Analyzing the Impact of U.S. Presidential Cycles on Economic and Stock Market Performance

Topic

Presidential Patterns: Exploring Economic and Market Trends Across U.S. Presidential Cycles - This project aims to analyze the relationship between U.S. presidential cycles and key economic indicators including GDP growth and S&P 500 performance.

Business Problem

The focus of this research is to validate the Presidential Election Cycle Theory, first proposed by Yale Hirsch, which suggests that the U.S. stock market follows a predictable pattern throughout a president's four-year term. Specifically, the theory argues that stock market returns are typically lower in the first year, improve in the second year, peak in the third year, and remain strong in the fourth year due to pre-election stimulus and policy-driven economic optimism. This study aims to determine whether this cyclical pattern holds true for both stock market performance, represented by the SPY ETF, and GDP growth.

Given that SPY tracks the largest U.S. organizations, it serves as a reliable proxy for broader economic health and corporate growth. In addition to analyzing the SPY ETF, this project seeks to investigate whether GDP growth follows a similar cyclical pattern during presidential terms. Understanding if GDP growth aligns with the Presidential Election Cycle Theory provides a more comprehensive view of how political cycles influence both market sentiment and economic performance.

Furthermore, this study aims to leverage the dataset to predict future SPY prices using advanced forecasting models like Facebook's Prophet. By combining historical analysis and predictive modeling, this research explores how deviations from the traditional cycle may be influenced by modern economic policies, global events, and market dynamics. The insights generated will help validate the theory and

offer a deeper understanding of the relationship between presidential terms, stock market performance, and GDP growth.

Background

The **Presidential Election Cycle** Theory was introduced by Yale Hirsch in the 1960s through his research on stock market trends. According to this theory, the U.S. stock market tends to experience cyclical patterns aligned with the four-year presidential term. The theory attributes lower market performance in the first and second years to policy uncertainties and potential fiscal adjustments, while the third year shows the strongest performance due to government-driven economic stimulus aimed at boosting voter confidence before the next election. The fourth year often continues to see favorable market conditions as presidents implement election-year policies. While this theory has historically been held for stock market returns, limited research has explored its applicability to GDP growth. In recent decades, factors such as globalization, technological advancements, and unprecedented events (e.g., the 2008 financial crisis and the COVID-19 pandemic) have introduced new complexities that may cause deviations from the traditional cycle.

Dataset Explanation

The research uses three primary datasets: SPY ETF data, GDP growth data, and U.S. presidential term data. The SPY ETF data captures the historical performance of the S&P 500, representing the largest U.S. companies. This dataset includes fields such as DATE, Price, Open, High, Low, Returns, Quarterly Returns, and Quarterly Volatility. The GDP growth data provides quarterly growth rates, including fields such as DATE and GDP Growth. The presidential term data includes information about each president's name, party affiliation, and years in office, broken down by Start Year, End Year, and Term Year. Data preparation involved merging these datasets on a quarterly basis, aligning SPY data dates (03-31, 06-30, 09-30, 12-31) with GDP data dates (01-01, 04-01, 07-01, 10-01). The combined dataset facilitated a comprehensive analysis of SPY performance and GDP growth within the context of

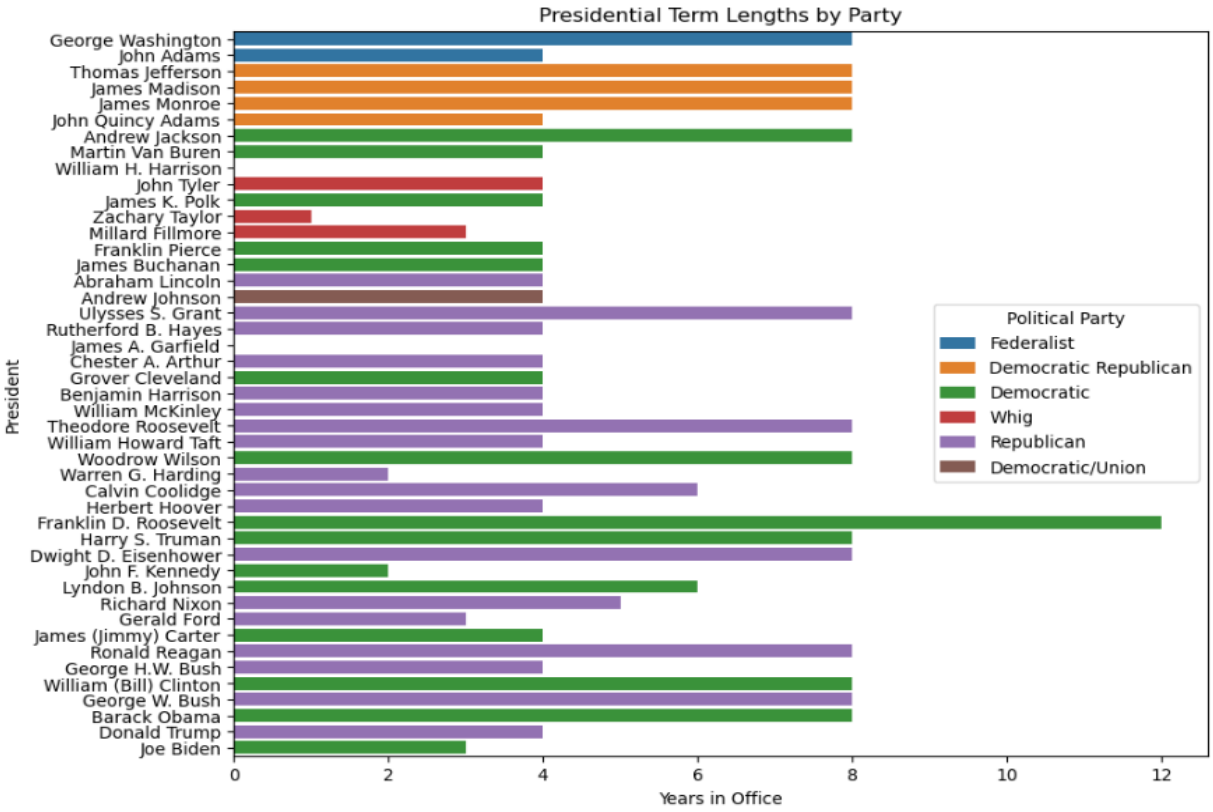
presidential terms. For further reference, U.S. presidential datasets, White House Official Website URL: White House Presidents Page, Historical GDP Dataset FEDERAL Reserve Bank of ST.Louis URL :FRED GDP Series and SPY (S&P 500 ETF) Data S&P 500 index data URL: Investing.com SPY Data

Research Approach and Process

This research employs a structured approach to validate the Presidential Election Cycle Theory and extend its application to GDP growth. The process begins with Exploratory Data Analysis (EDA) to visualize historical trends in SPY prices and GDP growth across the four-year presidential terms, identifying potential patterns that align with the theory. Following EDA, the research focuses on Presidential Theory Validation by comparing observed SPY returns and GDP growth for each term year to determine if cyclical behaviors exist as predicted. The Application of the Theory to GDP examines whether GDP growth mirrors the cyclical patterns seen in SPY, with particular emphasis on the second and third years. Finally, Time-Series Forecasting with Facebook's Prophet is utilized to predict SPY prices for 2024 and 2025, incorporating GDP growth projections to explore potential future market behavior in line with the theory.

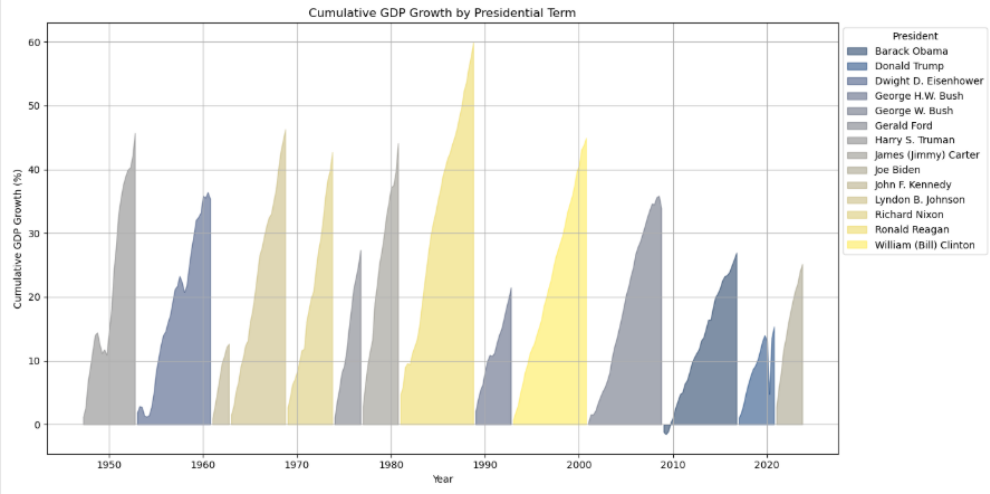
Analysis of Presidential Term Data

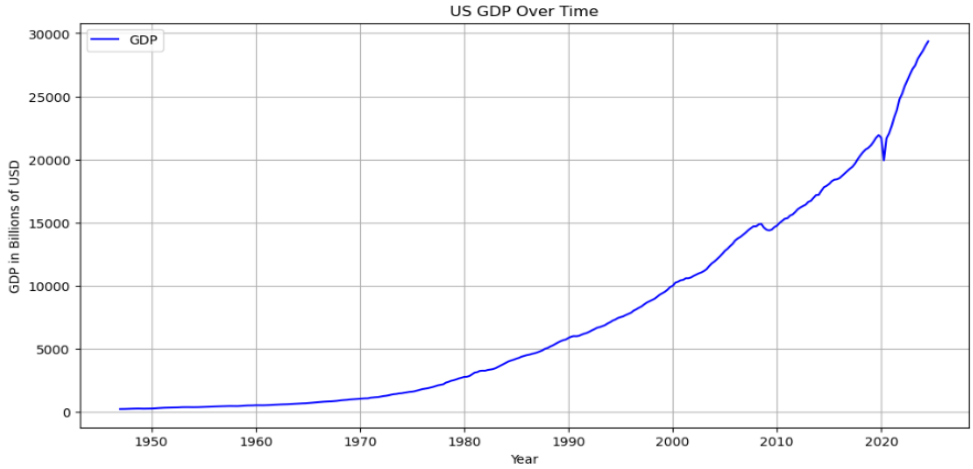
The EDA of the presidential dataset highlights variations in term lengths across different presidents and political parties. The chart shows standard four-year terms, shorter tenures due to unforeseen events, and extended presidencies like Franklin D. Roosevelt’s four terms. It also captures historical shifts between parties such as Federalist, Democratic-Republican, Democratic, Whig, and Republican. This analysis sets the stage for understanding how presidential terms and party affiliations may influence GDP growth and stock market performance, supporting the validation of the Presidential Election Cycle Theory.



U.S. GDP Trends and Growth Across Presidential Terms

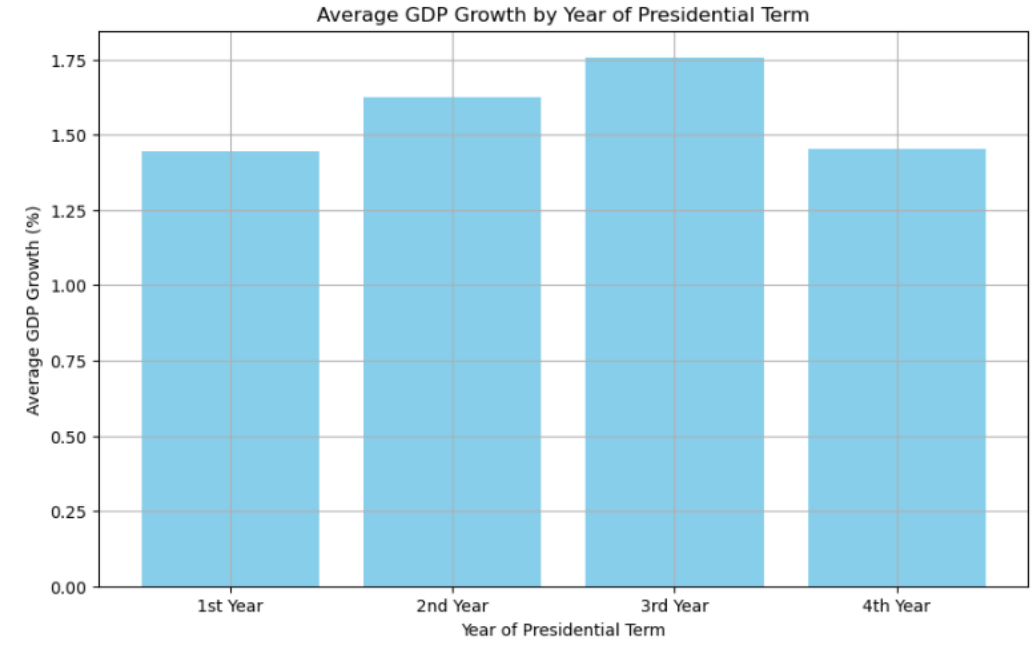
The first visualization shows the overall U.S. GDP growth trajectory from 1945 to 2023, highlighting a consistent upward trend with notable dips during economic downturns. This steady growth reflects the resilience and expansion of the U.S. economy over decades. The second visualization breaks down cumulative GDP growth by presidential term, revealing variations in growth rates across different administrations. Each president's term displays distinct patterns of economic performance, with some terms showing significant cumulative growth while others experience slower progress. Together, these visualizations provide a comprehensive view of how GDP growth correlates with presidential leadership, supporting the exploration of the Presidential Election Cycle Theory and its influence on economic performance.

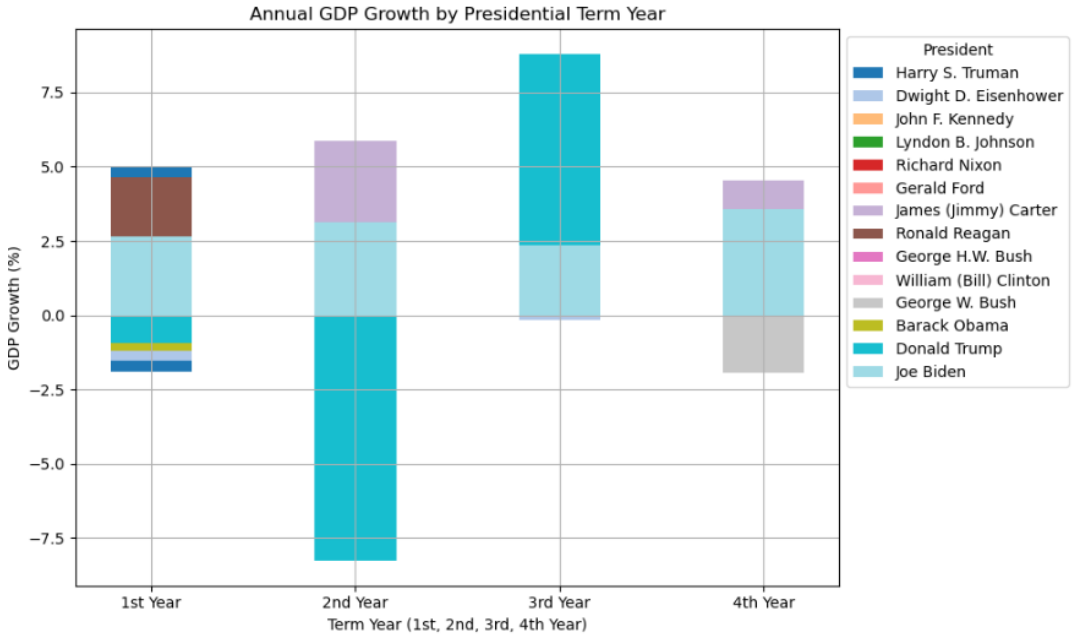




GDP Growth by Presidential Term Year

The first visualization shows the average GDP growth during each year of a presidential term. The data reveals that GDP growth tends to increase during the 2nd and 3rd years, peaking in the 3rd year, while the 1st and 4th years generally show lower growth. This trend aligns with the Presidential Election Cycle Theory, which suggests economic stimulation and policy impacts are most pronounced in the middle years of a term. The second visualization breaks down annual GDP growth by presidential term year and president. It highlights significant variability in GDP growth among different presidents, with notable gains in the 2nd and 3rd years and mixed results in the 1st and 4th years. The chart underscores how different administrations and economic conditions can influence GDP growth, while generally supporting the theory's expectation of mid-term economic strength.

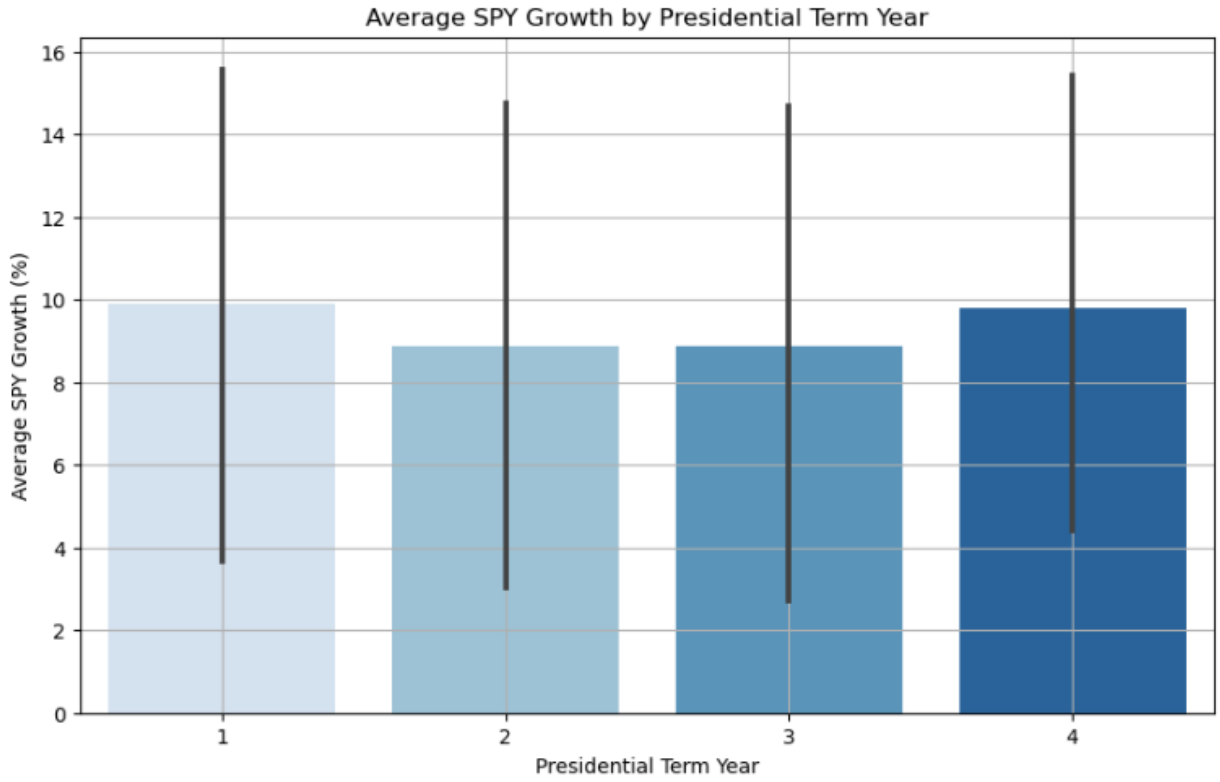




Average SPY Growth by Presidential Term Year

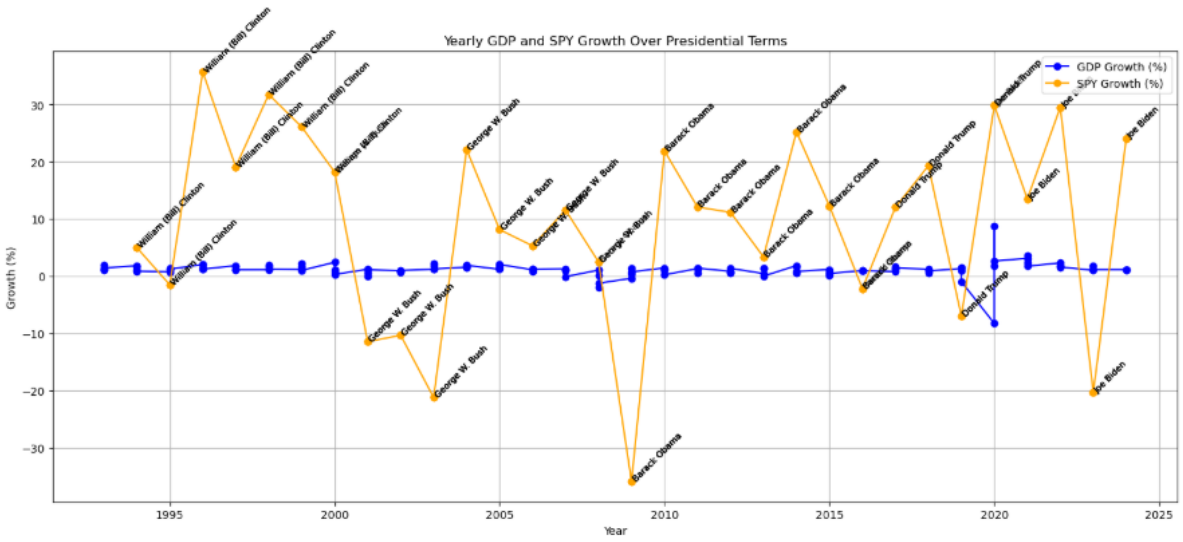
This visualization shows the average SPY growth rates across each year of the presidential term. The results indicate that while SPY returns are relatively stable throughout the term, the 1st and 4th years exhibit slightly higher average growth compared to the 2nd and 3rd years. The significant variability, as shown by the error bars, highlights the influence of market volatility and external

economic factors. This pattern suggests that while the Presidential Election Cycle Theory anticipates stronger mid-term returns, actual stock market performance can show notable deviations.



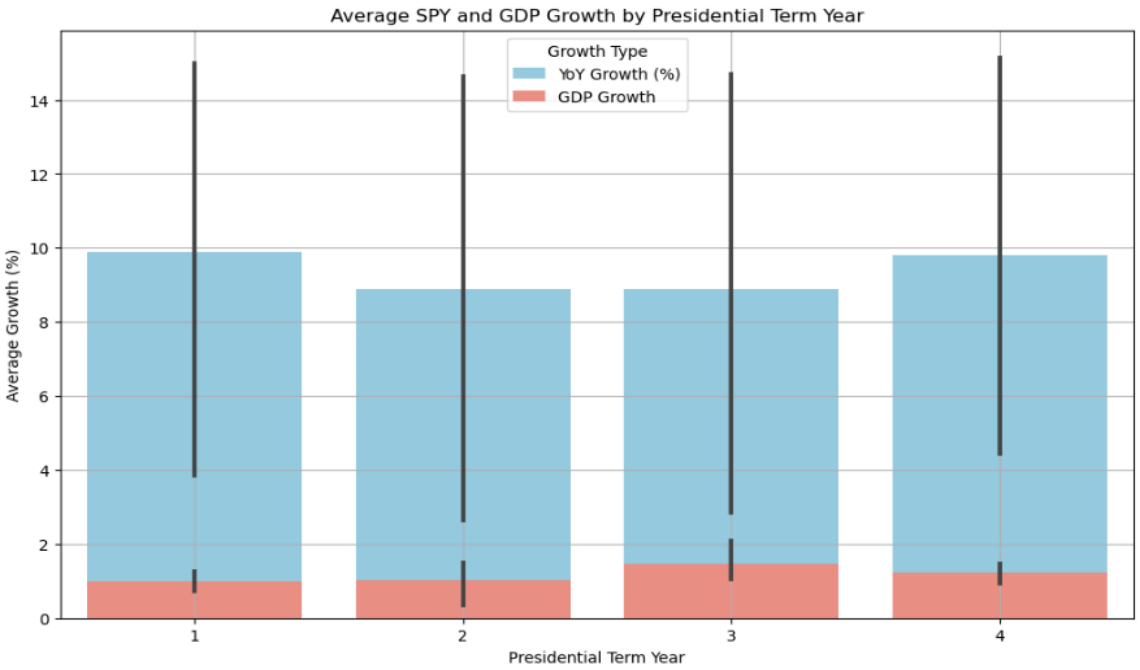
GDP vs. SPY growth over multiple presidential terms

The first visualization shows yearly GDP and SPY growth over multiple presidential terms, highlighting the cyclical trends and fluctuations in economic performance. While GDP growth remains relatively steady, SPY growth exhibits significant volatility, often aligning with the Presidential Election Cycle Theory. Periods of stronger SPY growth tend to occur in the second and fourth years of presidential terms, consistent with Hirsch's theory.



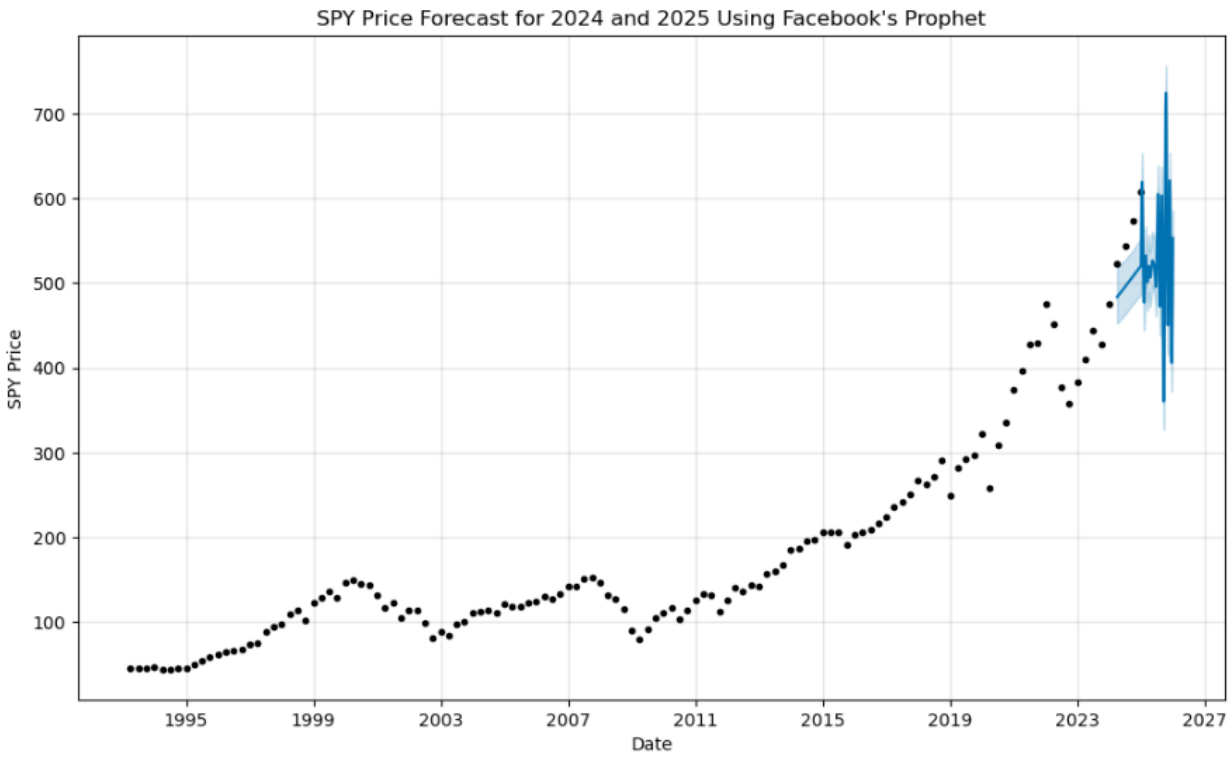
The second visualization compares average SPY growth and GDP growth by presidential term year, revealing key insights into economic and market performance. While SPY growth (blue bars) shows considerable variability and higher average returns, particularly in the second and fourth years, GDP growth (red bars) remains relatively stable across all four years. The higher volatility in SPY growth suggests that market sentiment is significantly influenced by presidential policies and pre-election dynamics, supporting the Presidential Election Cycle Theory. This analysis highlights that while GDP growth follows a steady trajectory, stock market returns reflect cyclical trends driven by political and

economic factors.



SPY price forecast for 2024 and 2025

The SPY price forecast for 2024 and 2025, generated using Facebook's Prophet model, shows a continuation of the upward trend observed in recent years. The forecast suggests that the SPY price will remain volatile but within a predictable range, with upper and lower confidence intervals capturing potential market fluctuations. The model takes historical data into account, including trends and seasonality, to project future prices, providing a reasonable basis for financial expectations during the upcoming presidential term years.




```
Mean Absolute Error (MAE): 18.58
Root Mean Squared Error (RMSE): 25.57
Mean Absolute Percentage Error (MAPE): 12.48%
```

The model's evaluation metrics show a Mean Absolute Error (MAE) of 18.58, a Root Mean Squared Error (RMSE) of 25.57, and a Mean Absolute Percentage Error (MAPE) of 12.48%. These metrics indicate that while the model's predictions are fairly accurate, market volatility and potential outliers contribute to the error margin. Given the nature of financial markets, this level of error is acceptable and suggests that the model is robust for forecasting purposes. This analysis supports informed decision-making and helps validate the potential relationship between presidential terms, GDP growth, and SPY price movements.

Conclusion

The analysis indicates that SPY returns exhibit a cyclical pattern consistent with the Presidential Election Cycle Theory, with notable peaks during the third and fourth years of a presidential term.

However, the first year also shows substantial growth, challenging the traditional expectation of weaker performance. This reflects the resilience and adaptability of large-cap U.S. companies tracked by the SPY ETF. In parallel, GDP growth follows a discernible pattern throughout the presidential term, with stronger performance typically occurring in the second and third years, aligning with policy stabilization and economic initiatives.

The observed deviations in recent years can be attributed to modern economic policies, global disruptions, and technological advancements, which introduce variability to the traditional cycles. Nevertheless, the overall trends suggest that the Presidential Election Cycle Theory retains relevance for both SPY stock performance and GDP growth, while highlighting the dynamic nature of contemporary economic and market conditions. These insights underscore the importance of considering both historical patterns and current economic contexts when analyzing market and economic forecasts.

Ethical Considerations

This research aims to validate the Presidential Election Cycle Theory through a responsible and unbiased analysis of SPY returns and GDP growth trends. The study maintains political neutrality by focusing solely on data-driven insights derived from publicly available sources, such as SPY ETF prices, GDP growth rates, and presidential term records. Transparency and replicability are prioritized by thoroughly documenting the data sources and methods used. The analysis is conducted objectively, avoiding any favor or critique of specific political parties, policies, or administrations.

While the study provides valuable insights into cyclical patterns in stock market and GDP performance, it acknowledges that external market indicators significantly impact predictive accuracy. Factors such as interest rates, inflation, employment rates, geopolitical events, and global economic conditions play critical roles in influencing market behavior. Incorporating these external indicators into the forecasting models would enhance prediction accuracy and robustness. The inherent volatility of financial markets and the possibility of unforeseen economic shocks or technological disruptions are

also recognized as limitations to the study. Policymakers, investors, and analysts should use these findings as part of a broader decision-making framework, considering additional market indicators for a more comprehensive and accurate outlook.

References

- Glossary of investment terms and understanding investment concepts, JP Morgan Asset Management
- Presidential cycle stock market theory , Presidential Election Cycle Theory: Meaning, Overview, and Examples
- Gross Domestic Product (GDP) USA growth index, Bureau of Economic Analysis (BAE)
- SPDR S&P 500 ETF Trust (SPY), Finance.yahoo.com
- Understanding Time Series Analysis, statology
- Two-Term Limit on Presidency, 22nd amendment, National Constitution center