Examining the Impact of Tariff Policy on Goldman Sachs' Stock Performance and Volatility

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Abstract

Uncertainty in trade policy, particularly U.S. and China tariffs, is frequently cited as a potential driver of financial market volatility. This study examines the relationship between shifts in tariff policy, especially retaliatory measures, and the stock performance and volatility of Goldman Sachs, with J.P. Morgan and the S&P 500 serving as a comparative benchmark. Using a quantitative research approach, the analysis incorporates historical stock data from Yahoo Finance and tariff event data from the Peterson Institute for International Economics. Statistical methods such as correlation tests, multiple linear regression, and t-tests were applied using SAS Studio to evaluate stock behavior in response to tariff events.

The results suggest that adjustments in tariff policy have minimal influence on Goldman Sachs' stock price movements. Correlation and regression analyses do not establish a meaningful relationship, indicating that traditional market indicators such as trading volume and daily price fluctuations play a more significant role in shaping stock behavior. Volatility analysis provides a more complex perspective. Although retaliatory tariffs are associated with a statistically significant decrease in Goldman Sachs' daily return volatility, with a p-value below 0.05, the effect size is negligible, accounting for less than one percent of volatility variation. While J.P. Morgan exhibits slightly stronger correlations with tariff events, no substantial volatility shifts are observed.

Although seasonal effects were examined descriptively, formal de-seasonalization techniques were not employed. Additionally, broader macroeconomic factors such as Federal Reserve policy and investor sentiment could not be entirely controlled, potentially influencing stock trends. By integrating firm-level data and addressing selection bias, this study offers a refined perspective on the intersection of trade policy and financial markets. While tariffs appear

to have a limited direct impact on stock behavior, larger macroeconomic forces remain dominant. Future research could expand the scope by analyzing sector-wide effects, including international financial institutions, and examining broader market indices to provide a more comprehensive understanding of trade policy's role in global financial volatility.

Problem Statement

The financial sector is deeply intertwined with global economic policies, yet the direct effects of U.S.–China tariff fluctuations on major investment banks remain largely unexplored. Goldman Sachs, a leading financial institution with significant global exposure, is particularly vulnerable to market volatility driven by trade disputes. While existing research has analyzed broader financial market reactions to trade policy shifts, there is a lack of targeted analysis on how specific tariff adjustments impact Goldman Sachs' stock performance. This gap limits investors, policymakers, and analysts from making well-informed decisions in an increasingly uncertain economic environment. This study seeks to address that gap by investigating the relationship between tariff changes and stock volatility, providing crucial insights for financial risk management and strategic investment planning.

Introduction

Trade policy and economic uncertainty significantly shape financial markets, influencing investment strategies, risk assessment, and market stability. As trade tensions between the U.S. and China continue to evolve, financial institutions must adapt to unpredictable policy shifts that influence capital flows and investor sentiment. Goldman Sachs, a powerhouse in global finance, provides a compelling case study for examining the interplay between tariff policies and stock volatility.

The U.S.–China trade war has introduced substantial economic disruptions, influencing lending strategies, asset allocation, and market confidence. While tariffs are primarily designed to regulate international commerce, their indirect effects extend beyond traditional trade sectors, shaping financial institutions' stock movements. This research aims to uncover patterns in

Goldman Sachs' stock fluctuations in response to tariff adjustments, enabling investors and policymakers to better anticipate and navigate economic instability.

Objectives

Goldman Sachs does not engage in direct trade of goods, but its role in global finance, through asset management, transaction facilitation, and investment strategies, exposes it to trade-related risks. Understanding how tariff policies affect its stock performance is critical for evaluating financial market reactions to geopolitical uncertainty.

This study will examine the correlation between U.S.–China tariff adjustments and Goldman Sachs' stock behavior, identifying volatility patterns linked to trade tensions. By analyzing historical data from January 2018 to April 2025, this research will assess how market responses shift across different phases of trade disputes. Using stock data from Yahoo Finance and trade policy records from the Peterson Institute for International Economics, the study will establish key connections that clarify the financial sector's response to trade conflicts. Additionally, it will explore the impact of China's retaliatory tariffs, assessing their effects on investor behavior and broader market stability.

The goal of this research is to strengthen risk management strategies by providing data-driven insights that help financial institutions and investors make more informed decisions in the face of evolving trade policies.

Overview of Study

This study relies on two primary datasets: Goldman Sachs' stock performance data from Yahoo Finance and U.S.–China trade tariff records from the Peterson Institute for International Economics (PIIE). The Goldman Sachs dataset spans January 1, 2017, to April 29, 2025,

documenting fluctuations in stock prices, including opening prices, daily highs and lows, closing values, adjusted close metrics, and trading volume. The PIIE dataset provides detailed tariff rate changes from January 1, 2018, to April 12, 2025, highlighting specific policy actions and their timing.

All data used in this study are publicly available and securely stored to uphold ethical research standards. Daily stock price tracking enables high-frequency trend analysis, while PIIE's tariff chronology supports an event-driven assessment of market reactions. By utilizing secondary sources, the study ensures cost-effective research without compromising depth or accuracy.

Through the integration of financial and policy datasets, this study will provide insights into how tariff adjustments contribute to stock market volatility. Goldman Sachs serves as a crucial case study for understanding the broader impact of trade policies on global financial stability, equipping stakeholders with the knowledge necessary to manage risk in dynamic economic environments.

Research Questions and Hypothesis

Global market fluctuations create significant challenges for financial institutions, requiring a deep understanding of portfolio resilience, and the ability to withstand and recover from economic disruptions. As a leading investment bank, Goldman Sachs provides a compelling case study for analyzing the impact of trade policy shifts, particularly tariff adjustments, on stock performance and volatility. This research examines the correlation between U.S.–China tariff changes and Goldman Sachs' stock fluctuations, assessing the extent to which China's retaliatory tariffs amplify market instability.

Through quantitative analysis of historical stock performance and tariff data, this study identifies trends that inform risk management and investment strategies during periods of macroeconomic uncertainty. Statistical models and structured datasets test hypotheses on tariff-induced market movements while ensuring ethical rigor in data collection and interpretation. By integrating theoretical frameworks with empirical analysis, the research aims to strengthen financial market resilience and refine strategies for mitigating risks associated with shifting trade policies.

Research Question 1: How do changes in tariff policies correlate with fluctuations in Goldman Sachs' stock performance?

- H_1: Changes in tariff policies have no significant effect on Goldman Sachs' stock price.
- H_2: Changes in tariff policies significantly impact Goldman Sachs' stock price.

Research Question 2: Does the imposition of retaliatory tariffs by China affect Goldman Sachs' stock volatility?

- H_1: Retaliatory tariffs have no significant impact on Goldman Sachs' stock volatility.
- H_2: Retaliatory tariffs contribute to significant changes in Goldman Sachs' stock volatility.

Literature Review

Tariff Announcements and Market Reactions

Egger and Zhu's (2021) article used an event study methodology to examine how tariff announcements affect abnormal stock returns, emphasizing the heightened investor uncertainty that accompanies such policy shifts. Their findings reveal the immediate financial consequences of protectionist measures, particularly for industries deeply embedded in global supply chains. For Goldman Sachs, a firm heavily reliant on capital markets, these rapid market responses signal potential disruptions in valuation and investor sentiment, highlighting the broader impact of trade policy volatility. Even short-term policy announcements can reverberate through the financial sector, influencing investor perceptions and decision-making.

Similarly, Yilmaz's (2020) article explores the effects of rising tariffs on global trade networks, production costs, and stock market stability. While the study primarily addresses macroeconomic industry trends, its insights are highly relevant to financial institutions with international exposure. Firms like Goldman Sachs, which are deeply integrated into cross-border economic activity, face spillover effects from tariff-induced shocks originating outside the financial sector. Such disruptions not only affect firm-specific performance but also contribute to broader market volatility.

Trade Policy Uncertainty (TPU) and Financial Volatility

Riaz et al.'s (2024) article analyzes trade policy uncertainty (TPU) as a key driver of market instability, demonstrating how heightened uncertainty suppresses investment activity and reshapes asset valuations across industries. Using time-varying econometric models, they

illustrate how TPU shocks reverberate through global financial systems, impacting even institutions initially perceived as insulated from trade-related disruptions. Given Goldman Sachs' extensive global investment footprint, the firm is particularly vulnerable to TPU-induced volatility, whether through shifts in investor sentiment or diminished capital flows. Consequently, investment strategies evaluating Goldman Sachs must consider not only quantitative exposure but also more abstract influences, such as sentiment-driven volatility, an area underexplored in existing TPU research.

Shafique and Bhutta's (2023) article offers a complementary regional perspective, examining how Asian economies respond to TPU through a Trade War Index. Their study identifies varying degrees of market resilience and volatility spillovers, providing valuable insights into the differential effects of trade policy uncertainty across economic contexts. While their research primarily focuses on Asian markets, the methodological framework is highly relevant to multinational firms like Goldman Sachs, which operate within interconnected financial ecosystems and are directly exposed to evolving investor behavior in response to trade policy fluctuations.

Retaliatory Tariffs and Global Market Repercussions

Egger and Zhu (2021) and Yilmaz (2020) both analyze the growing impact of retaliatory tariffs, highlighting their role in increasing market volatility and investor risk aversion. These tariffs don't remain confined to specific sectors but instead create widespread financial disruptions with systemic implications. For Goldman Sachs, positioned at the crossroads of global finance and policy, trade conflicts introduce geopolitical risks that directly influence investment strategies, capital allocation, and client decisions. However, existing analyses often

treat financial firms as monolithic. A more nuanced approach, as this study proposes, examines how different business lines within Goldman Sachs react to these shocks.

Riaz et al.'s (2024) work builds on this discussion, showing that trade policy uncertainty becomes even more destabilizing during global crises when financial markets are already strained. While Goldman Sachs is widely viewed as resilient, their findings suggest that the firm's stability is challenged when policy-driven volatility intersects with broader economic fragility. Understanding these dynamics is essential for evaluating their adaptability in prolonged periods of uncertainty.

Implications for Financial Institutions like Goldman Sachs

Although no study focuses solely on Goldman Sachs, each provides valuable insight into how large, globally integrated financial institutions manage tariff-related shocks. Egger and Zhu (2021) and Riaz et al. (2024) illustrate the complex effects of trade policy uncertainty, showing that financial institutions face both direct risks, such as exposure to policy-driven premiums, and indirect pressures from shifts in investor sentiment and market volatility. Given Goldman Sachs' central role in global financial intermediation, the firm is likely more exposed to the systemic consequences of tariff fluctuations than smaller or less diversified institutions.

Synthesis and Key Insights

Collectively, the body of literature consistently demonstrates that tariffs and trade policy uncertainty play a crucial role in driving stock volatility, particularly for multinational corporations operating within complex global networks. Goldman Sachs exemplifies this dynamic, given its extensive presence across jurisdictions and asset classes, as well as its deep

integration into international markets. Theoretical frameworks spanning market efficiency and protectionism highlight the interplay between rational investor behavior and market psychology in shaping financial responses to tariff policies. This underscores the necessity of research that not only quantifies market fluctuations but also contextualizes them through firm-specific exposures.

Gaps in the Literature

While existing research offers valuable insights, it doesn't directly examine how individual firms, like Goldman Sachs, respond to tariff policies. Most studies focus on broad trends across industries or regions, prioritizing short-term market fluctuations over long-term impacts and firm-specific details. Additionally, there's a noticeable lack of behavioral finance perspectives that explore how investor psychology and geopolitical uncertainty influence financial markets. This gap is particularly relevant to Goldman Sachs, whose performance depends not just on economic fundamentals but also on investor confidence and media-driven narratives. This gap is especially consequential because investor psychology may amplify or mitigate market responses to tariff news, suggesting that understanding volatility requires more than econometric modeling—it requires insight into investor behavior, a focus this study will incorporate.

The studies reviewed employ diverse methodologies, enhancing the reliability of their findings. Egger and Zhu (2021) use regression analysis and event study techniques to track short-term market shifts, while Riaz et al. (2024) apply time-varying parameter vector autoregressive (TVP-VAR) models to examine how market reactions to trade policy shocks evolve. Yilmaz (2020) takes a theoretical approach, whereas Shafique and Bhutta (2023) integrate principal

component analysis (PCA) with generalized autoregressive conditional heteroskedasticity (GARCH) modeling to assess volatility trends. These varied approaches illustrate how future research can balance statistical precision with broader conceptual insights to analyze firm-specific effects, particularly for Goldman Sachs. This study builds on these methods while advancing them by incorporating firm-specific analysis alongside contextual factors such as policy timing and media framing to develop a more nuanced understanding of stock volatility.

Research Design

Methodology

This study employs a quantitative, correlational research approach to evaluate the impact of U.S.-China trade tariffs on Goldman Sachs' stock performance. Specifically, it examines whether tariff policy announcements significantly influence key stock metrics, such as adjusted closing prices and trading volume. By utilizing secondary data, the analysis draws upon historical financial records and trade policy interventions rather than experimental manipulation, allowing for the identification of real-world correlations and trends.

The research relies on two primary datasets. The first, sourced from Yahoo! Finance, comprises 437 daily records detailing Goldman Sachs' stock activity, including Open, High, Low, Close, Adjusted Close, and Volume from January 1, 2017, to April 29, 2025. Before analysis, the date variable was standardized in Excel for compatibility across sources before being imported into SAS Studio, a statistical analysis platform integrating both code-based and point-and-click functionalities. The second dataset, obtained from the Peterson Institute for International Economics (PIIE), documents 63 notable tariff actions enacted during the U.S.-

China trade war from January 1, 2018, to April 12, 2025. These tariff measures are classified into six categories: China's MFN tariff adjustments, Section 232 national security tariffs, Section 301 trade conflict tariffs, IEEPA-based actions, Section 201 safeguard tariffs, and other miscellaneous measures. The dataset underwent preprocessing in Excel before being transferred to SAS Studio for further examination.

To facilitate the analysis, both datasets were merged using the Date variable as a common key, enabling direct alignment of financial market trends with specific trade policy events. This integration allowed for a focused assessment of stock performance fluctuations surrounding key tariff announcements. The data underwent rigorous cleaning, including duplicate removal, handling of missing values, and standardization of variable formats to ensure analytical precision.

The study began with descriptive statistical methods to assess central tendencies and variability within the datasets. Summary metrics such as mean, median, mode, standard deviation, variance, and range characterized stock performance and tariff patterns, while the coefficient of variation provided insight into trading volume volatility. Subsequently, Pearson correlation coefficients were calculated to explore linear relationships between categorized tariff measures and stock performance indicators, particularly Daily Return, Adjusted Close prices, and trading volume, helping to identify potential connections between policy shifts and market behavior.

Furthermore, the study explores the feasibility of an event study methodology to capture short-term market reactions to tariff announcements. This approach involves defining event windows (e.g., three days before and after a given policy change), estimating abnormal returns

using expected performance models, and applying statistical tests such as t-tests to assess significance. Although not fully implemented in this phase of research, this framework offers a robust foundation for future investigations into the immediate effects of tariff policies on financial markets.

Methods for Research Question 1

The research methodology for addressing the first question employs a quantitative, correlational approach. Using SAS Studio, statistical models will assess whether changes in U.S. tariff policies correspond with fluctuations in Goldman Sachs' stock performance. After merging stock performance data with tariff policy records to ensure proper alignment of date fields across both datasets, tariff implementation dates will be identified using a binary variable, where 0 indicates no tariff event and 1 denotes the imposition of a tariff. This coding method provides a structured representation of policy shifts, enabling a clearer examination of their effects (Polonsky & Waller, 2019).

These techniques form the foundation of financial data analysis, emphasizing the importance of selecting models appropriate to the research objectives rather than adding unnecessary complexity (Polonsky & Waller, 2019). As part of this quantitative analysis, the next step involves computing daily stock returns, a key metric for assessing market fluctuations.

Daily Return = (Close Price Today – Close Price Yesterday) / Close Price Yesterday.

This calculation provides a straightforward measure of how Goldman Sachs' stock fluctuates daily. Once daily returns are determined, key dates marking significant tariff policy changes will be extracted for further analysis. To quantify the relationship between tariff changes and stock performance, the Pearson correlation will be applied. This statistical measure assesses

both the strength and direction of the relationship between tariff events and stock returns, helping to identify potential patterns in market responses. A strong correlation would indicate that tariffs influence stock performance.

Rather than employing a complex time-series model, a basic linear regression is used to examine the hypothesis. If β_1 exhibits statistical significance, it could suggest that tariffs influence stock returns, lending support to H_2. Conversely, if β_1 does not show statistical significance, it could suggest that tariffs have little to no impact on stock returns, aligning with H_1. In cases where $\beta 1$ demonstrates evidence of statistical significance, additional analysis of stock trends before and after tariff changes may be conducted using ARIMA or GARCH models to more precisely evaluate volatility effects (Pennsylvania State University, n.d.).

Methods for Research Question 2

To assess the impact of tariffs imposed by China on Goldman Sachs' stock volatility, quantitative methods will be applied using SAS Studio. The daily return volatility will be calculated as the standard deviation of daily returns. A t-test will compare mean stock volatility between the pre-tariff and post-tariff periods, determining whether the difference is statistically significant. Linear regression will then quantify the relationship between tariff events and stock volatility. As noted by Polonsky and Waller (2019), these methods allow for reliable conclusions regarding group differences and predictive relationships, aligning with the study's quantitative approach.

In the regression analysis, Goldman Sachs' daily volatility is the dependent variable, while the tariff event serves as the independent variable. Statistical significance will be determined using p-values, with a threshold of 0.05. A statistically significant and positive β_1

indicates that Chinese retaliatory tariffs have a measurable impact on Goldman Sachs' stock volatility, consistent with H_2. If β_1 is found to be insignificant, it may indicate that tariffs do not influence volatility, aligning with H_1. If the findings indicate significance, advanced models such as multiple regression or GARCH may be necessary to further analyze volatility trends.

Limitations

This study examines the impact of U.S.-China trade tariffs on Goldman Sachs' stock performance and volatility, acknowledging several limitations. As an observational analysis, it identifies correlations rather than causation, recognizing that market movements stem from multiple factors, including Federal Reserve policies, geopolitical events, and corporate earnings. To prevent misinterpretation, a disclaimer clarifies that this research does not establish direct causal links.

The dataset, compiled by Chad P. Bown from sources such as UN Comtrade, Trade Map, Market Access Map, China's Ministry of Finance, and the U.S. Trade Representative, covers tariff actions from 2018 through April 12, 2025. While comprehensive, it excludes non-tariff barriers, investor sentiment, and broader policy uncertainty—key drivers of stock performance. Additionally, sentiment analysis is omitted due to time constraints, limiting the ability to capture qualitative influences on volatility.

One notable limitation of this research is its lack of firm-specific impact data. While it offers a broad perspective on U.S.-China trade relations, it does not provide direct insights into Goldman Sachs' experience. To mitigate this, the analysis was extended to include historical stock data from J.P. Morgan and the S&P 500, offering a broader comparative framework.

It is important to note that the regression models primarily control for firm-level price and volume indicators (Open, High, Low, Close, and Volume) and do not incorporate broader macroeconomic or sentiment-based variables such as the VIX, federal funds rate, or exchange rate movements. This limits the models' ability to capture external systemic influences, potentially understating the role of market-wide volatility or policy uncertainty in shaping stock performance.

The dataset's coverage period, ending in April 2025, excludes recent tariff adjustments and their market effects. Regulatory frameworks evolve, which may alter how investors interpret these findings over time. Additionally, while the Peterson Institute for International Economics (PIIE) is a reputable source, its dataset relies on secondary data rather than official government records, leaving room for potential biases or omissions.

Technological constraints also impact this study. SAS Studio, while structured, lacks the flexibility of tools like R or Python, potentially limiting analytical depth. The exclusion of advanced econometric models such as GARCH or ARIMA further narrows the scope of volatility analysis. Given these constraints, transparency in methodology is essential to maintain research integrity.

Ethical considerations include data integrity and researcher bias. Confirmation bias can influence data selection and interpretation, but clear methodological disclosures help mitigate this risk. Attribution challenges further complicate analysis, as stock prices are affected by numerous external factors. Since financial research can shape investment decisions, including a disclaimer noting the researcher's lack of financial stake in Goldman Sachs reinforces academic integrity.

Despite these limitations, the dataset provides a strong foundation for evaluating trade events and financial market implications. Acknowledging these constraints enhances the credibility of the research, ensuring findings are presented with transparency. Future research incorporating updated data, sentiment analysis, and refined econometric modeling could offer deeper insights into the relationship between trade tariffs and stock performance.

Ethical Considerations

This study upholds ethical integrity by using publicly available data with proper attribution and ensuring transparency in methodology. Since human subjects are not involved, concerns related to privacy and consent do not apply. Instead, ethical diligence focuses on maintaining data integrity, objectivity, and the responsible interpretation of correlations without misrepresenting them as causal relationships.

Investor psychology, shaped by media, macroeconomic trends, and market sentiment, plays a significant role in stock volatility. While this research takes a quantitative approach and does not directly analyze sentiment due to time constraints, its influence is acknowledged. To prevent misinterpretation, a disclaimer clarifies that the study identifies correlations rather than causation, a distinction critical for investors relying on such research for decision-making.

Selection bias is another ethical concern. By focusing exclusively on Goldman Sachs, the study may limit broader applicability, though comparisons to indices like the S&P 500 provide helpful context. Expanding the dataset to include multiple firms could mitigate firm-specific bias and strengthen the study’s insights. Regulatory compliance also plays a key role in ethical research, ensuring alignment with industry standards such as SEC guidelines. Since financial

studies can impact investment decisions, a disclaimer affirming no financial stake in Goldman Sachs reinforces objectivity and credibility.

Polonsky and Waller (2019) emphasize that responsible communication is crucial even in studies without direct human involvement to prevent misinterpretation, especially among vulnerable audiences. Ethical diligence also extends to technological constraints. SAS Studio provides a structured environment for analysis, but its limited flexibility could restrict analytical depth compared to more advanced tools like R or Python. While sophisticated econometric models such as GARCH or ARIMA could enhance volatility modeling, practical constraints require justification for their omission and suggestions for future research. Ensuring transparency in analytic choices strengthens research reliability.

Beyond methodology, ethical responsibility includes addressing researcher bias. Confirmation bias can subtly influence data selection and interpretation, making methodological transparency essential. Attribution challenges further complicate analysis, as stock prices are shaped by numerous external factors. Since financial research can inform investor strategies, responsible presentation of findings, avoiding overstated claims, and acknowledging broader systemic influences, ensure ethical integrity.

By considering human, ethical, and technological factors, this study maintains a balanced and responsible approach to analyzing the impact of tariff policies on Goldman Sachs' stock performance and volatility. Recognizing these limitations strengthens the credibility and transparency of the research, ensuring conclusions are both academically rigorous and ethically sound.

Findings for Research Question #1

Correlation Analysis

The correlation analysis of Goldman Sachs suggests that tariff events have an insignificant effect on its stock performance. As shown in Figure 1, the Pearson correlation coefficients for Daily Return (-0.01142), Adjusted Close (0.06538), and Volume (-0.02975) are all near zero, indicating no measurable relationship between tariff announcements and market fluctuations. Furthermore, the high p-values (0.8003, 0.1472, 0.5099) confirm the lack of statistical significance, reinforcing the idea that broader economic conditions, investor sentiment, and sector-specific developments exert a far greater influence on Goldman Sachs' stock trends than tariff policy alone.

Figure 1.

Correlation Analysis – Goldman Sachs

1 With Variables:	Tariff_EVENT
3 Variables:	Daily Return Adj Close Volume

Pearson Correlation Coefficients, N = 493
Prob > |r| under H0: Rho=0

	Daily Return	Adj Close	Volume
Tariff_EVENT	-0.01142	0.06538	-0.02975
Tariff_EVENT	0.8003	0.1472	0.5099

Table 1.

Correlation Analysis Comparison Table

Stock Index	Daily Return (Correlation, p-value)	Adjusted Close (Correlation, p-value)	Trading Volume/Close Price (Correlation, p-value)
Goldman Sachs	-0.01142, 0.8003	0.06538, 0.1472	-0.02975, 0.5099
J.P. Morgan	-0.08011, 0.0762	0.10364, 0.0216	-0.05127, 0.2569
S&P 500	-0.01539, 0.4849	0.04569, 0.0380	N/A (Close price used)

To contextualize these findings, a comparison with J.P. Morgan offers additional insight. While the correlation between tariff events and stock performance remains weak, Table 1 shows that J.P. Morgan's Adjusted Close price exhibits a slightly stronger correlation (0.10364) with a statistically significant p-value of 0.0216. This suggests that tariff events may have a small but noticeable influence on J.P. Morgan's stock price, something that is not observed for Goldman Sachs. However, the overall effect remains minimal, further emphasizing the role of broader market forces in shaping stock trends.

Expanding the scope to a broader market benchmark, the S&P 500 analysis in Table 1 provides further validation that tariff events play only a marginal role in financial markets. The Daily Return correlation (-0.01539) is negligible, with an insignificant p-value (0.4849), while the Close price correlation (0.04569) exhibits weak statistical significance (p-value = 0.0380). Although this suggests a small relationship between tariff events and stock performance at the market level, the effect size remains minimal, reinforcing the notion that macroeconomic variables outweigh trade policy shifts in driving stock market fluctuations.

Taken together, these comparisons underscore that Goldman Sachs exhibits the weakest sensitivity to tariff events among the three benchmarks analyzed. While J.P. Morgan and the S&P 500 display slightly stronger, though still weak relationships, particularly in Adjusted Close and Closing prices, Goldman Sachs' stock performance appears largely detached from tariff policy changes. This reinforces the conclusion that stock market movements are more heavily influenced by investor behavior, industry trends, and macroeconomic conditions rather than specific trade policy adjustments.

Given these findings, the correlation analysis effectively addresses the research question regarding the relationship between tariff policy changes and fluctuations in Goldman Sachs' stock performance. The results confirm that tariff events have no statistically significant impact on Goldman Sachs' stock prices. The Pearson correlation coefficients for Daily Return (-0.01142), Adjusted Close (0.06538), and Volume (-0.02975) remain close to zero, while the p-values (0.8003, 0.1472, and 0.5099) exceed the 0.05 threshold, reinforcing the conclusion that any observed correlations are likely coincidental rather than indicative of a genuine cause-and-effect relationship.

Consequently, this study provides evidence in favor of the null hypothesis (H_1), suggesting that changes in tariff policies may not significantly affect Goldman Sachs' stock performance. Conversely, the alternative hypothesis (H_2), which suggests a meaningful correlation between tariff policies and stock fluctuations, is not substantiated by the data. This further strengthens the idea that external factors, such as investor sentiment, macroeconomic conditions, and industry-specific developments, have a greater impact on Goldman Sachs' stock movements than tariff announcements.

Multiple Linear Regression – (dependent variable: Daily Return)

The multiple linear regression analysis highlights significant differences in explanatory power among Goldman Sachs, J.P. Morgan, and the S&P 500, as reflected in their respective R-squared values. Figure 2 demonstrates that Goldman Sachs' model has a moderate R-squared of 0.4611, indicating that approximately 46.11% of the variation in Daily Return can be explained by independent variables.

Figure 2.

Multiple linear regression – Dependent variable: Daily Return

Model: MODEL1
Dependent Variable: Daily Return Daily Return

Number of Observations Read	493
Number of Observations Used	493

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.37341	0.07468	83.33	<.0001
Error	487	0.43648	0.00089625		
Corrected Total	492	0.80988			

Root MSE	0,02994	R-Square	0,4611
Dependent Mean	0,00246	Adj R-Sq	0,4555
Coeff Var	1218,30970		

Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	0,02176	0,00727	2,99	0,0029
Tariff_EVENT	Tariff_EVENT	1	-0,00570	0,00409	-1,40	0,1635
Volume	Volume	1	-1.10512E-9	3.271E-10	-3.38	0.0008
Open	Open	1	-0.00360	0.00017814	-20.20	<.0001
High	High	1	0.00189	0.00016002	11.80	<.0001
Low	Low	1	0.00169	0.00017538	9.62	<.0001

Table 2.

Multiple linear regression comparison – Dependent variable: Daily Return

Metric	Goldman Sachs	J.P. Morgan	S&P 500
R-squared	0.4611	0.0167	0.0047
Intercept	0.02176 (p = 0.0029)	-0.02264 (p = 0.0412)	N/A
Tariff_EVENT Coefficient	-0.00570 (p = 0.1635)	-0.00895 (p = 0.0933)	-0.00065280 (p = 0.6955)
Volume Coefficient	-1.10512E-9 (p = 0.0008)	1.77257E-10 (p = 0.0655)	N/A
Open Price Coefficient	-0.00360 (p < 0.0001)	-0.00060100 (p = 0.2850)	-0.00003652 (p = 0.0080)
High Price Coefficient	0.00189 (p < 0.0001)	-0.00015258 (p = 0.7781)	0.00001431 (p = 0.1656)
Low Price Coefficient	0.00169 (p < 0.0001)	0.00085075 (p = 0.1496)	0.00002254 (p = 0.0083)

In contrast, Table 2 reveals that J.P. Morgan's model has a much lower R-squared of 0.0167, capturing only 1.67% of the variance. The S&P 500 fares even worse, with Table 2 showing an R-squared of just 0.0047, signifying extremely weak predictive capability. These results suggest that Goldman Sachs' stock movements are more responsive to market variables than J.P. Morgan's or the broader S&P 500 index.

Examining the intercept and the Tariff_EVENT variable, the regression results indicate that tariff-related events do not significantly impact stock performance. Figure 2 shows that Goldman Sachs has an intercept of 0.02176 (p-value = 0.0029), while Table 2 illustrates J.P. Morgan's negative intercept of -0.02264 (p-value = 0.0412). The Tariff_EVENT coefficient for Goldman Sachs is -0.00570 (p-value = 0.1635) and for J.P. Morgan, -0.00895 (p-value = 0.0933). Similarly, Table 2 confirms that the S&P 500's Tariff_EVENT coefficient is -0.00065280, with a p-value of 0.6955, further emphasizing the lack of statistical significance in tariff-related market reactions. Across all models, tariff events show no measurable impact on

stock prices, reinforcing the argument that external macroeconomic influences likely outweigh policy-related fluctuations.

However, market variables such as Volume, Open, High, and Low prices display much stronger correlations with Daily Return in the Goldman Sachs model compared to J.P. Morgan and the S&P 500. Figure 2 illustrates that all four market variables in Goldman Sachs' regression yield statistically significant relationships (p-values < 0.05), confirming that these factors play a crucial role in stock performance. In contrast, Table 2 demonstrates that J.P. Morgan's model struggles to establish significance, with Volume and Open prices failing to achieve statistical relevance. The S&P 500 results shown in Table 2 present similarly weak findings, as Open and Low prices show statistical significance, but their coefficients are too small to imply any meaningful impact on returns.

The results of this multiple linear regression analysis provide strong evidence in favor of the null hypothesis (H_1), demonstrating that changes in tariff policies do not significantly impact Goldman Sachs' stock price. The Tariff_EVENT variable, as shown in Figure 2, produced a coefficient of -0.00570 with a p-value of 0.1635, indicating that while tariff-related events may correspond with minor fluctuations in Daily Return, this relationship is not statistically significant. Similarly, Table 2 reinforces this conclusion, as J.P. Morgan and the S&P 500 exhibit insignificant Tariff_EVENT coefficients, confirming that tariff policy changes fail to exert a measurable effect on stock prices within the confines of a linear regression model.

Instead, Goldman Sachs' stock movements are primarily influenced by traditional market variables, as evidenced by the strong statistical significance of Volume, Open, High, and Low prices as shown in Figure 2. In contrast, Table 2 illustrates that J.P. Morgan and the S&P 500

demonstrate weak explanatory power, implying that external, unaccounted-for factors play a more substantial role in shaping their returns. Since Table 2 confirms that tariff policy changes are not significant predictors of stock price fluctuations, future research should consider nonlinear models or time-series techniques to investigate possible lagged or indirect effects that a linear approach may fail to capture.

To enhance the explanatory power of future analyses, incorporating broader macroeconomic indicators, such as interest rates, inflation, and global trade dynamics, could provide a more comprehensive understanding of stock market behavior. While the findings presented here provide strong evidence in favor of the null hypothesis (H_1) and do not offer sufficient support for H_2, further exploration of alternative modeling techniques could offer deeper insights into how policy shifts may influence investor sentiment and broader market trends.

Multiple Linear Regression – (dependent variable: Adjusted Close Price)

The multiple linear regression analysis for Goldman Sachs (Figure 3) presents a robust explanatory model, as evidenced by its R-Square value of 0.9941, meaning that 99.41% of the variability in the adjusted closing price is accounted for by the independent variables. Notably, the Tariff_EVENT coefficient (-0.50740, p-value = 0.6926) indicates that tariff policy changes do not significantly affect Goldman Sachs' stock price, reinforcing the null hypothesis (H_1).

Figure 3.

Multiple linear regression – Dependent variable: Adjusted Close Price

Model: MODEL1
Dependent Variable: Adj Close Adj Close

Number of Observations Read	493
Number of Observations Used	493

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	7189930	1437986	16293.8	<.0001
Error	487	42979	88.25341		
Corrected Total	492	7232910			

Root MSE	9.39433	R-Square	0.9941
Dependent Mean	289.91371	Adj R-Sq	0.9940
Coeff Var	3.24039		

Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	-40.56389	2.28254	-17.77	<.0001
Tariff_EVENT	Tariff_EVENT	1	-0.50740	1.28255	-0.40	0.6926
Volume	Volume	1	-1.90768E-7	1.026433E-7	-1.86	0.0637
Open	Open	1	-0.72851	0.05590	-13.03	<.0001
High	High	1	0.94744	0.05021	18.87	<.0001
Low	Low	1	0.84059	0.05503	15.27	<.0001

In contrast, J.P. Morgan and the S&P 500 (Table 3) exhibit a different response to tariff policies, with J.P. Morgan's Tariff_EVENT coefficient (-1.47915, p-value = 0.0186) and the S&P 500's coefficient (-6.51117, p-value = 0.0040) both showing statistically significant negative effects. This discrepancy suggests that financial institutions experience varying levels of

exposure to trade-related risks, with Goldman Sachs demonstrating relative insulation from these macroeconomic factors.

Table 3.

Multiple linear regression comparison – Dependent variable: Adjusted Close Price

Variable	Goldman Sachs	J.P. Morgan	S&P 500
R-Square	0.9941	Not explicitly stated	0.9997
Tariff_EVENT	-0.50740 (p = 0.6926)	-1.47915 (p = 0.0186)	-6.51117 (p = 0.0040)
Open Price	-0.72851 (p < 0.0001)	-0.78045 (p < 0.0001)	-0.79921 (p < 0.0001)
High Price	0.94744 (p < 0.0001)	1.10404 (p < 0.0001)	0.84929 (p < 0.0001)
Low Price	0.84059 (p < 0.0001)	0.77170 (p < 0.0001)	0.95058 (p < 0.0001)
Volume	-1.90768E-7 (p = 0.0637)	p = 0.6036 (insignificant)	Not included

Further analysis of trading variables in Figure 3 underscores the significance of intraday price movements in shaping Goldman Sachs' stock performance. The Open price coefficient (-0.72851, p-value < 0.0001) confirms a strong negative relationship, implying that higher opening prices may contribute to lower closing values due to shifting market sentiment throughout the day. Conversely, the High (0.94744, p-value < 0.0001) and Low (0.84059, p-value < 0.0001) price coefficients demonstrate substantial positive correlations with the adjusted closing price, reinforcing the notion that intraday price swings are critical in determining stock fluctuations. These findings align with broader industry trends, as reflected in Table 3, where J.P. Morgan's Open, High, and Low coefficients (Open = -0.78045, High = 1.10404, Low = 0.77170; all p-values < 0.0001) and the S&P 500's coefficients (Open = -0.79921, High = 0.84929, Low = 0.95058; all p-values < 0.0001) exhibit similar statistically significant patterns. The consistency in these results reinforces the conclusion that daily price

dynamics are among the most influential factors shaping stock performance across financial institutions.

Lastly, the role of trading volume appears minimal in Goldman Sachs' regression model (Figure 3). With a coefficient of -1.90768E-7 and a p-value of 0.0637, volume demonstrates only weak statistical significance, suggesting that fluctuations in trading activity have little direct impact on the stock's adjusted closing price. This trend is further validated by J.P. Morgan's data in Table 3, where the volume's p-value is 0.6036, confirming its negligible influence across both institutions. Collectively, these findings suggest that while macroeconomic factors like tariff events may significantly affect J.P. Morgan and the broader market (S&P 500), Goldman Sachs' stock performance is largely driven by short-term price dynamics rather than external trade policy shifts. This differentiation may be valuable for investors assessing financial institutions' sensitivity to geopolitical and economic developments.

Findings for Research Question #2

T-test

To assess the impact of tariffs imposed by China on Goldman Sachs' stock volatility, the daily return volatility was calculated in Excel. Then a two-sample t-test was executed using SAS Studio to compare mean stock volatility between the pre-retaliatory tariff and post-retaliatory tariff periods.

Figure 4 presents the results of the t-test examining how retaliatory tariffs imposed by China affected Goldman Sachs' stock volatility. The normality tests for the pre-tariff period (Retaliatory_Tariffs_by_China = 0) indicate significant departures from normality, as shown by

the Shapiro-Wilk test ($W = 0.784444$, $p < 0.0001$), Kolmogorov-Smirnov test ($D = 0.16845$, $p < 0.01$), Cramer-von Mises test ($W\text{-}Sq = 3.573865$, $p < 0.005$), and Anderson-Darling test ($A\text{-}Sq = 21.53972$, $p < 0.005$). However, normality test results for the post-tariff period (Retaliatory_Tariffs_by_China = 1) are missing, raising concerns about incomplete data or execution errors. Despite this limitation, the t-test results strongly suggest a statistically significant impact, as the average daily volatility for the pre-retaliatory tariff period is 0.0281, with a standard deviation of 0.0293. The test produced a t-statistic of 21.33 and a p-value of less than 0.0001, providing strong evidence in favor of the alternative hypothesis (H_2) that retaliatory tariffs may contribute to notable changes in Goldman Sachs' stock volatility.

Figure 4.

T-test results (Goldman Sachs, Retaliatory Tariffs only)

Variable: Daily_Volatility (Daily_Volatility)
Retaliatory_Tariffs_by_China = 0

Tests for Normality				
Test	**Statistic**		**p Value**	
Shapiro-Wilk	W	0.784444	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.16845	Pr > D	<0.0100
Cramer-von Mises	W-Sq	3.573865	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	21.53972	Pr > A-Sq	<0.0050

Variable: Daily_Volatility (Daily_Volatility)
Retaliatory_Tariffs_by_China = 1

Tests for Normality				
Test	**Statistic**		**p Value**	
Shapiro-Wilk	W	.	Pr < W	.
Kolmogorov-Smirnov	D	.	Pr > D	.
Cramer-von Mises	W-Sq	.	Pr > W-Sq	.
Anderson-Darling	A-Sq	.	Pr > A-Sq	.

Variable: Daily_Volatility (Daily_Volatility)

N	Mean	Std Dev	Std Err	Minimum	Maximum
493	0.0281	0.0293	0.00132	0.000238	0.2516

Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0.0281	0.0255	0.0307	0.0293	0.0276	0.0312

DF	t Value	Pr > |t|
492	21.33	<.0001

While the results indicate statistical significance, additional investigation is needed to confirm the validity of the findings. Since normality for the post-tariff period remains unknown, it is necessary to determine whether the data meets normality assumptions. Furthermore, other external factors could have influenced volatility, and assessing the effect size would clarify whether the observed difference is practically meaningful. To enhance the robustness of the analysis, additional testing and further examination of the dataset are recommended.

Figure 5.

T-test results (Goldman Sachs, all tariffs included)

Variable: Daily_Volatility (Daily_Volatility)
Tariff_EVENT = 0

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.795906	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.144862	Pr > D	<0.0100
Cramer-von Mises	W-Sq	2.947101	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	17.46395	Pr > A-Sq	<0.0050

Variable: Daily_Volatility (Daily_Volatility)
Tariff_EVENT = 1

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.297937	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.504673	Pr > D	<0.0100
Cramer-von Mises	W-Sq	4.209498	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	19.67473	Pr > A-Sq	<0.0050

Variable: Daily_Volatility (Daily_Volatility)

Tariff_EVENT	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
0		430	0.0316	0.0297	0.00143	0.000238	0.2516
1		63	0.00411	0.00651	0.000821	0.000721	0.0412
Diff (1-2)	Pooled		0.0275	0.0278	0.00375		
Diff (1-2)	Satterthwaite		0.0275		0.00165		

Tariff_EVENT	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		0.0316	0.0288	0.0345	0.0297	0.0278	0.0318
1		0.00411	0.00247	0.00575	0.00651	0.00554	0.00790
Diff (1-2)	Pooled	0.0275	0.0202	0.0349	0.0278	0.0262	0.0297
Diff (1-2)	Satterthwaite	0.0275	0.0243	0.0308			

Both general tariffs (Figure 5) and retaliatory tariffs imposed by China (Figure 4) significantly impacted stock volatility, as evidenced by the statistical analyses. In Figure 4, which examines retaliatory tariffs, the pre-tariff period shows an average daily volatility of 0.0281 with a standard deviation of 0.0293, while the t-test results indicate a significant difference ($t = 21.33$, $p < 0.0001$) between pre- and post-retaliatory tariff periods. However, the post-tariff normality test results are missing, raising concerns about the validity of the assumption that daily volatility remained normally distributed after the tariffs. Additionally, both datasets exhibited strong non-normality, making traditional parametric tests less reliable.

Figure 5 includes t-test results encompassing all tariff events. Here, the comparison between general tariff periods (Tariff_EVENT = 0 vs. Tariff_EVENT = 1) reveals a drastic drop in volatility, with average values decreasing from 0.0316 to 0.00411 and standard deviation shrinking from 0.0297 to 0.00651. The difference is statistically significant ($p < 0.0001$) across both pooled and Satterthwaite methods. Furthermore, variance equality tests indicate a significant shift (Folded $F = 20.74$, $p < 0.0001$), reinforcing the idea that tariffs played a major role in market stability.

A key limitation in analyzing retaliatory tariffs is the extremely small sample size, only five instances, making statistical results highly sensitive to outliers. While the results strongly suggest that tariffs influenced volatility, further investigation is necessary to determine practical significance and to account for other potential market influences beyond tariffs.

To sum up, the findings presented in Figure 4 demonstrate that Goldman Sachs experienced a statistically significant increase in daily volatility following the retaliatory tariffs imposed by China. Before the tariffs, average volatility was 0.0281, with a standard deviation of

0.0293, and the t-test produced a t-statistic of 21.33 with a p-value < 0.0001, providing strong evidence against the null hypothesis and suggesting a notable impact. However, the absence of normality test results for the post-tariff period introduces concerns about the reliability of these conclusions. Additionally, given that only five instances were analyzed for the post-tariff period, the limited sample size makes the results highly sensitive to outliers, raising questions about their overall robustness.

Table 4.

T-test comparison

Stock	Pre-Tariff Volatility	Post-Tariff Volatility	T-Statistic	P-Value	Folded F-Test (Variance Shift)
Goldman Sachs	0.0281 (SD = 0.0293)	*Unknown*	21.33	<0.0001	20.74 (p < 0.0001)
J.P. Morgan	0.0346 (SD = 0.00706)	0.0361 (SD = 0.00551)	*Not Significant*	0.6385 (Pooled), 0.5802 (Satterthwaite)	1.64 (p = 0.6875)
S&P 500	0.0102 (SD = 0.00321)	0.0110 (SD = 0.00230)	-0.56 (Pooled), -0.78 (Satterthwaite)	0.5739 (Pooled), 0.4770 (Satterthwaite)	0.5493 (p = 0.5493)

In contrast, Table 4 highlights J.P. Morgan's relative stability in response to the same tariffs. The bank's pre-tariff volatility stood at 0.0346, increasing slightly to 0.0361 post-tariff. However, the corresponding t-test results (p = 0.6385 for pooled, p = 0.5802 for Satterthwaite) indicate no statistically significant difference, reinforcing J.P. Morgan's resilience to tariff-induced market fluctuations. The Folded F-test result (1.64, p = 0.6875) further suggests that

volatility remained largely unchanged. This stands in sharp contrast to Goldman Sachs, which exhibited considerable sensitivity to the tariffs.

Similarly, Table 4 illustrates the stability of the S&P 500, with pre-tariff volatility at 0.0102 and post-tariff volatility at 0.0110. The t-test results ($t = -0.56$, $p = 0.5739$) and the Satterthwaite method ($t = -0.78$, $p = 0.4770$) reinforce the lack of a meaningful impact. There was significant evidence challenging the normality assumptions for the S&P 500, casting doubt on the appropriateness of parametric methods, the relatively small change in volatility indicates that retaliatory tariffs did not significantly disrupt broader market stability.

Taken together, the evidence suggests that Goldman Sachs was the most affected by retaliatory tariffs, exhibiting substantial volatility shifts, whereas J.P. Morgan and the S&P 500 remained relatively stable. The missing post-tariff normality test results and the small sample size introduce uncertainties that warrant further investigation using non-parametric approaches, such as the Wilcoxon rank-sum test, and effect size analysis. Strengthening the methodology would enhance the reliability of conclusions regarding the impact of tariffs on Goldman Sachs' stock performance.

Linear Regression

To assess the impact of tariff events on stock volatility, a linear regression analysis was conducted. As Polonsky and Waller (2019) highlight, this method enables robust conclusions regarding group differences and predictive relationships, aligning with the study's quantitative framework. In this analysis, Goldman Sachs' daily volatility serves as the dependent variable, while the binary variable Retaliatory_Tariffs_by_China functions as the independent variable.

The Retaliatory_Tariffs_by_China indicator is defined as 0 when no retaliatory tariffs are imposed by China and 1 when such tariffs are enacted.

Figure 6.

Linear Regression results – Goldman Sachs

The REG Procedure
Model: MODEL1
Dependent Variable: Daily_Volatility Daily_Volatility

Number of Observations Read	493
Number of Observations Used	493

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	0.00333	0.00333	3.90	0.0487
Error	491	0.41834	0.00085201		
Corrected Total	492	0.42166			

Root MSE	0,02919	R-Square	0,0079
Dependent Mean	0,02812	Adj R-Sq	0,0059
Coeff Var	103.79905		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	0,02838	0,00132	21,48	<,0001
Retaliatory_Tariffs_by_China	Retaliatory_Tariffs_by_China	1	-0.02593	0.01312	-1.98	0.0487

The regression analysis examines whether retaliatory tariffs from China influence Goldman Sachs' stock volatility. As shown in Figure 6, the model is statistically significant (F-statistic = 3.90, p-value = 0.0487), meaning tariffs have some effect. However, the R-Square value of 0.0079 suggests that tariffs account for only 0.79% of the variation in volatility, implying that other market forces likely play a much larger role. The Adjusted R-Square of 0.0059 further highlights the model's weak explanatory power.

Looking at the regression results, the intercept (0.02838) represents the average daily volatility without tariffs, while the coefficient for Retaliatory_Tariffs_by_China (-0.02593) indicates that volatility slightly decreases when China imposes retaliatory tariffs. Since the p-value for Retaliatory_Tariffs_by_China is 0.0487, the relationship is statistically significant at the 5% level, providing strong evidence against the null hypothesis (H_1) that tariffs have no impact. Instead, the findings provide evidence in favor of H_2, suggesting that tariffs may contribute to volatility changes, though only marginally.

Despite meeting statistical significance, the low R-Square value suggests that tariffs explain only a small fraction of stock volatility, meaning broader market forces, economic conditions, and investor sentiment are likely much more influential. While the analysis confirms that retaliatory tariffs play a role, their overall impact on Goldman Sachs' stock fluctuations appears minimal.

In summary, while the regression results indicate that tariffs have a statistically significant effect, their practical influence remains limited, reinforcing the idea that external economic factors drive stock volatility far more than trade policy alone.

The regression analyses for Goldman Sachs, presented in Figure 6, indicate a statistically significant relationship between tariffs and volatility, with an F-statistic of 3.90 and a p-value of 0.0487, suggesting that the null hypothesis (H_1) may not hold. However, the R-Square value of 0.0079 suggests that tariffs account for just 0.79% of the variation, signaling that broader economic factors exert much greater influence. The coefficient (-0.02593) indicates a slight decrease in volatility when tariffs are imposed, but given the model’s low explanatory power, this effect is relatively minor.

Table 5.

Linear Regression comparison

Metric	Goldman Sachs (Figure 6)	J.P. Morgan (Figure 11)	S&P 500 (Figure 16)
F-statistic	3.9	0.22	0.32
p-value	0.0487	0.6385	0.5739
R-Square	0.0079	0.0005	0.0002
Adjusted R-Square	0.0059	Not specified	-0.0003
Coefficient (Tariffs)	-0.02593	0.00149	0.00080682
Intercept	0.02838	Not specified	0.01016
Statistical Significance	**Yes** ($p < 0.05$)	**No**	**No**
Impact on Volatility	Slight Decrease	No Impact	No Impact
Variation Explained (%)	0.79%	0.05%	0.02%

Conversely, J.P. Morgan, as shown in Table 5, exhibits no statistically significant relationship between tariffs and volatility. With an F-statistic of 0.22 and a p-value of 0.6385, the results confirm that tariffs do not meaningfully impact stock price movements. The R-Square value of 0.0005 indicates that tariffs explain only 0.05% of volatility fluctuations, and the coefficient (0.00149) is statistically insignificant. These findings suggest that J.P. Morgan remained stable during tariff events, demonstrating a level of resilience absent in Goldman Sachs. This contrast underscores how financial institutions may react differently to changes in trade policy depending on firm-specific market dynamics.

When examining the S&P 500 (Table 5), the regression model reveals an even weaker relationship between tariffs and volatility. The R-Square value of 0.0002 suggests that only 0.02% of volatility variation can be attributed to tariffs, and the negative adjusted R-Square (-0.0003) reinforces the poor fit of the model. The F-statistic of 0.32 and p-value of 0.5739

indicate that tariffs do not significantly influence the index's volatility. Furthermore, the coefficient for tariffs (0.00080682) does not show statistical significance, suggesting that trade policy may have little to no role in shaping broader market movements. Instead, macroeconomic trends, investor sentiment, and external financial factors are far more dominant in driving fluctuations within the S&P 500.

Overall, Goldman Sachs shows the most sensitivity to retaliatory tariffs (Figure 6), while J.P. Morgan remains largely unaffected, and the S&P 500 exhibits no meaningful response (Table 5). Despite the statistical significance observed for Goldman Sachs, the low explanatory power of tariffs across all models suggests that trade policy has only a marginal effect on stock volatility. These results emphasize the importance of considering external economic forces when evaluating stock price movements, as investor behavior and macroeconomic trends appear far more influential than tariffs alone. A multi-factor regression model incorporating additional market indicators could provide a more comprehensive understanding of the drivers behind volatility shifts. Future research in this area would benefit from exploring alternative predictors to refine the explanatory power of regression models beyond the scope of trade policy.

Conclusion

This study provides a firm-level analysis of the impact of U.S. and Chinese tariff events on stock performance and volatility, offering a more granular perspective compared to traditional macroeconomic evaluations. Goldman Sachs exhibited minimal sensitivity to tariff policy changes, while J.P. Morgan displayed moderate responsiveness, particularly in adjusted closing prices. These findings suggest that firm-specific exposure plays a role in shaping market reactions.

Expanding the scope to the S&P 500, correlation analyses indicate that tariff events exert minimal influence on financial markets. While closing prices exhibit a statistically significant but weak association with tariff events, daily returns remain largely unaffected. Multiple linear regression results provide further evidence for this, suggesting that tariff events do not reliably predict daily stock returns, which aligns with the view that broader economic forces may drive market performance.

Although Chinese retaliatory tariffs showed statistical significance in Goldman Sachs' volatility patterns, their practical impact remains negligible. This trend is further substantiated by the S&P 500 volatility analysis, where t-tests and regression models confirm that tariff policies do not significantly affect market fluctuations. Given the weak correlations and poor predictive power of tariff events, it is likely that macroeconomic conditions and investor sentiment play a far more decisive role.

While external influences were considered, certain macroeconomic factors, such as interest rates and inflation, were omitted due to time constraints, which may have limited the depth of this analysis. To enhance the scope, the study extends beyond Goldman Sachs to include JPMorgan Chase and the S&P 500, offering a broader perspective on financial volatility. However, violations of normality in volatility tests and significant disparities in sample sizes raise concerns regarding the reliability of parametric tests, suggesting that alternative methodologies may yield more nuanced insights. While firm-level data helped mitigate selection bias, these findings may not be fully generalizable to smaller financial institutions or non-financial sectors, highlighting the need for further research. Future studies could broaden the scope to encompass international banking institutions, sector-wide effects, and broader market

indices, facilitating a more comprehensive understanding of the global impact of tariff policies on financial volatility.

Recommendations

This study highlights the importance of firm-level analysis in understanding financial market responses to trade policy shifts, particularly U.S.–China tariffs. While Goldman Sachs exhibited minimal sensitivity to these policy changes, J.P. Morgan showed moderate responsiveness, especially in adjusted closing prices, suggesting that firm-specific exposure plays a role in market reactions. However, findings indicate that tariffs alone are not primary drivers of stock behavior, as broader market forces such as trading volume and price fluctuations exert greater influence. Although Chinese retaliatory tariffs demonstrated statistical significance in Goldman Sachs' volatility, their practical impact was negligible, reinforcing the conclusion that financial markets respond more to macroeconomic conditions and institutional strategies than to trade policy announcements.

Future research should expand its scope to assess how smaller banks and non-financial sectors react to tariff exposure, helping determine whether industry-specific characteristics influence sensitivity to trade policy changes. Additionally, incorporating macroeconomic indicators like interest rates, inflation, and overall market cycles could provide deeper insights into how financial institutions navigate trade uncertainty. Refining volatility analysis through GARCH modeling and non-parametric tests would enhance methodological rigor, offering a more precise understanding of how stock behavior fluctuates under policy shifts. Extending the analysis period to examine long-term trends could also help differentiate between short-term market reactions and more sustained structural effects.

Beyond the financial sector, global comparisons could offer valuable perspectives on the role of tariffs in international markets. Investigating how tariff-sensitive institutions perform relative to broader indices, such as the MSCI World Index or Russell 1000, could reveal whether market-wide trends align with firm-specific findings. While efforts were made to control for selection bias and external influences, factors such as Federal Reserve policy and investor sentiment remain challenging to fully isolate. Expanding future studies to account for these variables would strengthen conclusions, providing clearer guidance for investors, analysts, and policymakers seeking to understand the complex relationship between trade policy and financial market dynamics.

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