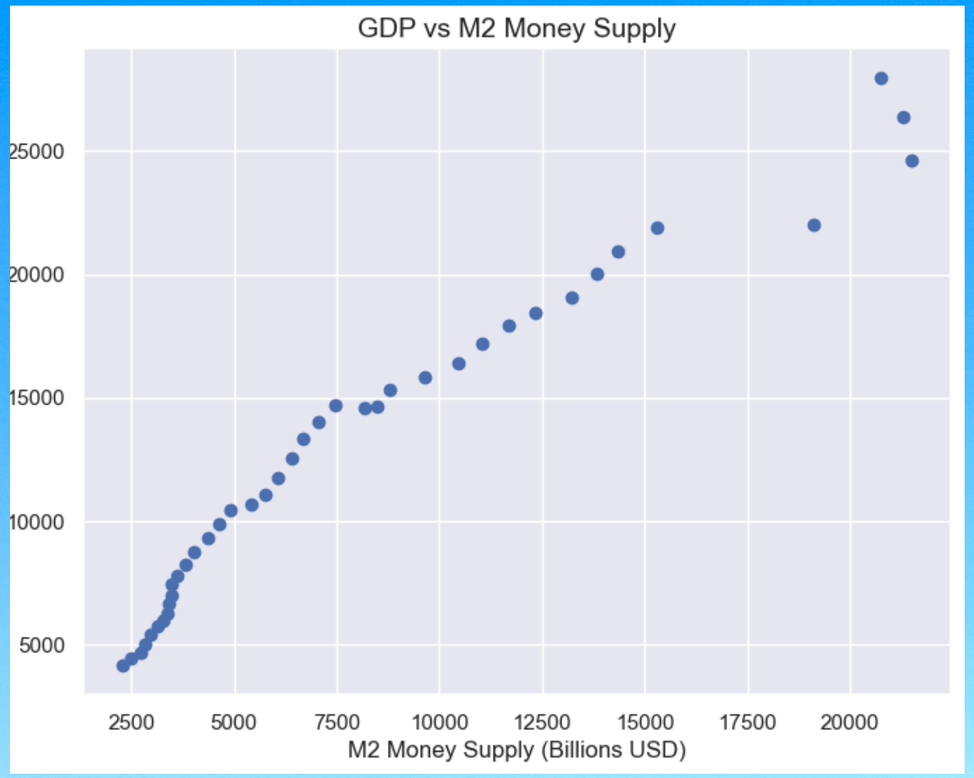


# Key Insights from EDA – Patterns and Relationships:

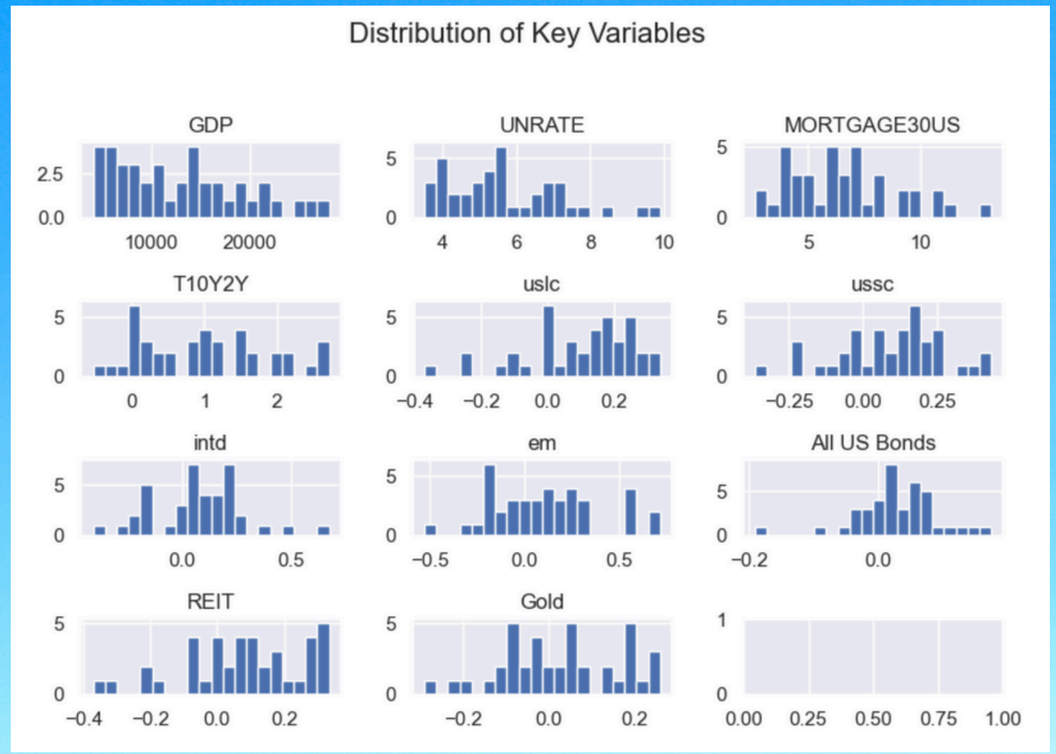
- Asset class ***returns*** tend to ***increase*** during periods of economic ***growth.***
- ***Unemployment*** rate ***inversely*** related to economic ***growth.***
- ***Right-skewed*** distributions in asset class returns indicate ***occasional high returns.***

## `Additional insights:

Positive relationship between GDP and M2 money supply.




Bimodal distributions in GDP and unemployment rate suggest distinct economic regimes.



## Proposed Data Science Solution:

- Develop predictive models to forecast asset class returns based on economic indicators.
    - Use machine learning techniques to identify key drivers of asset class performance.
- Make professional level investment models more accesible to average investor

## Anticipated Impact:

- Improved investment strategies based on data-driven insights.
- Enhanced economic forecasting capabilities.
- Cheaper, more democratized access to market research.

# Next Steps:

- Feature engineering and selection for predictive modeling.
- Train and evaluate machine learning models.
- Validate models using out-of-sample data.
- Refine models based on performance metrics.