FINAL PROJECT PROPOSAL
Team 5: Team Neo

Title: Analysis of the Impact of Major Historical Events on the S&P 500 Index and Its Component Industries

Objective:

To conduct an in-depth analysis of the impact of major historical events on the S&P 500 index and its component industries. By incorporating industry-specific data and employing advanced statistical techniques, such as regression and predictive modeling, we aim to uncover the heterogeneous responses of different sectors to significant events. Furthermore, we will investigate the relationship between event severity and recovery period, and compare the performance of individual companies to their respective industries and the overall index. The findings will provide insights for investors, policymakers, and risk managers in navigating future market disruptions.

SMART Questions:

1. How do different industries within the S&P 500 index respond to major historical events?
2. Can we develop a predictive model to forecast the impact of future events on the S&P 500 index?
3. Is there a relationship between the severity of an event and the length of the recovery period?
4. How do the returns of individual companies within the S&P 500 index compare to the overall index during major events?

Methodology:

The project will employ a combination of statistical analysis, regression modeling, and machine learning techniques to address the research questions. The data will be preprocessed to handle missing values and outliers. Exploratory data analysis will be conducted to visualize industry-specific responses to historical events. T-tests and correlation analysis will be used to compare industry performance. Multiple linear regression will be applied to examine the relationship between industry returns and the overall index. Predictive modeling, using time series techniques like ARIMA or LSTM, will be employed to forecast the impact of future events. The relationship between event severity and recovery period will be investigated using regression analysis.

Expected Outcomes:

The project aims to provide a comprehensive understanding of the heterogeneous impact of major historical events on the S&P 500 index and its component industries. The findings will offer actionable insights for investors in terms of portfolio diversification and risk management. Policymakers can benefit from a better understanding of the varying recovery periods across industries. The developed predictive models will assist in forecasting the potential impact of future events, enabling proactive decision-making.

Data Source:

**** [Just as a starting point] Source:**
https://www.kaggle.com/code/kspkumar/s-p500-with-gics-dataset-generator

**** CSV File: [Can be downloaded from the above Kaggle notebook]**

GitHub Repository:

Link: https://github.com/DATS6101-TeamNeo/final-project