

From Trade War to Pandemic: Analyzing S&P 500 Responses to Past Events and Predicting its Future

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AUTHOR BIO

Abigail Tedros is currently a high school student living in San Jose, California. After gaining initial exposure to finance through interviewing financial professionals, she holds a strong passion for finance and business. She wants to further her interests through conducting university-level research and wants to pursue them as majors beyond high school. Moreover, she enhances her knowledge on business through working in marketing and media under a financial services company and taking accounting and personal finance courses at her local community college. She gives back to her community through indulging in community service and helping other students at her school through numerous clubs. Abigail enjoys spending time with family and reading.

ABSTRACT

The author will overview the recent history of the S&P 500. The author will dive into extensive analysis on two major events that impacted the market: the 2018 Trade War and the 2019 Covid Pandemic. In addition to providing a general summary of the S&P 500's behavior, the author will then focus on specific financial companies that were hit the hardest. Using previous analysis on how the S&P 500 index responds to economic slowdowns, the author will produce an opinionated prediction as to how the S&P 500 will respond in the foreseeable future in response to anticipated political policies.

Keywords: S&P 500, Stock Market, Index, Trade War, Covid

INTRODUCTION



The S&P 500 is a widely utilized tool amongst investors looking to expand their knowledge about the stock market. Contributing to all other stock market indexes worth investing in, the S&P 500 is generally known as a collection of companies designed to be a barometer of a large swatch of corporate America (Pendola, 2024). Its volatility, or range from time to time, heavily depends on what macroeconomic events are taking place at a current state. Grouping up 500 of the top American companies listed on the Stock market, while constantly changing due to factors such as profit growth, decline, or bankruptcy, the S&P 500 has turned into one of the most popular broad stock market indexes in America.

So how exactly can analyzing the S&P 500s past slumps help determine its foreseeable future? The past behavior of the S&P 500 is a vital factor in determining its future. Understanding how it reacts to recessions, pandemics, and trade wars can help us discern its behavior and predict its potential reaction to upcoming economic and political events.

The uncertainty of the stock market is a crucial element as to why it's important to conduct extensive research; studying its past habits will most likely bring accurate predictions as to how it will behave in future macroeconomic developments.

The author's paper answers this question more profusely by going into depth about two specific events that have impacted not only the condition of America but the market: the 2018 Trade War and the Covid COVID-19 pandemic. These two events had an immense impact on the index, causing it to fall downwards tremendously. More specifically, the financial sector of this index took a toll on how investors reacted to the sudden changes in the market. The 2018 Trade War and the Covid 19 Pandemic, while having differing effects on the technological sector, contributed to a massive decline in the financial sector. For each major event analyzed in this research paper, a brief overview of how the S&P 500 was impacted will be shared to provide an outline as to how these findings share patterns or parallel similarities regarding reactions. In addition to providing an analysis of the overall behavior of the S&P 500, the author's paper will centralize specific financial companies under the S&P 500 to understand how they might react to future economic downturns created by political policies.

The volatility of the US market plays a large contribution to the effect macroeconomic effects have on the S&P 500. In large, the strenuous relations between the US and China, along with the

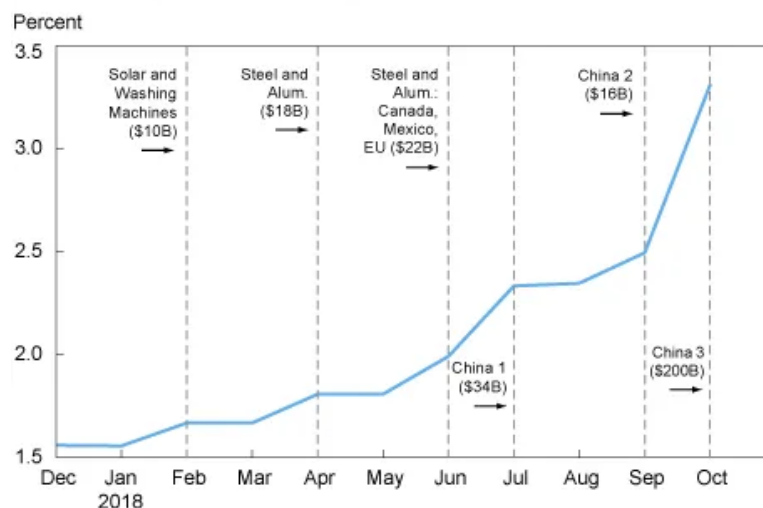
macroeconomic policies implemented from negative trade affiliations, impacted the stock market severely within the last 10 years. The uprising of panic and instability for investors during both events relating to the US and China led to wide volatility within the financial sectors, causing a significant decline that hadn't been reached since the 2008 Great Recession ("Federal Deposit Insurance Corporation", 2006). The financial sector of the S&P 500 suffered from market volatility, economic uncertainty, and disruption in global trade during both episodes. As a result, the findings of the author's paper show that financial sectors have had noteworthy drops in their market value due to economic uncertainty. The S&P 500 declined during both periods, yet showed a slow but evident recovery afterwards. These cases prove that there is substantial reasoning behind the S&P 500 declining yet again from another Trade War being enacted by political policies. Using both events as case studies, the author intends to analyze how the financial sector of the S&P 500 declined during both periods and what these past downturns mean for the approaching 2024 Presidential Election. In this research paper, the author will begin by discussing the basic economic functions of trade and how its activity can influence the behavior of the stock market. Then, the author will describe the events of the 2018 Trade War, and how its uncertainty impacted the stock market, additionally centralizing financial companies under the S&P 500 severely hit by these events. Following, the author will provide an overview of the COVID-19 pandemic, what the lockdown meant for the behavior of the stock market, and how fiscal ambiguity contributed to a downfall in the financial sector. Lastly, the author will use their past analysis to meticulously formulate a prediction as to how the S&P 500 will react to expected administrative policies enacted shortly.

2018 TRADE WAR

In this section, I will first explain the economics of trade and how understanding its fundamentals is vital to determine how it plays a role in the volatility of the market. Then, I will explain the events of the Trade War and analyze its repercussions on the S&P 500 index.

1. The Economics of Trade

Average Import Tariffs More Than Doubled in 2018



Sources: U.S. Census Bureau; USTR; USITC; authors' calculations.

Notes: Tariffs on the 10-digit Harmonized Tariff Schedule (HTS) product code by country, weighted by 2017 import value. Dashed vertical lines indicate the implementation of major new tariffs; tariffs implemented after the 15th of the month counted for the subsequent month. Three tranches of tariffs were imposed on China, designated by 1, 2, and 3.

International trade amongst nations is used highly, primarily driven by comparative rather than absolute advantage. Comparative advantage is a theory of trade - it elaborates on the reasoning on why we trade, and what goods should be traded if a country wants to optimize the resources and well-being of its citizens (Tabarrok, 2024). As an example- say it takes England 12 labor units to build 1 chair. Contrarily, it takes the United States only 1 labor unit to create 1 chair, therefore making them much more productive due to their ability to produce with fewer resources. While comparative advantage focuses on producing at a lower cost, absolute advantage, conversely, essentially describes being the best at something. This scenario, under the ideals of Absolute Advantage, makes trading for the United States unnecessary. While this may seem convincing, Absolute Advantage discards a country's concerns in terms of productivity. While the United States may be the most efficient at creating a singular chair, this significant activity takes up time that could've been spent on doing something more productive; trading off with another country that has a lower opportunity cost not only ensures that the product will be produced, but higher economic priorities can be achieved.

So, although Absolute Advantage may appear the best fit for determining whether a country is ideal for foreign trade, identifying a country's opportunity cost demonstrates whether the particular company has the resources, ability, and skill to produce your product efficiently.

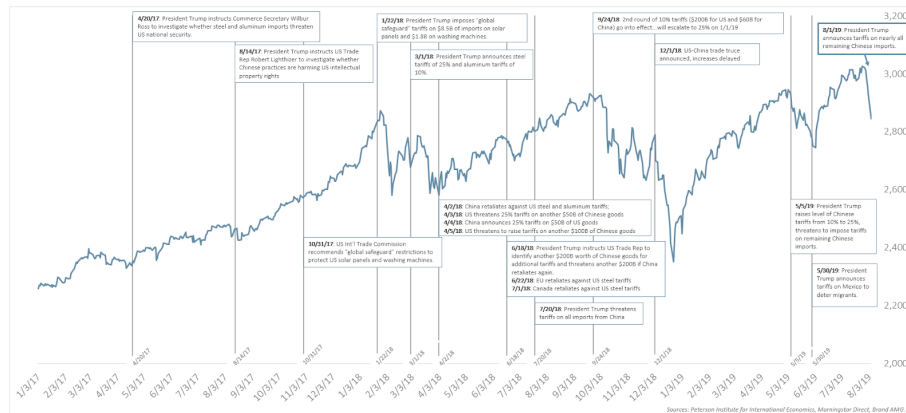
Along with Comparative advantage playing a key role in how countries interact with each other, tariffs are an integral part of international trade. Tariffs are taxes imposed on goods being imported between different countries (Tyler Cowen, n.d.). Imposing tariffs on foreign goods plays a key role in encouraging citizens to buy goods that are produced domestically, along with providing a modest source of government revenue (Chatzky, 2024). Another strong key point of tariffs is supporting local firms- due to the additional expense inflicted upon transnational goods, local businesses have an advantage over foreign competitors (Chatzky, 2024). The most commonly utilized tariff is known as an *ad valorem*, which is levied as a fixed percentage of the value of the imports (Chatzky, 2024).

Looking at the history of world trade, tariffs were relatively high in the late 19th century. During this period, countries in general did not have income taxes, and tariffs were used as a major source of funding for governments (Chatzky, 2024). As the years progressed, involving a much steeper decline in the Great Depression, tariff rates grew significantly higher, following a strong downward march in more recent years due to a free trade uprising.

When a country joins a free trade agreement, it agrees to the reduction or elimination of economic barriers between selected countries. A Free Trade Agreement functions as a legal arrangement between 2 or more countries, serving to eliminate tariff and non-tariff barriers for the trade of goods and services (Grier, n.d.). In 1987, the United States and Mexico signed an agreement to resolve trade disputes, as well as bring down trade barriers. One of the advantages of a Free Trade Agreement is its ability to reduce inflation, given the increased competition between foreign goods. Not only do Free Trade Agreements help open new opportunities for national trade amongst different countries (holding differing opportunity costs as well), but these trade agreements serve as peace agreements, symbolizing a mutually benevolent bond between the respective countries.

The logistics behind the functionalities of international trade, and how it plays a crucial role in the development of Stock Markets, are crucial for understanding the dynamics of the 2018 Trade War. The organizational components determine what and how goods get transported between borders, affecting price margins; this chain of events could lead to uncertainty and speculation in the stock market, thus causing contractions in the S&P 500.

2. The 2018 Trade War



On November 10, 2017, Donald Trump, the then-45th President of the United States, announced that he was rebuking China during his speech, directly going against the trade practices America has operated with China for years. Stating that we as a country “are not going to let the United States be taken advantage of anymore”, (Colvin, Kill, Jonathan, 2017) Trump argued that America was essentially taken advantage of by a harmful country that engaged in neglectful practices such as product dumping, currency manipulation, and government subsidizing of goods (Colvin, Kill, Jonathan, 2017). Moreover, Trump stated that China’s trade surplus, standing at \$223 billion at the time (Colvin, Kill, Jonathan, 2017), along with the theft of intellectual property was entirely unacceptable, thus breaking the trade bonds between the two countries.

In the years surrounding Trump's Addressing, the exports and imports exchanged between the US and China were vital goods, consisting of Agricultural Products, Machinery and Mechanical Appliances, and Chemicals, Plastics, and Leather Goods (“U.S. Trade with China 2022”, 2022). Additionally, China has imported commodity sectors such as Mechanical Appliances, Furniture, Bedding, Toys, Games, Sports Equipment, and Chemicals as well (“U.S. Trade with China 2022”, 2022). While these products play a huge role in international trade, a more specialized product has taken over all US goods exports by value to China. Soybeans make up 11.6% of overall US exports to China, with China serving as the world's largest importer of soybeans (“What are the Top US Exports to China?”, 2023). Due to the 2018 tariffs imposed by the Office of the United States Trade Representative, China retaliated by imposing tariffs on approximately \$110 billion of American imports, including a 25% tariff on soybeans; due to this, soybean exports to China have dropped 75% since then (“What are the Top US Exports to China?”, 2023). The eventual decline of such highly regarded and prominent goods, causing higher tariffs and reduced profit margins on businesses, was one consideration as to why the S&P 500 experienced declines.

While Trump has declared denouncement between China and the US on non-tariffed goods, an investigation has been made to evaluate the intellectual property appropriation in China that Trump declared. The IP-intensive economy also spent approximately \$4.8 billion in 2009 to address possible Chinese infringement (“China: Effects of Intellectual Property Infringement And...”, 2011). Many U.S. companies have reported that the infringement of their intellectual property rights in China has undermined their competitive positions. In fact, 58.1% of firms doing business in China have reported IPR infringement, including losses in sales, profits, and license and royalty fees, along with damage to product reputation (“China: Effects of Intellectual Property Infringement And...”, 2011). Out of these differing factors, Trademark infringement was the most common form, with nearly one-third of

businesses reporting this form of infringement (“China: Effects of Intellectual Property Infringement And...”, 2011).

The trade deficit the USA has concerning China's trade can also be attributed to China lending dollars to the United States. In buying government bonds from the U.S. Treasury Secretary, China is essentially lending money to the US to help balance U.S. budget deficits. China uses this foreign money acquired from the US to spend that money back on US goods or to reinvest in US assets by conducting activities such as building a factory or investing in Treasury securities. Essentially, foreigners take this money and invest it back in the US, thus increasing the dollar flow between the two countries. These investments include foreign direct investment, or portfolio investments (stocks and bonds) to buy shares of the US stock exchange or another activity such as shifting their bank deposit. When this chain of events leads to a strong dollar, or the US holding a larger value in its current state, U.S. exports become more expensive, thus heightening the Trade Deficit between the two countries.

Following Trump's declaration against China's foreign policies, he ordered a 25% tariff on steel imports and 10% on aluminum from all suppliers. From this point forward, the US and China go up against each other, imposing more tariff policies on their goods. China imposes tariffs of up to 25% on 128 US products, including soybeans, while the United States then unveils plans for 10% tariffs on over \$200 billion of China imports, and so on (“China: Effects of Intellectual Property Infringement And...”, 2011).

As Trump began to impose more taxes and thus radiate more unreliability upon the Chinese economy to others, his administration's tariffs on goods imported specifically from China have induced a large amount of uncertainty in the global economy. 2018 for the S&P 500 was a year shaped by volatility, having record highs and sharp reversals due to the trade war. Due to higher tariffs on goods, the increased costs for companies hurt earnings, leading to investors anticipating lower future profits and thus resulting in less investments in certain companies. Of the 500 companies in this stock index, the primary companies that got impacted the most include Apple Inc. Boeing Co., and NVIDIA, and have relied on China for manufacturing, joint ventures, and more.

In the 2018 quarter, the S&P 500 plunged 13.97 percent, its worst performance since 2011 (Insidore, 2018). Moreover, during December that year, all indexes dropped at least 8.7 percent (Insidore, 2018). By late 2019, the S&P 50 was 6% below its record hit only last month.

Centralizing in the financial sector, certain companies were hit especially hard during this time of strenuous foreign relations. Looking at the bigger picture, Morgan Stanley's share price for the year of 2018 took a decline of around 21%, dropping down from \$56 to \$44- moreover, in its earnings report, they experienced investment revenues of \$82 million decreased from \$113 million a year ago due to markdowns of investments and lower carried interest in certain alternative products, with James P. Gorman, the CEO, himself stating the company had a “challenging fourth quarter” (“Morgan Stanley”, n.d.). Firm net revenues were very evidently negatively impacted by the volatile global market environment in the fourth quarter (“Morgan Stanley”, n.d.). Net revenues from the quarter ended in 2018 to 2019 dropped from 9,872 million to 8,548 million, and by the end of the year, the firm repurchased \$4.9 billion of its common stock, or 97 million shares, a 21% increase from last year (“Morgan Stanley”, n.d.).

Similarly, the financial company JP Morgan Chase & Co can be seen experiencing parallel outcomes regarding the final sector for 2018. Their financial performance evaluation shows a revenue of \$3.4B, down 5% year-to-year, with a statement declaring it was “driven by lower market levels”;

moreover, their assets under management and client assets both went down 2%, holding the same justification of lower market levels (“4Q18 Earnings Press Release”, 2018).

Overall, it's very evident that the broad market volatility and investment sentiment shifts that the 2018 Trade War instigated hurt financial firms' stock performance and financial results.

But, amidst worry and doubt over the success rate of certain Chinese-related companies under the S&P 500, the market notably moved higher after President Donald Trump expressed optimism that the US could strike a trade deal with China, saying that a deal is “moving along very well” (Phillips, 2018). After the announcement of a temporary truce in the trade war by President Trump and President Xi Jinping, the S&P 500 stock index climbed 1.1 percent, showing the beginning of a slow but promising recovery for the stock market (Phillips, 2018).

2020 COVID PANDEMIC



In the weeks following the announcement of the COVID-19 pandemic, the stock market was deemed to continue its predicted rate of volatility. Investors, unsure of the exact impact this soon-spreading disease would bring upon their stocks, remained optimistic, seeing auspicious forthcoming for the S&P 500. When March 2020 rolled in, shedding light upon the wide-scale impact the disease was bringing on well-known businesses, the S&P 500 dropped to a staggering 25% during this month (Curto, 2022). Investors began panicking over how the impact of a government-issued lockdown would affect demand and profit for the businesses they had invested in and began transitioning from carrying large amounts of stock to lower-risk investments and conversions to cash (“Topic: Covid-19 and Investment Behavior Worldwide”, 2023). The unpredictability surrounding the effects and impact of this newly emerging pandemic caused less consumption and business closures, thus leading to financial distress (Jabeen et al., 2022). This disease, defined as a time with extremely high volatility on the market, caused investors to lose hope in the ability of businesses to pay back good dividends, thus selling their stocks as quickly as possible.

On March 23, 2020, the S&P 500 Index witnessed an unusual drop of 35% compared to the record high on February 18, 2020. The very sudden and dramatic fall of the stock market during this short

period was even compared to the financial crisis of 2008, further raising worries about what this meant for stock prices (Jabeen et al., 2022).

However, the reaction to the change in the stock market, which reflects the dramatic decline in March 2020, also varied depending on the investor. A 2023 study revealed that younger investors reacted stronger to the crisis, thus being the group primarily responsible for the drop, while the older generation kept the same level of risk in their portfolio (Jabeen et al., 2022). Affluent investor Warren Buffett advises to be “fearful when others are greedy, and greedy when others are fearful” (Jarvis, 2021), using this mechanism to prosper through the pandemic and increase his network to over \$100 billion in March. Conversely, billionaire investor Steven Cohen, founder of Point72 Asset Management, advocates staying cautious in times of recession, warning that “after an earthquake there are tremors” (Delevingne, 2020). Following the devastating month of March 2020 on stock markets, companies composing one aspect of the 500 companies under the index for energy and financial sectors reached low points of 44% and 57% during the first few months of this year (“4Q20 Earnings Presentation - JPMorgan Chase”, 2020). Moreover, airline companies and oil and gas companies saw their profits spiral down, due to the lack of revenue from the lockdown.

Financial sectors such as JPMorgan showed a 20% decrease in net income. Their lending revenue was marked down 23% year-to-year, the explanation saying it was driven by mark-to-market losses on hedges of accrual loans partially offset by higher net interest income and feeds (Wen et al., 2021). On the other hand, companies like Morgan Stanley surprisingly saw a positive impact from the pandemic, with a net income of 11 billion, as opposed to 9 billion in 2018.

Bank of America was one financial company that was hit especially hard by the pandemic's economic impact. Annual earnings went down 42.01% in 2020, transitioning from 32.75 billion in 2019 to 18.99 billion in 2020 (“Bank of America - Earnings”, n.d.).

While all these impacts on financial companies from COVID seem to be circulating within America only, the effect of this economic downturn extends to foreign nations as well. Chinese investors, amid the market volatility caused by the pandemic, began to draw out investments in the S&P 500 in response to global economic uncertainties.

Despite the stock market reaching measures of volatility not seen since the global financial crisis, the S&P 500 index began to reverse its course in late March, seeing noteworthy improvements to 2021. While the pandemic and the government imposed lockdowns that brought misfortune to big businesses located within the food or airline industries, this lockdown also led to growing legions of first-time investors, who had more free time to utilize trading apps and some extra cash to begin their first investments.

Additionally, a huge factor that contributed to this growing period in the index is the quick development of coronavirus vaccines, which eventually helped more individuals escape the confinement of the house, therefore helping businesses get back on track with stocks shooting even higher (“How did the Pandemic Usher in One of the Stock Market’s Greatest Runs?”, 2021).

Most importantly, this major shift from an extreme low to an all-time high can be attributed to the FED and its treasury policies. To start with, the Fed cut down the federal funds rate, lowering it to a range of 0% to 0.25%; this action helped aid businesses and households in times of economic downturn by lowering the cost of borrowing money (Milstein et al., 2024). Moreover, the Fed pursued quantitative easing, in which it resumed purchasing massive amounts of debt- this aimed to restore the smooth

functioning of the market. By buying billions of dollars of Treasury securities and government-guaranteed mortgage-backed securities over the following months of February 2020, their contributions helped bolster the economy and reinitiate efficient market operations (Milstein et al., 2024).

DISCUSSION

The present study investigated wheat seed properties and classification through computer neural networks. By analyzing the association of the seven features (area, perimeter, compactness, kernel length, kernel width, asymmetry coefficient, and kernel groove) and the three labels (Type 1, Type 2, or Type 3), the model can accurately predict the classification of new samples. The noticeable increase in performance observed with the second model justifies the importance of feature selection and supports that feature selection reduces unnecessary noise. The exceptionally low importances of the other features contrasted with the three selected features (kernel width, asymmetry coefficient, and kernel groove) form the conjecture that the variation in features like area, perimeter, compactness, and kernel length is not consequential to the sorting process. The selected features seem to be the main distinctive characteristics in the seed that the model detects which differentiate type. Thus, the results of feature selection incentivize future biological studies and modification of technology focusing on the three selected features, which can save time and resources.

However, the study has limitations, considering how the dataset contains only a few hundred samples. Future studies can be improved with larger datasets and deeper analysis of features; more comprehensive neural networks may require hidden layers. Other models can be implemented for deeper visualizations of the data and may yield additional analysis points. For example, models like K-nearest neighbors and cluster analysis explore how the distribution of samples affect model predictions, potentially reinforcing or complicating the results of feature selection. Models similar to the one implemented in this study can be applied to a broad range of crops, including other popular crops like maize and rice. As almost every major industry expeditiously digitalizes, the use of neural networks and machine learning is a crucial step toward replacing human shortcomings in the thousand-year-old art of agriculture.

WHAT NOW?



From analyzing the trends and behavior of the S&P 500, investors can make a more estimated guess on how future macroeconomic events will shape the course of the index in the foreseeable future.

In regards to the upcoming 2024 Presidential Election, and due to recent events regarding the assassination attempt on Trump, votes for the Republican candidate have been rising exponentially; he will likely become America's 47th President of the United States. On any upcoming policies he could impose, the potential for another trade war fueled by a rise in global protectionist policies has investors revisiting the potential impact on stocks, inflation, and economic growth (Kleintop, 2024).

After experiencing trade war tariffs in 2018-19 and seeing Trump's strong belief in "my country first", investors are beginning to show concerns about what another trade war could impose on the current somewhat stability of the Stock Market (Kleintop, 2024). The overall impact for investors is likely to be more volatility for the stock market, but less downside risk in the market (Kleintop, 2024).

While the unpredictable future of Trump's presidential inauguration has the possibility of being inconsequential to the S&P 500, investors believe that it is likely that the index will experience yet another downfall, due to past market reactions to trade tensions. The stock market experienced a 1.9% drop within one day when the US enacted a tariff increase from 10 to 25% on a \$200 ban on Chinese imports, while the market continued to go down as China began to raise tariffs on 75 billion dollars worth of US goods (Picciotto, 2024). It is evident that the stock market does not react positively to the harsh international relations between the two countries, so it's safe to say that, based on its past behavior, the upcoming election of Trump in office won't be very affirmative to the S&P 500 index.

While Trump may not win, the democratic side has been known to show similar attitudes toward Chinese Trade as well. While in office, President Biden directed his Trade Representative to increase tariffs under Section 302 of the Trade Act of 1974 on \$18 billion of imports from China to protect American workers and businesses (McCarthy, 2024). With Biden's strong actions to protect American

workers and American companies from China's unfair trade practices, one can reasonably infer that Harris will continue to emphasize these similar values during her presidential run as well.

It has been confirmed that Trump would impose tariffs of 60% or higher on Chinese goods were he to win a second term in office, with this tariff strategy possibly reviving the trade war he triggered during his first term as president (McCarthy, 2024). Not only would another trade war disrupt the global economy, further impacting the volatility of the stock market, but his new policies would further damage US-China relations. From analyzing the past stock reactions to the first trade war, the author believes that this new trade policy, if Trump were to impose it as the 47th President, would bring the S&P 500 down dramatically. Currently, the S&P 500 has been increasing slowly but steadily by 5.77% for the past 6 months. If Trump's new policies regarding Chinese tariffs and China being "the biggest threat to our country" (LaRocco, 2024) to be imposed, the author believes that the stock market could drop down to a maximum of 10%, somewhat reflecting the 7% drop in the S&P 500 that occurred from September 2018 to January 2019.

With the last trade war bringing continual drops to the S&P 500 during 2018-2019, the author contends that Trump's latest policies, which are more amplified and substantial than his 2018 policies, would bring parallel impacts upon the Stock Market. With his consistent worries about unfair trade practices in technology transfer and intellectual worries, a new presidential standing will give him the power to spread more of these very afflictions to others, thus leading to more uncertainty and less activity in the stock market. Additionally, certain sectors within the S&P 500 index, more specifically industries reliant on imports or exports, will most certainly be hit more intensely by Trump's new regulations, causing a more consequential decline in investments.

Following similar trends from 2018, big financial sectors like JP Morgan and Chase Morgan will be predicted to take a hit from this possible enforcement. However, due to experience in the economic downturn, the author believes that their response to another Trade War will be handled with more strategic adjustments that minimize the impact on their earnings. Financial companies under the S&P 500 have strengthened their risk management since 2018, reducing any vulnerability to any harm from foreign relations; it is highly likely that they now will be better equipped if such an event were to happen again.

Global logistics companies have already started planning for a potential Trump win in November and strategies that will be needed to mitigate any additional tariffs (LaRocco, 2024). Planning had begun after Trump announced he was considering imposing tariffs of 60% or higher on Chinese goods, as well as a blanket 10% tariff on all U.S. imports in his potential second term (LaRocco, 2024).

In conclusion, the past events regarding recessions in the performance of the stock market have major impacts on the S&P 500, more specifically within the financial sector, that extend out to many years. Analyzing its past behavior and how businesses reacted to these financial crises will help determine its future tendencies. The 2024 Presidential Election introduces the possibility of continued trade tensions, but with the benefit of prior knowledge and strategic planning, our economy has the potential to continue thriving.

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