Abstract

The trade war created uncertainty that increased Ford stock's short-term volatility and created temporary losses following major trade war events. The tariffs also elevated production costs and reduced earnings for Ford and other U.S. companies as well as pushed Ford to change product rollouts, layoff workers, and adjust production plans.

In the global economic landscape the trade war generated and amplified concerns of slowing growth amid other disruptive events such as Brexit, increased interest rates by the Federal Reserve, and doubts that the bull market would last much longer. The controversial trade war was implemented as a way to advance the Trump administration's "America First" agenda, but the conflict benefited only a small portion of America, while raising prices for nearly all consumers and depressing economic outlooks.

Definitions

Volatility

Volatility is a measurement used to determine how risky an investment is. The more volatile a stock, the riskier it is, and it is an indicator of investor uncertainty about market conditions. While some investors seek out more volatile stocks for the chance of an outsized profit, on the whole, a more volatile and thus more risky investment is a sign of uncertain future profitability. As the CEO of Ford said during the Q1 2018 earnings call, "What we crave as business people are certainty and equilibrium. So trade can thrive in a world where that's not in question."[1]

Historic volatility is an annualized metric that determines the volatility of a stock over a given period of time. Over a 10-day period, 11 days of closing prices are used. The percent change from one day to the next is calculated, and then the standard deviation from the average percent change is found. The standard deviation is multiplied by the square root of the 252, or the average number of trading days in a year. This final product is the 10-day historical volatility, which has no unit.

Tariff

A tariff is a tax instituted by governments on imports that protects domestic suppliers and raises government revenue. Tariffs make purchasing imported products less desirable and

[1] Ford Motor Co., "Q1 Earnings Call," news release, April 25, 2018, accessed February 24, 2021, https://s23.q4cdn.com/799033206/files/doc_financials/quarterly/2018/q1/TRANSCRIPT-Ford-Motor-Co.(F-US)-Q1-2018-Earnings-Call.pdf.

abundant due to a higher cost for exporters to ship their goods in turn increasing demand for domestic goods that are not targeted by tariffs.

Trade War

A trade war occurs when parties vying for an economic advantage continually create trade barriers, often through tariffs or quotas, against each other as a way to protect themselves and harm the other group. Most economists consider tariffs and trade wars to be more damaging than beneficial to countries, although it can benefit specific parts of a country's economy since there is increased domestic demand for domestic goods.[2] Threats of tariffs create uncertainty about market conditions as they are subject to the actions of policy makers. The tariffs themselves create uncertainty because they change the cost of production and profitability for different companies and industries. Since companies make their plans years in advance, shifting circumstances can derail a wide range of initiatives such as new product rollouts, going public, or increasing investment activity that are responsible for growth. These adjustments change outlooks for earnings, which in turn changes the value of the stock, creating volatility. Jobs are also placed at risk because while protected industries will likely see a spike in employment, secondary effects of tariffs jeopardize other jobs as a result of higher costs, reduces consumer spending, and slows growth. Retaliatory tariffs from countries targeted by the initial tariffs, are also one of the largest dangers to global growth which hurts every country, although sluggish global growth disproportionately harms poorer countries dependent on consumption from richer countries.[3] A trade war landscape thus creates a cycle of uncertainty that manifests as volatility and slowed economic growth.

[2] Anahita Thoms, "Why Trade Wars Have No Winners," World Economic Forum, last modified November 1, 2019, accessed March 2, 2021, https://www.weforum.org/agenda/2019/11/who-benefits-from-a-trade-war/.
[3] Ibid.

Ford Motor Company

Ford (F) is an American automaker and part of the Big Three U.S. automakers, the other two being General Motors and Fiat Chrysler. Automakers are classified as consumer discretionary because the products they create are non-essential as opposed to consumer staples like Campbell Soup. They are also cyclical stocks, meaning their earnings and stock price align the business cycle through its stages of growth and recession. As a result, they are particularly sensitive to changes in the overall economy. Automotive manufacturers also sell durable goods, or products that last more than three years. Demand for durable goods is an indicator of future economic activity. For instance, when demand for them is high, it signifies that consumer optimism is strong.

Background: How did the trade war come about?

Donald Trump ran on a presidential campaign in 2016 that promised to put "America First." Along with proposals to restrict immigration and overturn landmark healthcare legislation passed by the Obama administration, he created what he called "the most pro-growth, pro-family plan put forth perhaps in the history of our country" saying he would make $4.4 trillion in tax cuts and 25 million new jobs over ten years.[4] In keeping with the "America First" mindset he wanted to ensure America wasn't being "ripped off" or taken advantage of in trade, citing the U.S. 's trade deficit with China as a major point of weakness.[5] He also promised to protect U.S.

[4] Scott Horsley, "Trump Confident He Can Speed Economic Growth to Rate Not Seen in Years," NPR, last modified September 15, 2016, accessed February 21, 2021, https://www.npr.org/2016/09/15/494112503/trump-sets-audacious-goal-of-4-percent-economic-growth.
[5] Jacob Schlesinger, "Trump Forged His Ideas on Trade in the 1980s - and Never Deviated," *The Wall Street Journal* (New York City, NY), November 15, 2018, accessed February 21, 2021,

manufacturers and factory workers, vowing to take a new look at protectionist trade measures in a departure from the Bush and Obama administrations which had chosen to work more collaboratively, in line with the World Trade Organization's (WTO) goal to reduce barriers to trade.[6]

In April 2017 President Trump gave approval for Secretary of Commerce Wilbur Ross to proceed with investigations into the effect of imported aluminum and steel on national security. On February 16, 2018, two reports were published finding that "the present quantities and circumstances of" steel and aluminum "imports are weakening our internal economy" and "threaten to impair national security."[7] The reports urged President Trump to take immediate action in reducing imports through quotas or tariffs to boost the declining steel and aluminum industries in America and reduce America's dependence on foreign metal under the rarely used Trade Expansion Act of 1962 for protecting interests of national security. At the public hearings for the investigations into the national security risk imported steel and aluminum posed, numerous car companies warned that tariffs would disrupt their production and hurt their companies. This research can not make a judgement on how much aluminum and steel independence is important for national security.

In a separate investigation initiated in August 2017, U.S. Trade Representative Robert Lighthizer was tasked with investigating China's practices surrounding intellectual property,

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https://www.wsj.com/articles/trump-forged-his-ideas-on-trade-in-the-1980sand-never-deviated-15423045 08.

[6] Andrew Tangel, "Trade's Test Case: Your Washing Machine," The Wall Street Journal, October 4, 2017, accessed March 2, 2021, https://www.wsj.com/articles/whirlpool-makes-the-case-for-protectionism-1507143224.

[7] U.S. Department of Commerce, *The Effect of Imports of Steel on the National Security*, January 11, 2018, accessed February 21, 2021, https://www.commerce.gov/sites/default/files/the_effect_of_imports_of_steel_on_the_national_security_-_with_redactions_-_20180111.pdf.

innovation, and technology and if their practices are harming American economic interests.[8] In March 2018 the report was released, concluding that China's actions were unfair and violated technological intellectual property laws.

The results of the three investigations are the grounds for the tariffs that were implemented over the course of 2018 and 2019 resulting in a trade war. Lack of consensus among economic officials in the administration raised hopes for investors at the beginning of the trade war that the tariffs might not be out in place as members of the GOP were opposed to such measures. Gary Cohn, Trump's top economic advisor, even left following the President's insistence on pursuing the trade war.[9]

The administration's first tariffs as part of the "America First" agenda were implemented on January 23, 2018 on solar panels and washing machines at the behest of Whirlpool and solar panel companies. They sought protection under the controversial 1974 "safeguard" act which enables the federal government to provide relief for companies experiencing "serious injury" from imports.[10] The last time this act had been invoked was in 2002 by the Bush administration to protect American steel manufacturers, but their tariffs were revoked after the World Trade Organization had ruled they were illegal. Since then, industries had largely been discouraged from seeking protection under that provision until Trump took control.[11] These tariffs were aimed at South Korean and Chinese manufacturers, but notably, exemptions were not made for

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[8] Office of the United States Trade Representative, *Findings of the Investigation into China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation under Section 301 of the Trade Act of 1074*, March 22, 2018, accessed February 21, 2021, https://ustr.gov/sites/default/files/Section%20301%20FINAL.PDF.
[9] Nick Timiraos, "Gary Cohn Resigns as White House Economic Adviser After Losing Tariffs Fight," The Wall Street Journal, March 6, 2018, accessed March 14, 2021, https://www.wsj.com/articles/gary-cohn-to-resign-as-president-trumps-economic-adviser-1520376157.
[10] Office of the United States Trade Representative, *Findings of the Investigation*.
[11]Ibid. In September of 2020, the WTO ruled that the 2018 tariffs were illegal. The U.S. appealed the ruling, which effectively made it moot since the U.S. was keeping the appellate body from executing its duties by blocking the appointment of panelists to fill empty spaces.

Mexico, Canada, and Europe, places with which the U.S. traditionally held a friendlier relationship, reflecting the administration's aggressive policy approach.[12]

On March 8, 2018 Trump signed orders for tariffs on imported steel and aluminum directed at China, the top producer of steel and aluminum, and shortly after on March 22 Trump announced plans to impose $50 billion worth of annual tariffs on China as a penalty for theft of American technology and innovation.[13] Within hours China announced $3 billion in tariffs from the U.S. officially in response to the U.S.'s metal tariffs but also as a warning against Trump's announcement on tariffs for a wider range of Chinese products.[14] In Appendix A a timeline shows the key events and steps in the U.S. - China trade war.

Methodology

Preparation for the study included reading Kate Raworth's *Doughnut Economics*, Zachary Karabell's *The Leading Indicators: A Short History of the Numbers that Rule Our World*, and excerpts of George Mankiw's textbook *Principles of Economics*. Ford Motor Company was chosen because it is one of the Big Three automotive manufacturers in America.

First, a timeline was established with the dates of significant tariff/trade war events including threats of new tariffs, official announcements, dates of implementation of tariffs, and tariff retaliations from targeted countries. Events that were related to a specific major event in the

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[12] Erin Ailworth and Jacob Schlesinger, "U.S. Imposes New Tariffs, Ramping Up 'America First' Trade Policy," *The Wall Street Journal*, January 22, 2018, accessed March 2, 2021, https://www.wsj.com/articles/u-s-imposes-trade-tariffs-signaling-tougher-line-on-china-1516658821.

[13] "All the Threats and Tariffs in the U.S.-China Trade Conflict," *The New York Times* (New York, NY), June 15, 2018, Business, accessed February 21, 2021, https://www.nytimes.com/interactive/2018/04/05/business/china-us-trade-conflict.html.

[14] "Responding to Trump, China Plans New Tariffs on U.S. Goods," *The New York Times* (New York, NY), March 22, 2018, accessed February 21, 2021, https://www.nytimes.com/2018/03/22/world/asia/china-trump-retaliatory-tariffs.html

trade war were grouped together. The significance of an event was determined by whether or not it was discussed on the front page of the *Wall Street Journal*.

Data of the rate at which the terms “tariff” and “Trade war” were searched on Google was used to establish which events the public paid the most attention to as well as check that the newspaper’s focus was aligned with what the general public was looking for. When analyzing the time periods of a grouping of events, data was examined from ten trading days before the first notable event and ten trading days after the last notable event. Ford’s stock was also compared to the market to determine if Ford was moving less than, as much as, or more than the market. Quotes were collected from Ford’s quarterly earnings conferences and SEC filings to establish what the company’s official stance was on the tariffs’ impact and what they saw as the most notable impact of the tariffs on their business. Further research was done to find what the impact the trade war had on an industry wide, nationwide, and global level.

Stock Price and Volatility

Stock price data was collected from Yahoo! Finance. Stock movement following major trade war events was examined to determine how long it took for the price to level out or return to the level prior to the event. Over the long term, stock price data was examined by quarter, by year, and over the two year 2018-2019 period to determine any trends in price.

Data on volatility was collected from AlphaQuery. The 180-day average historical volatility from close-to-close for the stock was measured every two quarters over the 2018-2019 period and used as a benchmark for volatility during the time span it covered. During key trade events, the 10-day historical average was recorded starting from the first day of the event up until ten days after the last day of the event. The percent increase or decrease in volatility during trade war events was found by comparing the average 10-day historical volatility over the specific time frame and the 180-day volatility for the half of the year when the events took place.

This calculation determined whether or not the trade war had a demonstrable effect on the stock's volatility. The 10-day historical volatility metric was also examined on a day-to-day basis in comparison to the 180-day historical volatility.

Findings

<u>Case Study: March/April Madness March 1 - April 13, 2018</u>

Data was analyzed from Feb 14 to April 27

After the investigations' reports were released in February, the White House announced on March 1 that the U.S., would be imposing a 25% tariff on imported steel and a 10% tariff on imported aluminum causing shares of metal companies to soar and auto makers to slump.[15] On that day, Ford's price fell 3%, but it returned to its 2/28 price on March 6. Through March 8 the stock market was filled with uncertainty as investors weighed worries of an impending trade war with the fact officials inside the Trump administration were pushing against the tariffs.[16] During that week searches for "tariff" hit their peak for 2018, reflecting how impactful news of the tariffs was. This uncertainty manifested as volatility that was temporarily elevated on average by 18% from March 1 - March 9, before leveling off. Socks plummeted on March 22 when the Trump administration announced punitive measures on $60 billion worth of Chinese imports after an investigation found that China used unfair technology trade practices. Within hours

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[15] Jacob Schlesinger, Peter Nicholas, and Louise Radnofsky, "Trump's Tariff Vow Rattles Markets," *The Wall Street Journal* (New York, NY), March 1, 2018, accessed February 22, 2021, https://www.wsj.com/articles/trump-wont-quickly-announce-new-tariffs-on-aluminum-steel-1519921704.

[16] Andrew Tangel, Harriet Torry, and Mike Colias, "Officials Beat Back Warnings on Tariffs," *The Wall Street Journal* (New York, NY), March 4, 2018, accessed February 24, 2021, https://www.wsj.com/articles/trump-administration-beats-back-warnings-on-tariffs-1520212164.

China unveiled plans for $3 billion in tariffs for American goods officially in response to the U.S.'s metal tariffs, causing Ford's stock to drop 4.9% over two days as "months of growing investor anxiety over U.S. trade policy" exacerbated the market's response to the negative news.[17] By April 3 the stock was again above where it was before the fall. The short-term period of volatility followed by a period of stability until the next major event demonstrates that investors weren't so much concerned about the individual tariff as they were about a more long-term global back and forth that the events on March 22 symbolized. The selloff on March 22 also came amidst signs that interest rates would rise faster than expected and worries that the longest running bull market in history was losing momentum.[18]

Compared to the same time period of February 14 to April 26 in 2017 the average 10-day historical volatility was 42% higher in 2018 demonstrating that the 2018 fluctuations were a result of trade war news.

Following all major trade events from March 1 - April 13 there was a period of heightened volatility in Ford's stock. From February 14 to April 27, 2018, the average 10-day volatility was 6.75% lower than the average of Q1 and Q2 of that year. When stocks fell on March 14 amid new worries of protectionist policies, Ford's stock increased 2.2% but did not see above average volatility.[19] After the events on March 22, Ford saw above average volatility for thirteen straight trading days through April 10 as negotiations went underway. These findings display that individual trade war events created short term volatility and stock price reductions

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17 Akane Otani and Michael Wursthorn, "Stocks Plummet on Tariff, Rate Fears," *The Wall Street Journal*, March 22, 2018, accessed February 28, 2021, https://www.wsj.com/articles/asian-stocks-rise-after-fed-rate-increase-1521684233.
18 Ibid.
19 Amrith Ramkumar, "U.S. Stocks Fall on Renewed Trade Worries," *The Wall Street Journal*, March 14, 2018, accessed March 3, 2021, https://www.wsj.com/articles/global-stocks-fall-following-tillerson-firing-1520991638?mod=article_inline.

rather than triggering long bouts of uncertainty or stock price decline. As trade news and hostilities slowed, after April 8, a pattern can be seen of "no news is good news," as Ford's stock stabilized in the absence of major trade updates.

Case Study: G-20 Summit Meeting in Buenos Aires November 30 - December 1

Events

Trump Presses China on Trade November 26, 2018 (WSJ - front page the 27th)

On November 26 Trump "said he expects to move ahead with boosting tariff levels on $200 billion of Chinese goods to 25%" saying it is highly unlikely he would accept China's request to hold off on the increase. "If we don't make a deal, then I'm going to put the $267 billion additional on." This threat was first brought up in late summer.[20]

Trump Says GM Plant Closings May Justify New Car Tariffs November 28, 2018 (WSJ - front page World-Wide column the 29th)[21]

US, China Explore Deal on Trade November 29, 2018 (WSJ - front page the 30th)

Departing for Buenos Aires Trump says the two sides are "very close" to a trade deal with China but adding "I don't know if we want to do it. I'm open to making a deal, but frankly, I like the deal we have now." The mixed signals reflect the splits in US leadership on their demands from

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[20] Bob Davis, "Trump Expects to Move Ahead With Boost on China Tariffs," *The Wall Street Journal* (New York, NY), November 26, 2018], accessed February 21, 2021, https://www.wsj.com/articles/trump-expects-to-move-ahead-with-boost-on-china-tariffs-1543266545.
[21] Jacob Schlesinger, "Trump Says GM Plant Closings May Justify New Car Tariffs," The Wall Street Journal (New York, NY), November 28, 2018, accessed February 23, 2021, https://www.wsj.com/articles/trump-says-gm-plant-closings-may-justify-new-car-tariffs-1543418195.

China as well as the weeks of talks that have failed to guarantee an agreement during the summit.[22]

US-China Truce Tees Up Sticky Issues December 2, 2018 (WSJ - front page the 3rd)

After the G-20 meeting in Buenos Aires, Presidents Trump and Xi announce a deal to halt the escalation of tariffs that were expected in January while they negotiate over trade concerns. The US postponed the threat to increase tariffs on $200 billion in goods to 25% from 10% until March 1, 2019 if an agreement can't be reached. Trump tweeted that "China has agreed to reduce and remove tariffs on cars coming into China from the U.S. Currently the tariff is 40%." [23]

<u>The Effects of Trade Truce</u>

Global Companies Are Relieved, for Now December 2, 2018 (WSJ - front page the 3rd)

Enthusiasm is tempered by signals the U.S. and China had failed to bridge major differences.The deal was greeted with relief by businesses as the two largest economies eased concerns over a possible new Cold War.[24]

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[22] Lingling Wei and Bob Davis, "U.S., China Explore Deal as Leaders Meet at G-20 Summit," *The Wall Street Journal* (New York, NY), November 29, 2018, accessed February 21, 2021, https://www.wsj.com/articles/u-s-china-exploring-deal-to-ease-trade-tensions-1543508589.

[23] . Bob Davis, "U.S.-China Truce Tees up Sticky ISsues," The Wall Street Journal (New York, NY), December 2, 2018, https://www.wsj.com/articles/u-s-china-face-thorny-obstacles-to-lasting-trade-peace-1543785395.

[24] James Areddy, Jesse Newman, and Kwanwoo Jun, "Global Companies Relieved, for Now," The Wall Street Journal (New York, NY), December 2, 2018, accessed February 23, 2021, https://www.wsj.com/articles/tariff-truce-with-china-eases-cold-war-fears-1543751615.

Market Send Conflicting Signals December 3, 2018 (WSJ - front page the 4th)

Global stocks and oil prices flew higher after easing of geopolitical tensions.[25]

<u>Events included in 10-day volatility measurements</u>

US Taps Critic of China for Talks December 3, 2018 (WSJ - front page the 4th)

Choice of Lighthizer, a tariff advocate, signals a harder line as nations aim to end trade rift.[26]

[25] Akane Otani and Georgi Kantchev, "Markets Send Conflicting Signals," The Wall Street Journal (New York, NY), December 3, 2018, accessed February 23, 2021, https://www.wsj.com/articles/asian-stocks-rise-as-u-s-and-china-reach-a-trade-truce-1543794233.

[26] Vivian Salama and Bob Davis, "U.S. Taps Critic of China for December Talks," *The Wall Street Journal* (New York, NY), December 3, 2018, [Page #], accessed February 23, 2021, https://www.wsj.com/articles/trump-says-u-s-china-relations-have-taken-big-leap-forward-1543847551.

Stocks tumble as trade fears jolt investors December 4, 2018 (WSJ - front page the 5th)

Doubts over the US-China trade truce and waning enthusiasm for negotiations progress during the 90 day tariff cease fire cause stocks to fall.[27]

US Vows Tough Stance on Beijing December 4, 2018 (WSJ - front page the 5th)

The U.S. plans to take a tough stand in 90 day negotiations with China.[28]

The Stock Market Closes in Mourning of President George H.W. Bush December 5, 2018

Stocks Slide at End of Volatile Week December 7, 2018 (WSJ - front page 8th - 9th)

Persistent anxiety about the trade war and the global economic outlook outweighed the November jobs report showing high wage growth but slow hiring, a sign that the economy could be losing momentum. The brief optimism soured over concerns of the tariffs' impact on the national economy. Global companies declined more than 3%, as the sellout accelerated on reiterations from the Trump administration that they would take a tough stance with negotiations. [29]

[27] Michael Wursthorn and David Hodari, "Stocks Tumble as Trade Fears Jolt Investors," The Wall Street Journal (New York, NY), December 4, 2018, accessed February 23, 2021, https://www.wsj.com/articles/dow-tumbles-nearly-800-points-as-trade-jitters-return-1543959007.

[28] Vivian Salama, "U.S. Vows Tough Stance on Beijing," The Wall Street Journal (New York, NY), December 4, 2018, accessed February 23, 2021, https://www.wsj.com/articles/john-bolton-calls-for-tougher-stance-on-intellectual-property-theft-1543935567.

[29] Corrie Driebusch and Riva Gold, "Stocks Slide at End of Volatile Week," The Wall Street Journal (New York, NY), December 7, 2018, accessed February 23, 2021, https://www.wsj.com/articles/stocks-extend-slide-amid-trade-tensions-growth-fears-1544172486.

U.S. Maintains Hard Line as Details Emerge in Trade Truce With China December 9, 2018 (WSJ - front page 10th)[30]

China Moves to Soothe Tensions December 11, 2018 (WSJ - front page 12th)

China agrees to reduce auto tariffs and buy more American products, but the U.S.'s hardline stance could make it difficult for a full deal to be developed. Trump tweeted that he was having "very productive" conversations with China and the world should "Watch for more announcements!"[31]

China to Open Up in Policy Shift December 12, 2018 (WSJ - front page 13th)

U.S. stocks rose but didn't close at their peak, continuing a pattern of volatility as signs of easing in global tensions raises the economic-growth outlook.[32]

Stock-Market Decline Deepens December 17, 2018 (WSJ - front page 18th)

The S&P 500, NASDAQ, and DJIA each fell more than 7.5% this month alone. Investors lost appetite for risk amid trade tensions, geopolitical disputes, and worries of slowing growth. A more gradual increase in Fed interest rates have been priced in.[33]

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[30] Lingling Wei and Bob Davis, "U.S. Maintains Hard Line as Details Emerge in Trade Truce With China," The Wall Street Journal (New York, NY), December 9, 2018, accessed February 23, 2021, https://www.wsj.com/articles/details-emerge-in-u-s-s-trade-truce-with-china-1544360520.

[31] Lingling Wei and Bob Davis, "China Moves to Soothe Tensions," The Wall Street Journal (New York, NY), December 11, 2018, accessed February 23, 2021, https://www.wsj.com/articles/china-agrees-to-reduce-tariffs-on-u-s-autos-11544548658.

[32] Lingling Wei and Bob Davis, "China to Open Up in Policy Shift," The Wall Street Journal (New York, NY), December 12, 2018, accessed February 23, 2021, https://www.wsj.com/articles/china-is-preparing-to-increase-access-for-foreign-companies-11544622331.

[33] Jessica Menton, "Stock Market Decline Deepens," The Wall Street Journal (New York, NY), December 18, 2018, accessed February 23, 2021, https://www.wsj.com/articles/global-stocks-await-cues-on-future-fed-policy-11545035789.

Data was analyzed from November 13 to December 18
Events ranged from November 26 to December 3

There were no major events pertaining to the trade war with China before November 26, although the days that were counted for November 26's 10-day historical volatility was analyzed.

Summary of Events

These events surround the G-20 conference in Buenos Aires where President Trump and President Xi Jinping met to negotiate on a trade deal before the U.S.'s elevated tariffs on Chinese imports would kick in on January 1. On December 1 the U.S. and China agreed to a 90-day truce to allow for further negotiations until March 1, the date the tariffs were postponed to. China wanted the tariffs to be postponed, and the U.S. was looking for guarantees from China they would uphold their pledges to purchase U.S. agricultural products and ensure protection for American intellectual property.

Over the weeks of November 13 through December 18, Google users searched "tariff" at 21% the rate at the peak in April. Over the specific time period of the trade events that occurred, November 26 - December 3, "tariff" searches were up to 32.5% of the peak in searches. Searches for "Trade war" were similarly elevated during this period.

Ford Stock Performance in connection to overall trends

On November 26 when President Trump announced his intentions to proceed with imposing the tariffs on January 1, Ford's stock saw a 3% jump despite the trade war news. This was likely because the company announced they would not close auto plants in Canada as well as released bold plans and updates in their ongoing business transformation.

After the announcement of the truce between China and the US on Saturday December, 1, Ford's stock rose 2%, in line with the DJIA and S&P 500 which each rose 1.1% as tensions seemed to ease.[34] This effect was temporary, however, as it did little to waylay the concerns about a global and domestic slowdown in growth and an end to the bull market. The next day, Ford's stock plunged 4.4% as trade jitters resumed, dragging down the market and causing DJIA, S&P 500, and NASDAQ to fall more than 3%.[35]

Over 22 days of trading from November 13 to December 13, the stock was on average 2.7% more volatile than the 180-day historical volatility over Q3 and Q4 of 2019. During all 10-day historical average time periods that included the four major events, the stock was 13.7% more volatile.

The changes in Ford's stock were more drastic than the changes in the overall market in response to the ups and downs in trade negotiations, indicating that the stock's performance was directly and particularly influenced by developments in the trade war.

In comparison to the same period in 2016, volatility was 27% higher during the trade war, highlighting how the circumstances the trade war created resulted in volatility. 2016 was used as a comparison year since in 2017 the investigations into trade were already underway.

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[34] Akane Otani and Georgi Kantchev, "Markets Send Conflicting Signals," The Wall Street Journal (New York, NY), December 3, 2018, accessed February 23, 2021, https://www.wsj.com/articles/asian-stocks-rise-as-u-s-and-china-reach-a-trade-truce-1543794233.

[35] Michael Wursthorn and David Hodari, "Stocks Tumble as Trade Fears Jolt Investors," The Wall Street Journal (New York, NY), December 4, 2018, accessed February 23, 2021, https://www.wsj.com/articles/dow-tumbles-nearly-800-points-as-trade-jitters-return-1543959007.

Trade War Damages

When accounting for tariff revenue, gains for American producers, and elevated prices for consumers and firms buying imported products, the overall loss in the economy's income was $7.2 billion, equivalent to .04% of GDP.[36] This number is not statistically significant; however, buried in it is the $51 billion in losses for U.S. consumers and firms due to higher import costs, or .27% of GDP in 2018.[37] This large loss for consumers is in line with expectations that the tariffs would raise costs for purchasers of imports and raise demand for domestic suppliers, the latter of which helped offset the higher consumer costs when calculating the net loss from the trade war.

Automotives, which depend heavily on imported metal for production, had particularly high exposure to any disruptions caused by the tariffs and were the fifth most vulnerable industry to tariffs, experiencing a tariff rate of 5.9% on shipments during 2018.[38] As a purchaser of imported metals, Ford's performance reflects how the trade war undercut earnings and forced the company to adjust its production plans.

At the end of Q1 Ford explained that half a year of its contracts for commodities, specifically steel and aluminum, had already been arranged and would not be impacted by the tariffs, trying to soothe investors that at least for the short term the company would in theory not have elevated costs.[39]At the end of Q2, though, Ford explained that an increasingly uncertain policy environment was "causing real unfavorable bottom line effects on the business such as

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[36] Board of Governors of the Federal Reserve System, *"Disentangling the Effects of the 2018-2019 Tariffs on a Globally Connected U.S. Manufacturing Sector*, by Aaron Flaaen and Justin Pierce, December 23, 2019, accessed February 21, 2021, https://www.federalreserve.gov/econres/feds/files/2019086pap.pdf.
[37]National Bureau of Economic Research, *The Return*.
[38]Board of Governors of the Federal Reserve System, *"Disentangling the Effects*.
[39] Ford Motor Co., "Q1 Earnings Call," news release, April 25, 2018, accessed February 24, 2021, https://s23.q4cdn.com/799033206/files/doc_financials/quarterly/2018/q1/TRANSCRIPT-Ford-Motor-Co.(F-US)-Q1-2018-Earnings-Call.pdf.

higher commodity cost beyond normal cyclical effects as well as tariff-related impacts." In their SEC filing for Q4 2018 Ford listed under "Risk Factors" "changes in commodity prices (tariff or otherwise)" and warned that the "Recent steps taken by the U.S. government to apply and consider applying tariffs on automobiles, parts, and other products and materials have the potential to disrupt existing supply chains and impose additional costs on our business. Further, other countries could attempt to retaliate by imposing tariffs that would increase the cost for us to import our vehicles into such countries." Under "Key Economic Factors and Trends Affecting the Automotive Industry" they noted volatility in steel and aluminum prices as a result of tariffs and said specifically later in their "Trade Policy" section under "Key Economic Factors" that "The imposition of tariffs on steel and aluminum coming into the United States in 2018 had a direct negative impact on costs for manufacturers in the U.S. market." During their earnings call wrapping up Q4 of 2018 and the year, Ford noted: "in 2018, we incurred headwinds of about $3.3 billion in four areas… The first, roughly $750 million in tariff-related effects."[40] In their Q4 2019 SEC filing Ford explained in-depth how the tariffs and trade disputes were disrupting operations. They warned that geopolitical tensions and barriers in key markets could create volatility and declines in sales that would hurt the company. Ford's official stance, thus, is that the trade war created volatility, lowered earnings, and disrupted plans created years in advance for long term growth.

Ford saw a steady decline in stock price through 2018 which concluded in extreme volatility. Trade war instability and restrictions contributed to thinking that the longest running bull market was at an inflection point, making investors reluctant to buy stocks in what was an increasingly uncertain environment.

[40] Ford Motor Co., "Q4 2018 Earnings Call," news release, January 23, 2019, accessed February 23, 2021, https://s23.q4cdn.com/799033206/files/doc_financials/quarterly/2018/q4/CORRECTED-TRANSCRIPT-F-US-20190123-2181023-C.pdf.

Industries more exposed to tariffs saw reductions in employment as the effect of elevated input costs and retaliatory tariffs outweighed the effect of import protections. Ford announced in May 2019 that it would be cutting 7,000, or 10%, of its salaried jobs internationally to reduce their layers of bureaucracy and create $600 in savings in the face of slowing sales in Europe, South America, and Asia. These layoffs were part of a restructuring plan that had started prior to the trade war, but the tariffs added pressure for the company to make big changes such as this.[41] The adjustments led Ford to overperform in Q1 2019, elevating the price of the stock.

Over the last few years Ford had aimed to roll out new vehicles for the US market. One model, the Ford Crossover, was meant to be released in 2019 but was cancelled due to its being produced largely in China which was subject to the bulk of the tariffs.

Despite these setbacks, the tariffs, while they generated large losses, also didn't completely derail the company. For Q3 2018 Ford explained that brand favorability in China had not appeared to decline, and sales of its Lincoln cars had been up 3% despite having to take adjusted pricing measures into account as a result of the tariffs. Ford also began plans to localize production in China to reduce exposure to tariffs, which was part of its larger aim of strengthening sales in international markets. In Q2 2019, the tariffs were given a passing mention as part of how the company reports its projections, suggesting that much of the impact of the tariffs was already priced-in to investor expectations, as discussion of the trade war disappeared during conference calls.

Other Concerns

[41] Paul Eisenstein, "Ford cutting another 12,000 European jobs as restructuring continues," CNBC, last modified June 27, 2019, accessed March 14, 2021, https://www.cnbc.com/2019/06/27/ford-cutting-another-12000-european-jobs-as-restructuring-continues.html.

It is important to note that in comparing American tariffs to the retaliatory tariffs America faced, the retaliatory ones dwarfed in comparison to the ones America implemented. America was the one that started the conflict and it had a stronger negotiating position than other countries. America's growth was not significantly impacted by the trade war, which is why the Federal Reserve was still able to raise interest rates during that time period, although they raised rates more slowly than they had originally intended due to concerns of a global slowdown in growth. Besides the trade war, these concerns arose from Brexit and worries that the high growth market was losing steam. While these issues impacted Ford's performance, the effects and concerns of the trade war were demonstrably larger, as indicated by their high prevalence on the cover of the *Wall Street Journal* in comparison to the other issues. For instance, trade war news was on the front page multiple times a week from mid-August 2018 through March 2019 while Brexit was mentioned at a significantly lower rate as observed from reviewing months of front pages.

Action from the Federal Reserve is also far more predictable than, for instance, trade negotiations between the U.S. and China, and there will always be cause for uncertainty in business no matter how well things are going. As a result, these two concerns were lower sources of volatility than the trade war and would cause stock movement outside of major trade war events.

Trump Effect

Trump's trade war appears to be more politically motivated than driven by sound economic principles, ushering in all the fully expected dangers of a trade war.[42] Having been a leader of free trade for more than 50 years, the return to protectionism was unprecedented in the post-war era due to the magnitude of the countries involved, the size of the tariffs, and the wide range of sectors the tariffs impacted.[43] The dispute hurt America's economy and the international economy, putting only a small portion of "America first" at the expense of consumers and most industries beyond aluminum and steel.

One of Trump's goals with his administration's trade restrictions was to reduce the trade deficit with China, which he believed was emblematic of China taking advantage of the U.S. and hurting American industries to such an extent that it threatened national security. While the steel and aluminum industries in America had been declining, economists widely agree that a trade deficit in and of itself isn't harmful if both parties benefit from trade more than if the trade didn't occur at all.[44] Excluding whether or not protecting the steel and aluminum industries is a national security concern, trying to close a trade deficit is not a goal that should usually be strived for. It can cause more harm by disrupting chain supplies and the natural equilibrium, and starting a potentially even more disruptive trade war to close a deficit is further unsound economic action.

In 2019 the U.S.'s trade deficit with China shrunk to $345 billion, which was about the same size of the deficit in 2016, down from a record $419.2 billion in 2018.[45] While the reduced

[42] Ibid.
[43] National Bureau of Economic Research, *The Return to Protectionism*, March 2019, accessed March 2, 2021, https://www.nber.org/system/files/working_papers/w25638/w25638.pdf.
[44] Bloomberg, "How China Won Trump's Trade War and Got Americans to Foot the Bill," Bloomberg Businessweek, last modified January 12, 2021, accessed March 1, 2021, https://www.bloomberg.com/news/articles/2021-01-11/how-china-won-trump-s-good-and-easy-to-win-trade-war.
[45] Ryan Hass and Abraham Denmark, "More pain than gain: How the US-China trade war hurt America," Brookings, last modified August 7, 2020, accessed March 14, 2021,

trade flow was successful in lowering America's deficit specifically to China, America's overall trade deficit remained constant as imports from Europe, Taiwan, and Mexico increased.[46]

The tariffs also faced significant pushback from manufacturing companies, including auto companies, and politicians on both sides of the political aisle, underscoring how largely unpopular the trade war was among key stakeholders. President Trump's approach to the trade war was characterized by the belief that "trade wars are easy to win" and are "beneficial," both of which are items he tweeted as the trade war progressed, running counter to mainstream economic theory.[47] Trade wars as a whole are seldom beneficial or easy to win, suggesting a gap in understanding of trade theory or an effort to mislead the public.[48]

The trade war additionally alienated long standing American allies that had to negotiate for exemptions from the tariffs, deteriorating foreign relations in line with the isolationist and populist policies that defined the Trump era.

Conflicting messages from White House officials about trade developments symbolize the unique circumstances of the trade war. The plans were predicted to have negative economic repercussions and were largely unpopular among economic and business experts. The conflict arose from one leader defying precedent, and it predictably created uncertainty and volatility that rocked markets and hurt consumers.

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https://www.brookings.edu/blog/order-from-chaos/2020/08/07/more-pain-than-gain-how-the-us-china-trade-war-hurt-america/.

[46] Ibid.

[47] Thomas Franck, "Trump Doubles Down: 'Trade wars are good, and easy to win,'" CNBC, last modified March 2, 2018, accessed March 15, 2021, https://www.cnbc.com/2018/03/02/trump-trade-wars-are-good-and-easy-to-win.html.

[48] Hass and Denmark, "More pain," Brookings.

Conclusion

The disruptions Ford and America faced from 2018 to 2019 were predictable outcomes of the trade war, which generated uncertainty and volatility that slowed growth. From an economic standpoint the trade war caused more harm than good. If putting “America First” in trade means instilling policies that will support growth for the economy, then the trade war failed to encourage such growth and also did not close the trade deficit, which was a controversial goal in the first place.

As economic policy often takes years to see the full repercussions of, more research could find whether companies were able to successfully adapt to the tariff policies, and how the trade war was managed during the coronavirus pandemic, which upended all economic activity. While a trade deal was struck in January 2020 between the two countries, many of the tariffs remained in effect, and relations remain tense under the current Biden administration as it is conducting a review of the country’s trade relationship to China before making changes. Potentially, the documented negative effects of the trade war will encourage the current administration to adjust its approach to protecting domestic metal producers and penalizing China for its transgressions.

Appendix A

Trade War Timeline

Initial announcements of tariffs and dates of implementation

January 22, 2018 - U.S. imposes tariffs on solar panels and washing machines which has the heaviest impact on China and South Korea

March 8, 2018 - U.S. announces steel and aluminum tariffs to go into effect March 23

March 22, 2018 - A plan is announced to impose tariffs on $60 billion worth of Chinese imports as a penalty for China's violations of American intellectual property

March 23, 2018 - China releases a list of 128 American goods it will impose tariffs on as an official response to the U.S.'s metal tariffs

April 1, 2018 - China announces that it will impose $3 billion worth of tariffs on American goods

April 2, 2018 - China's tariffs go into effect

July 6, 2018 - Phase 1: U.S. implements tariffs on $34 billion Chinese imports

China retaliates with $34 billion in tariffs

August 23, 2018 - Phase 2: The U.S. imposes $16 billion in tariffs on China

China retaliates with $16 billion in tariffs

September 24, 2018 - The U.S. imposes Phase 3 tariffs of 10% on $200 billion worth of Chinese imports

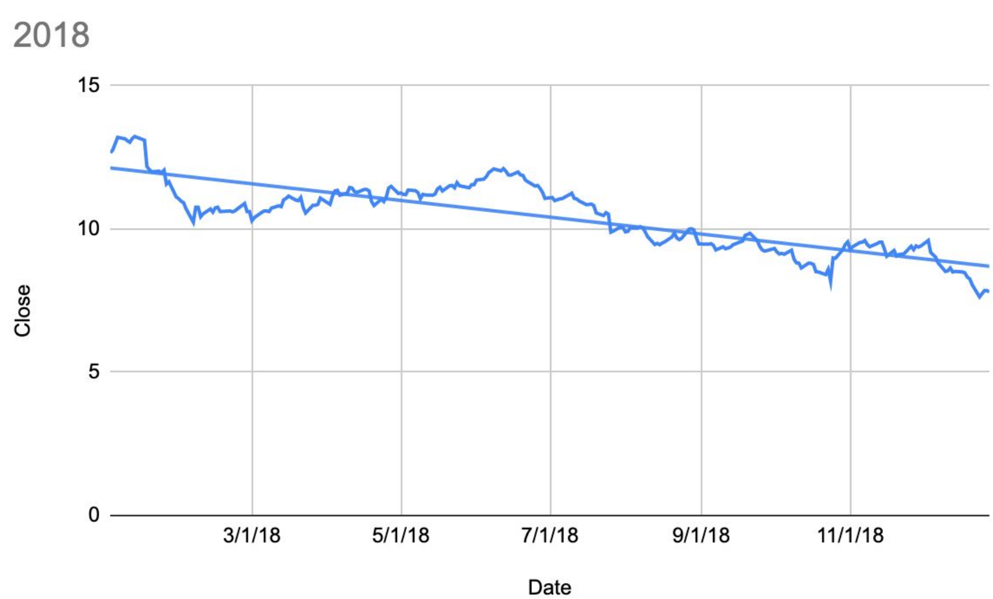
May 10, 2019 - American Phase 3 tariffs are raised to 25%

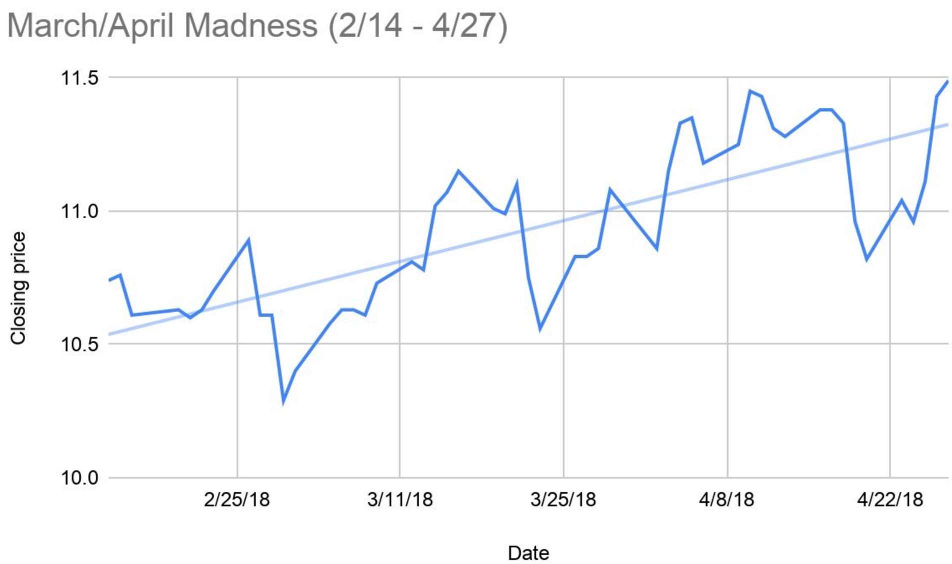
August 23, 2019 The U.S. raises tariffs on Phase 1 - 3 Chinese goods to 30% and Phase 4 tariffs to 15%

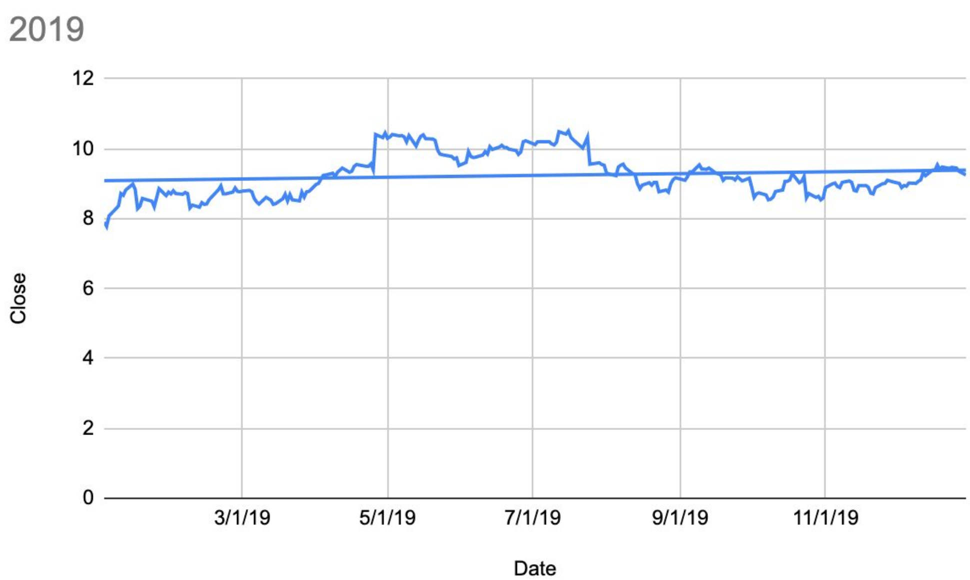
September 1, 2019 - The U.S. imposes Phase 4 tariffs worth $110 billion on Chinese goods

Appendix B

Ford Stock Chart Graphs




March/April Madness (2/14 - 4/27)
11.5
11.0
10.5
10.0
Closing price
2/25/18
3/11/18
3/25/18
4/8/18
4/22/18
Date


2019
12
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8
6
4
2
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3/1/19
5/1/19
7/1/19
9/1/19
11/1/19
Date


Q1 + Q2 2018
Close
14
13
12
11
10
2/1/18
3/1/18
4/1/18
5/1/18
6/1/18
Date
Close


Q1 2018
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14
13
12
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12/31/17
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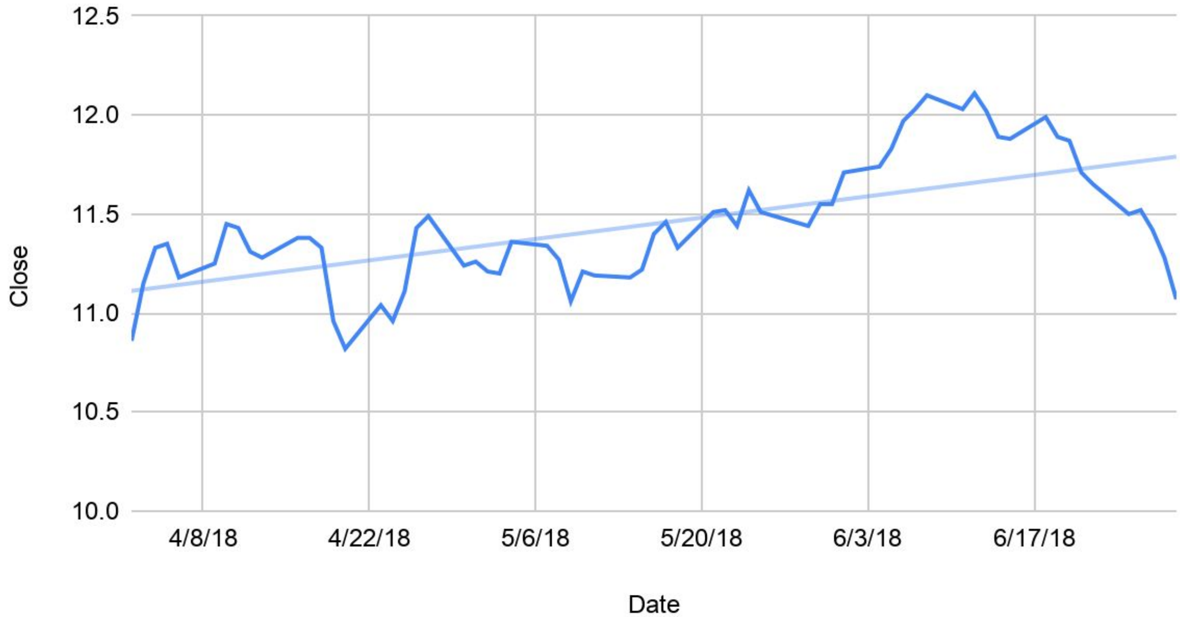
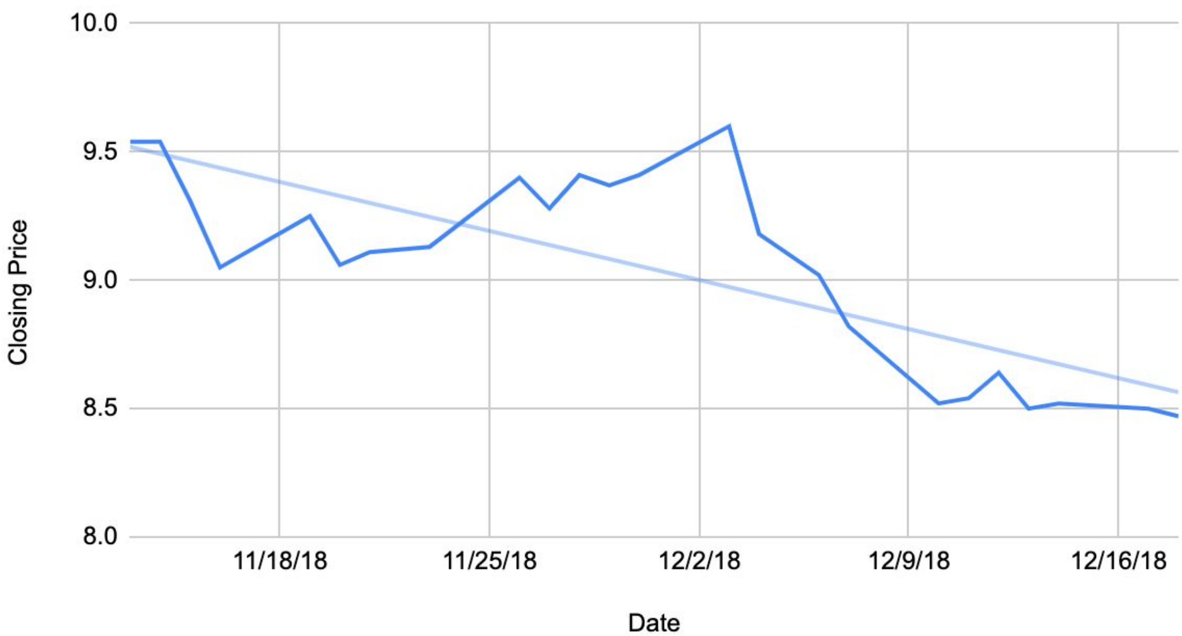
2/25/18
3/11/18
3/25/18
Date
Close

Q2 2018



G-20 Summit (11/13 - 12/18)




Q4 2018
10
9
8
7
10/7/18
10/21/18
11/4/18
11/18/18
12/2/18
12/16/18
12/30/18
Date

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