

Starbucks Stock Prices and the Ongoing Boycott

Nour Hany, Laila Khaled, Yasmine Mohammed, Dana Sherin, Ahmed Sameh

Abstract

This study analyzes the impact of political and social trends on the market performance of Starbucks, focusing specifically on the effects of a boycott that began in October 2023. By examining daily stock prices and trading volumes from October 2022 to May 2024, the research aims to determine whether the boycott significantly influenced Starbucks' stock performance. The analysis includes descriptive statistics, data visualization, and hypothesis testing to compare the periods before and after the boycott. Results indicate a notable decline in stock prices and daily returns, coupled with an increase in trading volume following the boycott. The findings suggest that the boycott significantly affected investor behavior and market dynamics. This study provides valuable insights for investors, market analysts, and business strategists in understanding the interplay between political events and market performance.

Keywords: Starbucks, Market analysis, Boycott, Stock prices

1. Introduction

Global markets are increasingly influenced by political and social trends, impacting companies like Starbucks. Ongoing boycotts, social movements, and the effects of the COVID-19 pandemic present both challenges and opportunities for the company. Whether you're an investor, market analyst, or curious about the business landscape, this analysis provides insights into key trends shaping Starbucks' market performance, aiding strategic decision-making.

2. Research Questions

This study aims to address the following research questions:

- Did the boycott that began in October 2023 have a significant impact on Starbucks' closing stock prices?
- Did the boycott that began in October 2023 have a significant impact on Starbucks' trading volume?

3. Hypothesis

Null Hypothesis 1: There is no difference between the means of close prices of October 2022 to May 2023 and October 2023 to May 2024.

Alternative Hypothesis 1: The average close price in the former period is less than the latter.

Null Hypothesis 2: There is no difference between the means of volume of October 2022 to May 2023 and October 2023 to May 2024.

Alternative Hypothesis 2: The average volume in the former period is less than the latter.

4. Population of Interest

Daily stock prices of Starbucks from October 2022 – May 2024.

5. Dataset

The dataset contains Starbucks's historical data in the stock market from 26 June 1992 till present day (23 May 2024).

Date: The date of the trading day.

Open: The opening price of the stock on that day.

High: The highest price the stock reached on that day.

Low: The lowest price the stock reached on that day.

Close: The closing price of the stock on that day.

Adj Close: The adjusted closing price of the stock, accounting for any corporate actions like stock splits and dividends.

Volume: The number of shares traded on that day.

6. Analysis

6.1. Descriptive Statistics Analysis

6.1.1. Period: October 2022 - May 2023

- Open Prices: Mean: 100.75, SD: 7.03, Min: 84.07, Max: 114.49
- High Prices: Mean: 101.79, SD: 6.92, Min: 85.47, Max: 115.48
- Low Prices: Mean: 99.85, SD: 7.16, Min: 82.43, Max: 114.25
- Close Prices: Mean: 100.88, SD: 7.13, Min: 83.76, Max: 114.56
- Adjusted Close Prices: Mean: 97.67, SD: 7.17, Min: 80.47, Max: 111.25

- Volume: Mean: 6,557,510, SD: 2,819,347, Min: 2,320,000, Max: 24,388,600
- Daily Return: Mean: 0.001, SD: 0.017, Min: -0.092, Max: 0.085
- Volatility: Mean: 0.272, SD: 0.086, Min: 0.144, Max: 0.437

6.1.2. Period: October 2023 - May 2024

- Open Prices: Mean: 92.23, SD: 7.29, Min: 72.29, Max: 107.18
- High Prices: Mean: 92.95, SD: 7.23, Min: 72.85, Max: 107.66
- Low Prices: Mean: 91.42, SD: 7.25, Min: 71.80, Max: 106.20
- Close Prices: Mean: 92.14, SD: 7.20, Min: 72.50, Max: 107.21
- Adjusted Close Prices: Mean: 91.07, SD: 6.90, Min: 71.95, Max: 105.77
- Volume: Mean: 9,182,346, SD: 6,251,854, Min: 3,206,400, Max: 66,610,700
- Daily Return: Mean: -0.001, SD: 0.019, Min: -0.159, Max: 0.095
- Volatility: Mean: 0.234, SD: 0.108, Min: 0.140, Max: 0.516

6.2. Comparison of Descriptive Statistics

The comparison indicates a general decline in stock prices and daily returns, while the trading volume has increased during the period following the boycotting event. This suggests that the boycott might have influenced investor behavior, leading to more trading activity but lower stock prices.

7. Data Visualization

This section includes data visualizations that illustrate the impact of the boycott on Starbucks’ stock prices and trading volume.

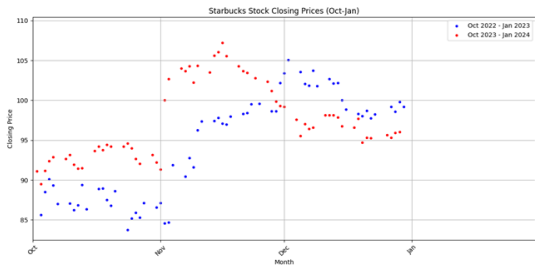


Figure 1: Starbucks Stock Closing Prices (Oct-Jan)

The provided scatter plots offer a comparative analysis of Starbucks stock closing prices over two periods: October

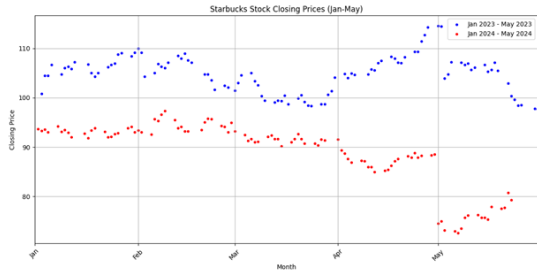


Figure 2: Starbucks Stock Closing Prices (Jan-May)

to January, and January to May. Each plot contrasts the data from two consecutive years—2022-2023 and 2023-2024—highlighting the variations in stock performance across these timeframes.

October to January (Fig. 1):

- **Plot Overview:** The first scatter plot illustrates the closing prices from October to January for the periods of 2022-2023 (blue) and 2023-2024 (red).
- **Key Observations:**
 - **Initial Levels:** In October, the closing prices for 2022-2023 start slightly lower compared to 2023-2024, around 85 to 90.
 - **Trends and Peaks:** During the 2023-2024 period, the stock prices show a significant upward trend, peaking in December at over 105, then facing a decline. Conversely, the prices during 2022-2023 exhibit a more stable pattern with minor fluctuations and steady upward trend.
 - **Conclusion of the Period:** By January, the 2022-2023 prices remain high, around 95 to 100, while the 2023-2024 prices stabilize around 90 to 95.

January to May (Fig. 2):

- **Plot Overview:** The second scatter plot continues from January to May for the same two periods.
- **Key Observations:**
 - **Continuation and Divergence:** The 2022-2023 period shows continued growth with a steady rise, peaking at around 110 in February and maintaining high levels throughout the period. In contrast, the 2023-2024 prices display a more stable trend, with continuous decline, remaining around 85 to 95. Then a very sharp decline in May.

Conclusion:

The comparison between the two periods (October to January and January to May) for the years 2022-2023 and 2023-2024 reveals noticeable differences in the stock price trends. The 2022-2023 period exhibits an overall upward trend, while the 2023-2024 period shows stability

but lower overall prices until the sharp decline in May. These observations suggest that external factors, such as the boycotting event starting in October 2023, may have negatively impacted the stock performance in the latter period.

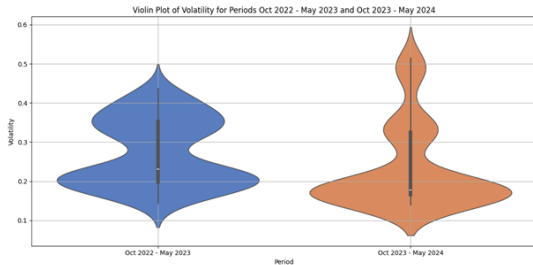


Figure 3: Violin Plot of Total Volume (Oct 2022 – May 2023 and Oct 2023 – May 2024)

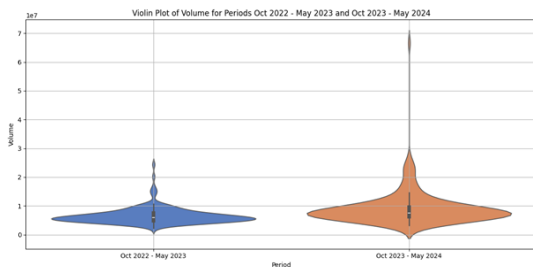


Figure 4: Comparison of Stock Prices

The above violin plots compare the total volume of Starbucks' stock traded and also the stock prices between October 2022 – May 2023 and October 2023 – May 2024, highlighting the impact of the boycotting that started in October 2023

Volume: The violin plot for volume shows that during the period from October 2022 to May 2023, the trading volume had a narrower distribution centered around lower values, indicating more consistent and moderate trading activity. Conversely, in the period from October 2023 to May 2024, the distribution of trading volume is broader with a significant peak towards higher volumes. This suggests that trading activity was more volatile with periods of unusually high volume, possibly reflecting heightened market interest or significant events influencing trading behavior during this period.

Volatility: The violin plot for volatility reveals that the period from October 2022 to May 2023 exhibited a relatively narrower and more consistent range of volatility, suggesting more stable stock price movements. In contrast, the period from October 2023 to May 2024 shows a broader distribution with higher median volatility, indicating increased fluctuations in stock prices. This period seems to have experienced more pronounced volatility, possibly due to market reactions to external factors such as the boycott mentioned.

Analysis: The data indicates a clear difference in trading behavior and stock price stability between the two periods. The period from October 2023 to May 2024 shows both higher trading volumes and greater volatility. This could be due to signif-

icant market events or external factors affecting investor sentiment and behavior. The increased volatility and volume during the latter period suggest a more reactive market, potentially influenced by the boycott mentioned and other economic factors. These patterns highlight the importance of considering external market conditions and events when analyzing stock performance and investor behavior.

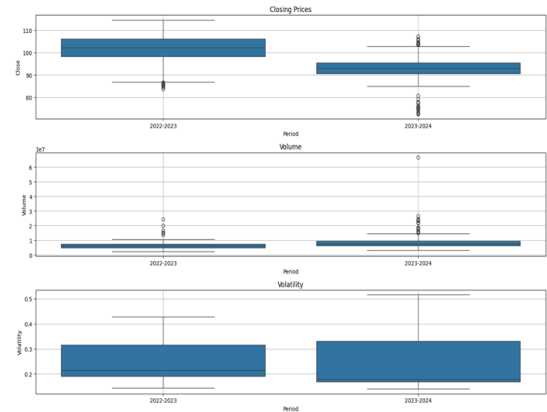


Figure 5: Box plots analyzing the stock prices, volatility levels and total volume

These box plots provide an analysis of the stock prices, volatility level and total volume, comparing the two periods, Oct 2022-May 2023 and Oct 2023-May 2024

a. Closing Prices:

• 2022-2023:

- The median closing price is around 100.
- The interquartile range (IQR) is between approximately 90 and 110. There are several outliers below 90, indicating occasional lower closing prices.

• 2023-2024:

- The median closing price is slightly lower, around 95.
- The IQR is between approximately 85 and 105.
- There are more outliers below 85, indicating increased instances of lower closing prices.

• Comparison:

- The median closing price has decreased from 2022-2023 to 2023-2024.
- The IQR has shifted downward, indicating a general decline in closing prices.
- The number of outliers has increased, suggesting more frequent low closing prices in 2023-2024.

b. Volume:

• 2022-2023:

- The median trading volume is relatively low.

- The IQR is very tight around the median, indicating low variability in volume.
- There are several significant outliers, indicating occasional high trading volumes.

- **2023-2024:**

- The median trading volume remains low and similar to 2022-2023.
- The IQR is slightly wider but still indicates low variability.
- There are fewer significant outliers compared to 2022-2023.

- **Comparison:**

- The trading volume in both periods shows low median values with occasional spikes.
- The 2022-2023 period has more significant outliers, suggesting occasional high trading activity.
- The 2023-2024 period has fewer outliers, indicating steadier trading behavior.

c. Volatility:

- **2022-2023:**

- The median volatility is around 0.3.
- The IQR is between approximately 0.2 and 0.4, indicating moderate variability in volatility.
- There are few outliers, indicating consistent volatility levels.

- **2023-2024:**

- The median volatility is similar, around 0.3.
- The IQR is slightly narrower, indicating more consistent volatility.
- There are no significant outliers, suggesting stable volatility levels.

- **Comparison:**

- The volatility levels are similar in both periods, with a slight reduction in variability in 2023-2024.
- The absence of significant outliers in 2023-2024 indicates more stable volatility compared to 2022-2023.

Summary:

- **Closing Prices:** The stock prices have decreased in 2023-2024 compared to 2022-2023, with a shift in the median and IQR downward.
- **Volume:** There is low variability in trading volume for both periods, with occasional spikes. The 2023-2024 period shows fewer significant outliers.

- **Volatility:** The volatility levels are consistent between the two periods, with a slight reduction in variability in 2023-2024.

Interpretation:

- The downward shift in closing prices and the decrease in the number of outliers suggest a less favorable market sentiment or performance for Starbucks in the 2023-2024 period compared to 2022-2023.
- The low variability in trading volume and the absence of significant outliers in 2023-2024 indicate steadier trading behavior.
- The consistent volatility levels with reduced variability in 2023-2024 suggest a stable market environment with fewer extreme price movements.

These observations provide valuable insights into the changes in stock performance and market behavior for Starbucks over the two periods.

8. Competitor Analysis

In the figure below (Figure 6), we compare the closing stock prices of Starbucks with one of their biggest competitors, Costa Coffee. The goal is to identify and eliminate potential confounding variables, providing a clearer understanding of whether any economic trends have impacted the entire coffee industry or if the observed changes are specific to Starbucks. This comparison aims to discern broader economic influences from factors that may be unique to Starbucks, such as the boycotting event starting in October 2023. By analyzing both companies' stock performances over the same period, we can better isolate the effects of industry-wide economic trends from company-specific events.

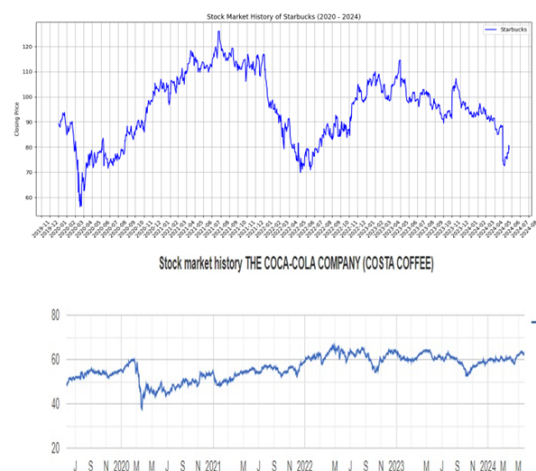


Figure 6: Competitor Stock Price Comparison

The boycott of Starbucks starting in October 2023 could indeed be a contributing factor to the observed trends in the stock

prices, particularly the sharp decline and subsequent volatility seen in the Starbucks stock graph. Here's a detailed analysis:

Sharp Decline Post-October 2023: The Starbucks stock graph shows a noticeable drop starting in late 2023. This decline aligns with the timing of the boycott, suggesting that negative public sentiment and reduced consumer demand may have significantly impacted the stock price. Investors likely reacted to the potential loss in revenue and market share due to the boycott, leading to a sell-off in the stock.

Increased Volatility: After the initial decline, the stock shows increased volatility. This can be attributed to the market's uncertainty about the long-term impact of the boycott. Fluctuations in stock prices might reflect changing investor sentiment as new information about the boycott's impact becomes available, including any measures Starbucks took to mitigate the effects or changes in consumer behavior.

Comparison with Costa Coffee: Comparing with Costa Coffee's steadier performance, it is clear that Costa Coffee did not face the same level of public backlash or market disruption. This relative stability further supports the idea that Starbucks' unique challenges, like the boycott, played a significant role in its stock performance.

Market Reaction: Boycotts can lead to immediate negative market reactions as investors anticipate lower earnings and potential long-term damage to the brand. The impact on Starbucks' stock price is a reflection of these market dynamics, with the sharp decline and subsequent volatility highlighting the investors' concerns.

Conclusion: While there could be multiple factors influencing Starbucks' stock prices, the timing and nature of the decline and increased volatility strongly suggest that the boycott starting in October 2023 had a significant impact. This aligns with typical market behavior in response to boycotts, where investor sentiment quickly adjusts to perceived threats to the company's financial performance and brand reputation.

The competitor analysis highlights that while external market conditions influenced the entire coffeehouse sector, Starbucks was more significantly affected by the boycott. This resulted in greater stock price declines and higher volatility compared to its competitors. Understanding these dynamics is crucial for strategic planning and market positioning.

By comparing Starbucks' performance with its competitors, we gain valuable insights into the broader market trends and how individual companies are navigating challenges and opportunities in the industry.

9. Explaining the Reason for the Immediate Sharp Incline after the Boycotting

The short, sharp incline in Starbucks' stock prices immediately following the onset of the boycott in October 2023 is an

interesting anomaly, as illustrated in Figures 7 and 1. Typically, one might expect a boycott to exert downward pressure on a company's stock due to anticipated declines in sales and revenue. However, the observed initial increase could be attributed to opportunistic investor behavior.



Figure 7: Starbucks Stock Price Recovery Post-Boycott

When a company faces a significant, but potentially temporary, challenge such as a boycott, some investors might view the resultant dip in stock prices as a buying opportunity. These investors likely believe that the company's fundamentals remain strong and that the boycott's effects will be short-lived. Consequently, they purchase shares at reduced prices, anticipating a rebound once the boycott ends or its impact diminishes. This surge in buying activity can temporarily drive up the stock price, creating a short-term upward trend.

Market Psychology and Value Investing:

- Investor Sentiment:** The rationale behind this behavior is grounded in market psychology and the principles of value investing. Investors who trust in Starbucks' long-term prospects might see the boycott as an overreaction by the market, leading to undervalued stock prices.
- Capitalizing on Undervaluation:** By capitalizing on this perceived undervaluation, they aim to benefit from the stock's eventual recovery. This behavior reflects a strategic approach where investors leverage short-term market disruptions to achieve long-term gains.

Conclusion: The immediate sharp incline in Starbucks' stock prices following the boycott can be largely attributed to the actions of opportunistic investors. These investors, driven by confidence in the company's underlying strength and future recovery, seized the opportunity presented by the initial drop in stock prices. This dynamic showcases the interplay between market psychology and investment strategies, particularly in response to temporary market challenges.

Understanding these market reactions provides valuable insights into investor behavior and the factors influencing stock price movements during periods of corporate adversity.

10. Are the Economic Conditions the Reason?

To determine whether the decline in Starbucks' stock prices after October 2023 is primarily due to the boycott or influenced by broader economic factors, we need to examine

key economic indicators such as inflation rates, GDP growth, and unemployment rates during this period.

Inflation Rates: In 2023, the inflation rate in the U.S. saw significant fluctuations, peaking at around 9.1% in June 2022 and then gradually decreasing to 3.2% by October 2023. Throughout 2024, the inflation rate remained relatively stable, fluctuating between 3.1% and 3.5% (US Inflation Calc) (Bureau of Labor Statistics).

GDP Growth: The GDP growth rate in the U.S. during this period showed signs of recovery from the pandemic-induced recession. In 2023, the GDP growth rate was around 2.1%, indicating moderate economic expansion. This trend continued into 2024, with the GDP growth rate expected to stabilize around 2% (Bureau of Labor Statistics).

Unemployment Rates: Unemployment rates also provide insight into economic health. In 2023, the unemployment rate was around 3.9%, reflecting a tight labor market. This rate remained consistent into early 2024, indicating that employment levels were stable and not significantly affecting consumer spending power (Bureau of Labor Statistics).

Analysis: Given these economic indicators, the decline in Starbucks' stock prices post-October 2023 is less likely to be solely attributed to broader economic conditions such as high inflation, GDP growth fluctuations, or unemployment rates. Instead, the immediate drop following the boycott suggests that the boycott had an impact on investor sentiment and stock performance.

While it's possible that some investors might have seen the lower stock prices as a buying opportunity, the overall trend indicates that the boycott's influence on consumer behavior and market perceptions likely played a major role in the stock price decline.

Conclusion: While economic factors provide a backdrop to market conditions, the timing and magnitude of the stock price changes suggest that the boycott might be a driver of the observed decline.

11. Hypothesis Testing Steps

1. Define null and alternative hypothesis
2. Choose the appropriate test
3. Calculate the p-value
4. Determine the statistical significance

11.1. Hypothesis Testing for the Close Prices

- Null Hypothesis: There is no difference between the means of close prices from October 2022 to May 2023 and from October 2023 to May 2024
- Alternative Hypothesis: The average close prices in the first period is less than the latest

- ANOVA test result: p-value = 1.5862346891804615e-24
- Conclusion: With a significance level of 0.05, the null hypothesis is rejected.

11.2. Hypothesis Testing for the Volume

- Null Hypothesis: There is no difference between the means of volume from October 2022 to May 2023 and from October 2023 to May 2024
- Alternative Hypothesis: The average volume in the first period is less than the latest
- ANOVA test result: p-value = 1.524511637171421e-06
- Conclusion: With a significance level of 0.05, the null hypothesis is rejected.

12. Conclusion

At the 5% significance level, there is evidence to support the claim that there is a difference between the means of close prices and volumes for the periods from October 2022 to May 2023 and October 2023 to May 2024. The unusual decrease in the average close price is most likely influenced by the recent boycott.

13. Potential Issues

One potential issue in our research is the limited availability of datasets for the stock prices of Starbucks' competitors. Many competitors are privately held and do not disclose their stock prices, restricting our ability to include a comprehensive analysis of market trends within the industry.

References

- [1] Psychreg, (2022). Understanding Investor Psychology and Emotions in Market Volatility. Retrieved from <https://www.psychreg.org/understanding-investor-psychology-emotions-market-volatility/>
- [2] Frontiers in Environmental Science, (2022). Environmental Factors Influencing Market Trends. Retrieved from <https://www.frontiersin.org/articles/10.3389/fenvs.2022.1068398/full>
- [3] Macrotrends, (2023). World Inflation Rate (CPI). Retrieved from <https://www.macrotrends.net/global-metrics/countries/WLD/world/inflation-rate-cpi>
- [4] Bureau of Labor Statistics, (2023). Consumer Price Index Home. Retrieved from <https://www.bls.gov/cpi/home.htm>
- [5] NerdWallet, (2024). Average Stock Market Return. Retrieved from <https://www.nerdwallet.com/article/investing/average-stock-market-return#:text=stock>