Market Volatility and US-China Trade Policy: Evidence from the First Trump Administration

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A B S T R A C T

Prior work on the impact of the first Trump administration on the intersection between financial markets and international relations—especially with People's Republic of China—suggest that Mr. Trump's decidedly less "measured" tone compared with his predecessors (George W. Bush and Barack Obama) resulted in striking increases in financial market volatility and investor interest around trade-related announcements. Now, with the re-election of Mr. Trump as President of the United States for a second non-consecutive term, we re-examine financial market reactions to the Trump administration trade events. The present study significantly extends prior work by investigating the impacts of a sample of 90 key US/China trade announcements on VIX and VXFXI volatility metrics made over the course of the first Trump administration. Interestingly, trade announcements classified as likely to lead to increases in trade tensions had no impact on changes in the two studied indexes, whereas events thought likely to lead to decreases in trade tensions were associated with rather dramatic decreases of 2.5% in VIX volatility. Although conjecture, the results are consistent with the hypothesis that financial market participants did not respond to antagonistic pronouncements simply because they may have been fully anticipated, whereas announcements of a more conciliatory tone were perceived as unexpected. Tests of volatility spillovers between the US and Chinese markets document highly significant spillovers from the VIX index to the VXFXI index but not from the VXFXI to the VIX.

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1. Introduction

With the November 5, 2024 re-election of Donald J. Trump as President of the United States—the first US president elected to non-consecutive terms since Grover Cleveland in 1893—and Republican control of both the US House and Senate, the world entered a new and potentially much more volatile political and economic environment. Compounding the considerable domestic uncertainties associated with Mr. Trump's oft-repeated pledge to deport millions of undocumented immigrants and billionaire Elon Musk's newly-created Department of Government Efficiency's (DOGE) efforts to dramatically shrink the size of the U.S. government, the ultimate ramifications of geopolitical events of an unusually serious nature—the wars in Gaza and Lebanon (precipitated by a deadly surprise attack against Israel by Gaza-based Hamas fighters), the increasingly hostile relationship between Israel and Iran, the Trump administration's shift away from NATO and Ukraine in favor of closer ties with Russia, and, perhaps most seriously for the global economy, the growing threat of a trade war triggered by Mr. Trump's promise of dramatically increased U.S. tariffs[4] and the increasingly belligerent rhetoric from China regarding its intentions in the South China Sea (especially involving the threat of forced unification with Taiwan[5])—remain unknown, but suggest an obvious need for serious and careful diplomacy.[6]

It is within the context of the words "serious" and "diplomacy" that recent work by Mauck, Pruitt, and Zhang (2022) regarding the observed positive correlation between US and Chinese investor attention and market-wide share-price volatility in both nations in response to trade-related announcements—especially the measurably "less diplomatic" statements issued over the course of the Trump administration—is particularly relevant. Concluding that "words matter," the authors' findings imply that financial market participants, no less than diplomats and forward-thinking politicians and bureaucrats, carefully consider both the substance and tone of various economic pronouncements.

The present study significantly extends the Mauck, Pruitt, and Zhang study by presenting the first-ever event-specific analysis of the responses of market-wide US and Chinese equity proxies of expected future volatility in the context of the recent US-China trade war by exploiting a remarkably comprehensive catalog of US-Chinese trade-related events over much of the Trump administration (from 5/2/2016 to 1/15/2020).[7] In addition, the study also examines US and Chinese equity proxies for the presence of volatility spillover effects around these events—both from the US to China and from Chinese markets to the US. Given the extraordinary importance of US and Chinese trade to the world economy (valued at $575 billion in 2023 alone[8]) and the aforementioned current deterioration of US and Chinese political relations, information concerning the sensitivity of US and Chinese—and, by extension, world—equities markets to trade-related stimuli over the 2016 to 2020 time period is likely to prove of significant interest to many constituencies, including politicians, bureaucrats, corporate managers, and financial market participants in the hotter still present political and military environment.

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[4] See, e.g., https://www.nytimes.com/2024/11/25/business/economy/trump-tariffs-canada-mexico-china.html.

[5] In a March 3, 2024, speech at the opening of the National People's Congress (NPC), Premier Li Qiang for the first time officially dropped the previously employed terms "peaceful reunification" regarding China's relationship with Taiwan. See, e.g., https://www.reuters.com/world/china/china-drops-peaceful-reunification-reference-taiwan-raises-defence-spending-by-2024-03-05/

[6] As noted by famed British MP Tony Benn (1925-2014), "All war represents a failure of diplomacy."

[7] As discussed below, the beginning of the *global* COVID-19 pandemic in mid-January 2020 significantly altered the diffusion of information and market pricing dynamics in US and Chinese markets. For a detailed timeline of the COVID pandemic, see, e.g., https://www.cdc.gov/museum/timeline/covid19.html#:~:text=January%2020%2C%202020,respond%20to%20the%20emerging%20outbreak.

[8] See, e.g., https://www.statista.com/statistics/277679/total-value-of-us-trade-in-goods-with-china-since-2006/.

2. Previous Results

Generally considered to have officially begun on January 17, 2018, when then-US President Donald Trump began setting tariffs and other trade restrictions on the import of washing machines and solar panels—the vast majority of which were (and remain) made in China—the genesis of the US/China "trade war" actually began on May 2, 2016, when then-candidate Trump used the "r-word" (as in "rape") in an Allen County (Ohio) campaign speech: "We can't continue to allow China to rape our country and that's what they're doing. It's the greatest theft in the history of the world."[9] Not surprisingly, since that time, scholars of various academic disciplines have sought to evaluate the impact of the conflict on trade, financial markets, and, more broadly, political relations. For example, Liu, Sun, Xu, and Zhang (2023), Feng, Li, Peng, and Tan (2021), and Cheng, Hua, and Wang (2023) have studied the impact of US and Chinese trade discord on trade contraction, the cost of debt, and the influence of corporate culture on firm resilience, respectively.

Not surprisingly, several prior studies have examined the influence of trade-related information on cross-border equities markets. For example, Chen, Lui, Lu, and Tang (2016) analyze the impact of regularly scheduled official Chinese trade announcements on both equity market price levels and volatility. The authors employ the Baidu Search Index[10] as a proxy for investor attention and document the expected positive correlation between investor interest and equity price reactions around the time of the announcements. Related studies by Bank, Larch, and Peter (2011) and Takeda and Wakao (2014) present virtually identical results within the context of German and Japanese equities markets, respectively.

As noted above, Mauck, Pruitt, and Zhang (2022) exploited innovations in Google Trends' Search Volume Index (SVI) for the query "U.S. China trade"—an explicit proxy for investor interest in US/China trade news—to assess volatility changes in both US and Chinese equity market indexes to trade-related news under different US presidential administrations. Using data collected over the 2004 to 2018 period, the authors' findings demonstrate a clear distinction between the changes in volatility observed in response to the more measured pronouncements made during the George W. Bush (a decrease) and Obama (no change) administrations and the statistically significant increases in volatility associated with the more truculent language of those issued during the first Trump administration. Tests of volatility spillovers suggest the primary direction of contagion was from the US to Chinese markets, with little evidence of spillovers from the Shanghai Stock Exchange to the S&P 500.

In a study that proved influential in the collection of data for the present work, Yang, Luo, and Jiang (2021) created a daily economic policy uncertainty (EPU) index and employed a series of complex network analyses to ascertain the relationships between various Pacific Basin markets. The authors concluded i) that China was the clear center of the larger Asia-Pacific network, ii) that the US and China were the most important sources of cross-nation spillover effects in the studied financial networks, and iii) that correlations between the constructed EPU and financial networks significantly changed (i.e., increased) during the COVID-19 outbreak as compared with prior experience. Lei and Song (2022) similarly examines economic policy uncertainty in China and finds that stock price crash risk for Chinese firms increased during the US/China trade war. While Wang and Wang (2010) and Zhou, Zhang, and Zhang (2012) find that a "spillover" of volatility between U.S. and Chinese equities that runs in both directions, Vuong, Nguyen, and Huynh (2022) also present compelling evidence of a statistically significant "breakpoint" in equity market spillovers between the US and China due to the COVID-19 pandemic. Combined, these findings lend substantial empirical support for the decision to truncate the present analysis to the beginning of the pandemic.

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[9] See, e.g., https://www.politico.com/blogs/2016-gop-primary-live-updates-and-results/2016/05/trump-china-rape-america-222689

[10] Baidu, founded in 2000, is the second largest internet search engine in the world and is used almost exclusively by Chinese citizens and nationals.

3. Data and Methodology

3.1 Data

As noted above, the basic research sample of trade-related events for this study begins on May 2, 2016, the day before the Republican Party's two remaining presidential candidates—Ted Cruz and John Kasich—suspended their campaigns for the presidency and the Republican National Committee's then-chairman (Reince Priebus) declared Mr. Trump to be "the presumptive Republican nominee."[11] The sample ends on January 15, 2020, in deference to the findings of LI, et al. (2021) that the advent of the COVID-19 pandemic at that time significantly altered prior marketplace correlations (by essentially closing large swaths of the global economy). As such, the data encompass the final six months of the 2016 US presidential election campaign and all the Trump administration prior to the beginning of the COVID-19 pandemic.

Consistent with Frino et al. (2011), the purpose of the study was to examine market-wide volatility around specific events classified as likely to either increase or decrease the overall temperature of the US/China trade relationship in place at that time. For example, Mr. Trump's widely reported January 1, 2018, threat to impose "a big fine" on China over alleged intellectual property theft was classified as increasing the trade temperature, while his May 13, 2018, Twitter[12] tweet promising to help Chinese telecom company ZTE compete for US business was classified as decreasing trade temperatures. Naturally, information viewed as increasing trade tensions would be expected to be associated with increases in overall market risk (that is, financial market volatility) and vice versa. Chen, Jiang, Li, and Xu (2016) similarly examine Chinese futures markets and volatility around specific US events, although their focus is on US. Consumer Price Index (CPI) announcements.

The trade-related events included in the sample were obtained by melding the informational content of multiple published news reports. For example, an October 2019 report from the Reuters news service provided a detailed timeline of 33 major events involved in "the U.S.-China trade war."[13] An additional and even more comprehensive report from Dezan Shira and Associates' China Briefing presented a timeline of 79 trade-related events.[14] Finally, the Peterson Institute for International Economics—an independent nonprofit, nonpartisan research organization dedicated to international trade issues—summarized the various events into five broad "battle" categories: solar panels and washing machines, steel and aluminum, and technology and intellectual property.[15] Each of the studied announcements was classified by the members of the research team as likely to be interpreted by financial market participants as either increasing or decreasing trade tensions. The appendix presents a summary of all 90 of the events included in the study.

The volatility of the U.S. stock market around the 90 studied U.S.-China trade-related events was assessed via daily changes in the Chicago Board Options Exchange (CBOE) well-known Market Volatility Index (VIX), commonly known as "the fear index." This index, which is created by value-weighting all out-of-the-money call and put prices on options expiring between 16 and 44 days into the future (two calendar weeks on each side of one 30-day month) outstanding on the S&P 500 market index, where the weights employed are based on the number of minutes to the expiration of each individual option contract relative to the total. As constructed, the index is designed to quantify expected market volatility over the following thirty days.[16] VIX is used in other spillover research such as Smales (2022) who finds that US market uncertainty (measured by VIX) spreads to many

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[11] See, e.g., https://en.wikipedia.org/wiki/Political_career_of_Donald_Trump#:~:text=By%20March%202016%2C%20Trump%20was,Trump%20the%20presumptive%20Republican%20nominee.

[12] Now known simply as "X."

[13] https://www.reuters.com/article/us-usa-trade-china-timeline/timeline-key-dates-in-the-us-china-trade-war-idUSKBN1WP23B/

[14] https://www.china-briefing.com/news/the-us-china-trade-war-a-timeline/

[15] https://www.piie.com/blogs/trade-and-investment-policy-watch/2018/trumps-trade-war-timeline-date-guide

[16] A detailed discussion of the computational procedures involved in the creation of the VIX index is available from sources such as Investopia. See, e.g., https://www.investopedia.com/articles/active-trading/070213/tracking-volatility-how-vix-calculated.asp.

global markets including China. Similarly, the China ETF Volatility Index (VXFXI) is a metric of the expected volatility of the Chinese stock market, calculated based on the information obtained from over-the-counter options listed on the Stock Exchange of Hong Kong Ltd (SEHK), also published by CBOE. Historical data for both the VIX and VXFXI indexes were obtained directly from the CBOE website.

3.2 Methodology

As noted above, during the period under scrutiny (933 trading days), 90 significant trade events were recorded.[17] Our initial analysis delved into the variations in VIX and VXFXI levels on the specific dates of each U.S.-China trade event, with the correlation between these dates and implied volatility structured in the form of a VAR(1) regression. The specified model closely follows Jiang, Konstantinidi, and Skiadopoulos (2012) and Krieger, Mauck, and Vasquez (2015), both of which extensively examined volatility spillovers between U.S. and foreign markets.

We first estimated the following equation to investigate the existence of volatility spillovers:

$$\Delta IVt = C + \varphi \Delta IVt - 1 + \mu t, \tag{1}$$

where $\Delta IVt = IVt - IVt{-}1$ is a (2 x 1) vector of changes in the implied volatility indices for the U.S. (VIX) and China (VXFXI), C is a vector of constants, and φ is a (2 x 2) matrix of regression coefficients. To capture the volatility effects of trade friction announcements, we generalized equation (1) by incorporating indicator variables for each trade announcement. This augmented model enabled us to examine the direct linkage between the trade announcements and coincident spillovers in implied volatility between the U.S. and Chinese stock markets. In addition, we also investigated whether the responses of the volatility indices to the studied announcements were shaped by the market's anticipation of trade fears. This endeavor aimed to ascertain if events characterized by increases or decreases in trade tensions resulted in differences in market dynamics and, if so, how these differences modulated volatility spillovers between the two markets.

4. Empirical Results

Table 1 presents the results of the mean and median percentage volatility changes observed in the VIX (Panel A) and VXFXI (Panel B) indexes in response to the 90 aggregated trade-related events analyzed over the May 2016 to January 2020 interval. Overall, there is little evidence that the announcements led to significant changes in the volatility of either index. Indeed, what evidence exists is mainly contradictory. Whereas the non-parametric sign-test (Z) of the simple fraction of announcements that resulted in VIX volatility reductions is statistically significant at the 5 percent level, the mean and median volatility metrics actually moved in opposite directions—with the means rising and the medians falling—underscoring the general lack of any meaningful volatility impact in the complete sample. Interestingly, in no case is there any evidence that the studied trade-related announcements elicited reactions in the VXFXI index (Panel B), although, again, the directional change of the means and medians are reversed. However, since, as noted above, the 90 studied trade announcements represent events likely to be interpreted by financial market participants as either leading to increasing or decreasing US-China trade tensions (but not both), bifurcation of the full sample into separate "increase" and "decrease" sub-samples is necessary. Tables 2 and 3 present the results of these tests.

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[17] Nine trade-specific events were eliminated from the sample due to issues related to "clustering," where one event announcement classified as likely to increase U.S./China trade tensions occurred on the very same day as one classified as likely to decrease trade tensions. It should be noted that there were no qualitative differences observed between the two samples.

Table 1 VIX and VXFXI Changes on Major Events During the Trade Frictions

	Mean % Change	Median % Change
Panel A: Reactions from VIX		
VIX	1.27%	-1.30%
t-statistics	[0.786]	
VIX increases	36	
VIX decreases	54	
Z-statistics for sign-rank test	-2.003	
Panel B: Reactions from VXFXI		
VXFXI	0.19%	-0.11%
t-statistics	[0.281]	
VXFXI increases	43	
VXFXI decreases	47	
Z-statistics for sign-rank test	-0.527	

This table presents changes in the VIX and VXFXI levels on major trade events during the trade frictions. The percentage changes relative to the previous days, are reported. The sample period is May 2nd, 2016–Jan 15th, 2020. T-test results of the mean change and sign-rank tests of the median change are reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10%, respectively.

Panels A and B of Table 2 present the results of the studied trade-friction announcements on the VIX volatility index, with Panel A (Panel B) including events assumed to represent a decrease (increase) in US-China tensions. The employed methodology and test statistics are identical to those presented in Table 1 above.

Unlike the general lack of statistical significance for the aggregated sample, Panel A of the table shows strong evidence of decreases in overall VIX volatility in response to trade-related events thought to lead to decreases in U.S.-China trade tensions. In both cases the results are significant at the 1 percent level or less. Indeed, of the 42 events in the likely decrease sample, 33 (78.6%) exhibited declines in volatility at the time of the announcements. Further, the directional changes in volatility (decreases) were consistent across the board. Interestingly, unlike the case of the likely decrease group, the impact of events thought likely to lead to increases in US-China trade tensions were not statistically different from zero, with just over half (54.2%) of the 48 events leading to increases in the volatility of the VIX index (although both the means and medians moved in the same direction).

Although impossible to test empirically, the results of the Mauck, Pruitt, and Zhang (2022) study suggest a plausible explanation for the clear asymmetry of the volatility impacts of the likely increase and decrease samples. As noted by the authors, President Trump's ". . . belligerent statements regarding China and U.S./Chinese trade seemed almost a staple of daily news reports." Indeed, even a casual reading of the 90 events included in the present study suggests a consistent personal and political animosity (if not outright vitriol) toward China unlikely to be in any way "enhanced" short of a formal declaration of war. In other words, financial market participants may not have responded to antagonistic trade-related pronouncements by the Trump administration for the simple reason that they were probably fully anticipated. Conversely, those (rarer) instances in which Mr. Trump "changed his stripes" and established a more positive, conciliatory tone were likely perceived by financial markets as unexpected surprises, thus leading to a general reduction in trade fears and, hence, overall lower levels of market volatility. As the authors conclude, "In the final analysis, the results of the study strongly suggest that—at least in the case of U.S./China trade—words matter."

Table 2 VIX Changes on Different Types of Major Trade Events

	Mean % Change	Median % Change
Panel A: Likely Decrease group		
VIX	-2.50%***	-2.39%
t-statistics	[-2.947]	
VIX increases	9	
VIX decreases	33	
Z- statistics for sign-rank test	-3.549	
Panel B: Likely Increase group		
VIX	4.57%	0.80%
t- statistics	[1.595]	
VIX increases	26	
VIX decreases	22	
Z- statistics for sign-rank test	0.433	

This table presents changes in the VIX levels on different types of major trade events. The percentage changes relative to the previous days, are reported. The sample period is May, 2016–Jan, 2020. T-test results of the mean change and sign-rank tests of the median change are reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10%, respectively.

Table 3 presents identical tests to those in Table 2 but, in this case, employs the volatility of the VXFXI index. Not only do the results not approach conventional levels of statistical significance, but the mean and median changes in volatility of the VXFXI index and the simple fraction of events registering volatility increases and decreases are inconsistent, a finding which strongly suggests VXFXI traders may have been less attuned to trade-related developments than VIX traders—at least over this interval of calendar time.

Table 3 VXFXI Changes on Different Types of Major Events

	Mean % Change	Median % Change
Panel A: Likely Decrease Group		
VXFXI	0.19%	0.53%
t- statistics	[0.203]	
VXFXI increases	22	
VXFXI decreases	20	
Z- statistics for sign-rank test	0.463	
Panel B: Likely Increase Group		
VXFXI	-0.28%	-0.51%
t-statistics	[-0.279]	
VXFXI increases	21	
VXFXI decreases	27	
Z-statistics for sign-rank test	-1.01	

This table presents changes in the VXFXI levels on different types of major trade events. Changes in the absolute level in VXFXI, as well as the percentage changes relative to the previous days, are reported. The sample period is May, 2016–Jan, 2020. T-test results of the mean change and sign-rank tests of the median change are reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10%, respectively.

Table 4 presents the results of a series of multivariate regression tests on volatility spillovers between the US and China employing daily percentage changes in the VXFXI as the dependent variable. As shown in Panel A, although there is evidence of first-order negative autocorrelation between daily changes in the VXFXI—that is, increases in the VXFXI volatility index on, say, Tuesday preceded decreases in the index on Wednesday (and vice versa)—there is no statistically significant evidence of first-order autocorrelation (either negative or positive) between the VIX index and the VXFXI.

Panel B of Table 4 replicates the Panel A analysis discussed above but with the addition of an indicator variable on the date of each of the aggregated sample of trade events (first column) and both the event date and an interaction variable between the prior day's change in the VXFXI and the date of each trade event. As shown, there is no evidence that the aggregated event sample and changes in the VXFXI index are in any way related. However, again, since the aggregated sample includes trade-related events thought likely to lead to increases or decreases (but not both simultaneously) in the volatility of the VXFXI index, the overall impact of the studied events cannot be assessed without bifurcation of the sample. The results of these tests are presented in Panel C of the table.

As shown in Panel C, trade-related events classified as likely to lead to increases in the daily volatility of the VXFXI index were associated with both economically and statistically significant increases in volatility. Indeed, adjusted for first-order autocorrelations, the studied trade tension increase events led to a mean 2.5 percent increase in the volatility of the VXFXI index (a change significant at the 1 percent level). Interestingly, although consistent in sign, events classified as likely to decrease US/China trade tensions did not elicit statistically significant decreases in VXFXI volatility at conventional levels, as the overall percentage impact of the decrease events was just 44 percent of the magnitude of the increased sample. There is no evidence that the interaction terms (the change in the VIX multiplied by the increase or decrease dummies) are significant at conventional levels.

Table 5 continues the analysis by studying the impact of the same variables included in Table 4 above on the percentage of daily changes in the CBOE's VIX index. Although there is no evidence of first-order autocorrelation between the change in the VIX controlled for the VIX change the prior trading day, there is extreme evidence of volatility spillovers between the VIX index and "same day" movements of the VXFXI (Panel B) due to the lack of synchronicity between the trading locations (with China being fourteen hours ahead of Chicago).

Panel C of Table 5 repeats the Panel C of Table 4 analysis with the likely increase and likely decrease events and interaction terms. Unlike the lack of significance of the interaction terms of the Table 4 results discussed above, the interaction between the VXFXI, the change in the VIX index, and the likely volatility-increasing events is highly significant. As expected, there is no evidence that the likely decrease events and changes in the VXFXI index are in any way correlated with changes in the VIX.

Table 4 Spillover Effects on the Percentage Changes in Volatility Levels:

from the U.S. to China

	ΔVXFXI%	
Panel A: Volatility spillover		
C	0.001	
	[0.554]	
ΔVIX%(t-1)	0.015	
	[0.553]	
ΔVXFXI%(t-1)	-0.175***	
	[-3.879]	
Adj. R^2	0.023	
N	933	
Panel B: Volatility spillover with trade event days		
C	0.0002	0.000
	[0.102]	[0.116]
ΔVIX%(t-1)	0.016	0.008
	[0.579]	[0.282]
ΔVXFXI%(t-1)	-0.178***	-0.183***
	[-3.932]	[-4.048]
Trade Events	0.009	0.008
	[1.439]	[1.365]
ΔVXFXI%(t-1)* Trade Events		0.083
		[1.403]
Adj. R^2	0.024	0.025
N	933	933
Panel C: Volatility spillover with different types of trade event days		
C	0.000	0.000
	[0.105]	[0.117]
ΔVIX%(t-1)	0.014	0.008
	[0.529]	[0.284]
ΔVXFXI%(t-1)	-0.178***	-0.184***
	[-3.959]	[-4.064]
Increase	0.026***	0.024***
	[3.153]	[3.008]
Decrease	-0.011	-0.011
	[-1.285]	[-1.280]
ΔVIX(t-1)*Increase		0.088
		[1.296]
ΔVIX(t-1)*Decrease		0.023
		[0.211]
Adj. R^2	0.033	0.033
N	933	933

This table tests the spillover effects from the U.S. to China, using multivariate regressions on the percentage (daily) changes of VXFXI for China market. The coefficient estimates, t-statistics (in brackets), and adjusted R2 are reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10%, respectively.

Table 5 Spillover Effects on the Percentage Changes in Volatility Levels:

from China to U.S.

	ΔVIX%	
Panel A: Volatility spillover		
C	0.002	
	[1.091]	
ΔVXFXI%	1.160***	
	[29.579]	
ΔVIX%(t-1)	0.012	
	[0.528]	
Adj. R^2	0.485	
N	933	
Panel B: Volatility spillover with trade event days		
C	0.002	0.002
	[1.036]	[1.053]
ΔVXFXI%	1.160***	1.096***
	[29.536]	[25.569]
ΔVIX%(t-1)	0.012	0.009
	[0.527]	[0.381]
Trade Events	0.000	-0.002
	[0.018]	[-0.317]
ΔVXFXI%(t-1)* Trade Events		0.377***
		[3.635]
Adj. R^2	0.485	0.491
N	933	933
Panel C: Volatility spillover with different types of trade event days		
C	0.002	0.002
	[1.041]	[1.062]
ΔVXFXI%	1.152***	1.095***
	[29.227]	[25.701]
ΔVIX%(t-1)	0.011	0.007
	[0.455]	[0.282]
Increase	0.013	0.003
	[1.330]	[0.317]
Decrease	-0.015	-0.022*
	[-1.438]	[-1.968]
ΔVXFXI*Increase		0.469***
		[4.197]
ΔVXFXI*Decrease		-0.484*
		[-1.766]
Adj. R^2	0.486	0.497
N	933	933

This table tests the spillover effects from China to the U.S., using multivariate regressions on the percentage (daily) changes of CBOE VIX for the US market. The coefficient estimates, t-statistics (in brackets), and adjusted R2 are reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10%, respectively.

5. Conclusion

Without question, Donald Trump's first US presidential term (2017-2021) was characterized by a very different geopolitical emphasis than that of his immediate predecessors (George W. Bush and Barack Obama). Prior research by Mauck, Pruitt, and Zhang (2022) demonstrated this difference quantitatively by examining changes in internet search frequencies and the volatility of both US and Chinese stock markets associated with US/China trade announcements made during the Bush (associated with a volatility decrease), Obama (no impact), and Trump (a volatility increase) administrations. The present study significantly extends this analysis by investigating the impacts of a sample of 90 key US/China trade-related events on daily changes in VIX and VXFXI volatility metrics over the course of the majority of the first Trump administration.[18]

Viewed in totality, there is no evidence that the 90 studied events had any measurable impacts on the volatility of the VIX or VXFXI indexes. However, once the full sample was bifurcated between events likely to lead to increases or decreases in market volatility, a very different picture emerged. Specifically, while events classified a priori as likely to lead to increases in US/China trade tensions elicited no economic or statistical changes in the VIX index, events thought likely to lead to decreases in trade tensions were associated with rather dramatic decreases in VIX volatility (-2.5%; significant at the 1% level). Although the likely increase trade tensions sample was associated with a rather dramatic increase in VIX volatility of over 4.5%, the large standard errors associated with this sample meant that this increase was not significant at conventional levels. Although conjecture, these results are consistent with the hypothesis that financial market participants may not have responded to antagonistic trade-related pronouncements by the Trump administration for the simple reason that they may have been fully anticipated, whereas announcements of a more conciliatory tone were viewed as unexpected surprises. Interestingly, the 90 studied trade announcements were not associated with any statistically significant changes in the VXFXI index. Tests for volatility spillovers between US (VIX) and Chinese (VXFXI) markets present evidence of the highly substantial spillovers between the VIX index and "same day" movements of the VXFXI expected due to the lack of synchronicity between the two trading locations.

With the November 2024 re-election of Donald Trump as the 47th President of the United States and his subsequent (and almost immediate) launching of what appears to be a new worldwide trade war based upon "reciprocal" increases in tariffs with Mexico, Canada, and China[19], the course of future US trade relations with its many worldwide partners is presently in flux. Future historians and economists may well find ample additional evidence that, as noted by Mauck, Pruitt, and Zhang (2022), when it comes to US/China trade, "words (really do) matter."

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[18] As noted above, the present sample was truncated to the beginning of the COVID-19 pandemic in deference to research by LI, Luo, and Jiang (2021) and Vuong, Nguyen, and Huynh (2022), who present compelling evidence of a statistically significant "breakpoint" in market spillovers between US and Chinese financial markets due to the pandemic.

[19] See, e.g., https://www.whitehouse.gov/fact-sheets/2025/02/fact-sheet-president-donald-j-trump-imposes-tariffs-on-imports-from-canada-mexico-and-china/

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Appendix: Major Events during the U.S.-China Trade War

This table lists the 90 important events happened during the trade war[20]. These events are classified into five groups: (1) news good for both; (2) news bad for both; (3) news bad for China/good for US; (4) news good for US/bad for China; (5) news unclear for both parties. For US, group (1) and (3) are good news for them, whereas group (2) and (4) are bad news for them. In our empirical analysis, for US, news are divided into two types: "good news for US", which includes (1) and (3), and "bad news for US", which includes (2) and (4). Similarly, for China, news are also divided into two types: "good news for China", which includes (1) and (4), and "bad news for China", which includes (2) and (3).

	Date	Event	Brief Description/Minor trade issue	
1	3/31/2017	Two executive orders signed by Trump.	One calls for tighter tariff enforcement in anti-subsidy and anti-dumping trade cases. The other orders a review of U.S. trade deficits and their causes.	Increase
2	4/7/2017	Xi visits Trump's Mar-a-Lago estate in Florida.	Trump and Chinese President Xi Jinping agree to set up a 100 Day Action Plan to resolve trade differences.	Decrease
3	5/22/2017	Trade deal reached.	US and China agree to a trade deal that would give US firms greater access to China's agriculture, energy, and financial markets, while China gains access to sell cooked poultry to the US.	Decrease
4	7/19/2017	The two sides fail to agree on new steps to reduce the U.S. deficit with China after the 100 days of talks.		Increase
5	8/14/2017	"Section 301" case against China initiated.	Trump orders "Section 301" probe into alleged Chinese intellectual property theft, described as his first direct trade measure against Beijing.	Increase
6	11/10/2017	Trump pays a "state visit plus" to China.	Relations were considered to have warmed.	Decrease
7	1/17/2018	Trump threatens a big "fine" on China	Trump, in a Reuters interview, threatens a big "fine" on China over alleged IP theft, without providing details.	Increase
8	1/22/2018	Trump imposes tariffs on all imported washing machines and solar panels - not just those from China.		Increase
9	2/5/2018	China Investigates US Exports of Sorghum		Increase
10	2/7/2018	'Global safeguard tariffs' implemented.	The US implements 'global safeguard tariffs' – placing a 30 percent tariff on all solar panel imports, except for those from Canada, (worth US$8.5 billion) and a 20 percent tariff on washing machine imports (worth US$1.8 billion).	Increase

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[20] We take reference of several sources. "Timeline: Key dates in the U.S.-China trade war", see, https://www.reuters.com/article/us-usa-trade-china-timeline/timeline-key-dates-in-the-us-china-trade-war-idUSKBN1WP23B; "The US-China Trade War: A Timeline", see, https://www.china-briefing.com/news/the-us-china-trade-war-a-timeline/; "Trump's Trade War Timeline: An Up-to-Date Guide", see, https://www.piie.com/blogs/trade-investment-policy-watch/trump-trade-war-china-date-guide.

11	3/8/2018	Trump orders 25% tariffs on steel imports and 10% on aluminum from all suppliers - not just China.		Increase
12	3/22/2018	Trump signs a memorandum directing some acts.	To file a WTO case against China for their discriminatory licensing practices; To restrict investment in key technology sectors; and To impose tariffs on Chinese products (such as aerospace, information communication technology and machinery).	Increase
13	3/23/2018	Tariffs on steel and aluminum imports imposed.	US imposes a 25 percent tariff on all steel imports (except from Argentina, Australia, Brazil, and South Korea) and a 10 percent tariff on all aluminum imports (except from Argentina and Australia).	Increase
14	4/2/2018	Tariffs on US goods imposed by China.	China imposes tariffs (ranging 15-25 percent) on 128 products (worth US$3 billion) including fruit, wine, seamless steel pipes, pork and recycled aluminum in retaliation to the US' steel and aluminum tariffs.	Increase
15	4/3/2018	Initial list released by US.	The USTR releases an initial list of 1,334 proposed products (worth US$50 billion) subject to a potential 25 percent tariff (list revised June 15).	Increase
16	4/4/2018	Tariffs on US goods imposed by China.	China reacts to USTR's initial list, and proposes 25 percent tariffs to be applied on 106 products (worth US$50 billion) on goods such as soybeans, automobile, chemicals (list revised on June 16).	Increase
17	4/5/2018	Additional tariffs proposed by Trump.	Trump instructs trade officials to consider whether an additional $100 billion of US imports from China should be imposed.	Increase
18	4/16/2018	US Department of Commerce concludes that Chinese telecom company ZTE violated US sanctions.	US companies are banned from doing business with ZTE for seven years.	Increase
19	4/17/2018	China announces antidumping duties of 178.6 percent on imports of sorghum from the US.		Increase
20	5/7/2018	US-China engage in trade talks in Beijing.	The US demands that China reduce the trade gap by US$200 billion within two years. Talks end with no resolution.	Decrease
21	5/13/2018	Trump promises to help ZTE in a tweet.		Decrease
22	5/18/2018	China's Commerce Ministry announces that it will stop tariffs on US sorghum at negotiations.		Decrease
23	5/20/2018	The trade war is put on hold.	US and China agree to put the trade war on hold after China reportedly agrees to buy more US goods.	Decrease
24	5/29/2018	US reinstates tariff plans after brief truce		Increase

25	6/5/2018	Two days of trade talks between US and China held in Beijing.		Decrease
26	6/7/2018	US and ZTE agree to deal that will allow ZTE to resume business.		Decrease
27	6/15/2018	(US) Initial list of products reduced and finalized.	List 1 now implements a 25 percent tariff on a reduced 818 products (from 1,334) and is set to take effect on July 6, 2018. List 2 of 284 new products is also announced and under consideration.	Decrease
28	7/6/2018	US implements first China-specific tariffs US		Increase
29	7/10/2018	US releases second tariff list US (The United States unveils plans for 10% tariffs on $200 billion of Chinese imports).	The USTR releases a third list of tariffs (List 3) of over 6,000 commodities originating in China (worth US$200 billion), which will be subject to a 10 percent tariff.	Increase
30	7/16/2018	Trump Administration Files WTO Challenges	The US Trade Representative files separate disputes at the World Trade Organization against Canada, China, the	Increase
31	7/20/2018	Trump Threatens Tariffs on All Imports from China		Increase
32	8/1/2018	Trump orders USTR to increase the tariffs on $200 billion of Chinese imports to 25% from the originally proposed 10%.		Increase
33	8/2/2018	US tariffs revisions (US$200 billion)	The US Department of Commerce also adds 44 Chinese entities to its export control list that pose a "significant risk" to US national security.	Increase
34	8/3/2018	China announces second round of tariffs on US products		Increase
35	8/7/2018	Second round of tariffs finalized and released by US	US releases a revised version of tariffs on a final list of US$16 billion worth of imports from China	Increase
36	8/8/2018	China revises its $50 billion tariff list, removing crude oil.		Decrease
37	8/14/2018	China files WTO claim against US	The Chinese Ministry of Commerce announces that a formal case has been lodged at the WTO against the US for its tariffs on solar panels, alleging that US tariffs have damaged China's trade interests.	Increase
38	8/23/2018	US and China implement second round of tariffs, China files second WTO complaint US		Increase
39	9/7/2018	Trump threatens new tariffs	Trump threatens to impose tariffs on US$267 billion more.	Increase
40	9/12/2018	US invites China to re-open negotiations	The White House's top economic advisor, Larry Kudlow, says that the US has invited China to restart trade negotiations before tariffs on US$200 billion worth of Chinese goods (List 3) go into effect.	Decrease

41	9/17/2018	US finalizes tariffs on US$200 billion of Chinese goods		Increase
42	9/18/2018	China announces retaliation for US tariffs	China announces that it will implement tariffs on US$60 billion worth of US goods (List 3) after the latest round of tariffs from the US (worth US$200 billion) go into effect on September 24.	Increase
43	9/24/2018	US and China implement third round of tariffs US	On Sep 22nc, China cancels trade talks with US	Increase
44	10/25/2018	US and China officials resume contact.	US and China working-level officials reportedly resume contact after weeks of silence.	Decrease
45	10/30/2018	US reportedly prepared to announce tariffs on remaining Chinese products	The US is reportedly prepared to announce tariffs on all remaining Chinese products by early December if talks between Trump and Xi at the G20 in Argentina are not successful.	Increase
46	11/9/2018	US and China resume trade talks	According to the report, the two sides discussed a framework for a trade deal, or at least a "ceasefire" to reduce tensions.	Decrease
47	11/19/2018	US releases list of proposed export controls on emerging technologies	The rules do not specify China, but are widely considered by observers to be related to US efforts to prevent China from acquiring sensitive technologies.	Increase
48	12/1/2018	The United States and China agree on a 90-day halt to new tariffs.		Decrease
49	12/14/2018	China to temporarily lower tariffs on US autos; resumes buying US soybean exports		Decrease
50	1/9/2019	US and China engage in 3-day trade talks in Beijing	After the talks, China's Commerce Ministry issued a statement that the talks were "extensive and established a foundation for the resolution of each other's concerns."	Decrease
51	1/22/2019	US cancels preparatory talks with China	US officials cited disagreements over the enforcement of IP rules as the reason for the cancellation.	Increase
52	1/31/2019	US and China hold 2-day trade talks in Washington D.C	China offers to buy five million tons of US soybeans. Trump announces that he will meet with Xi in-person in February.	Decrease
53	2/15/2019	US and China hold trade talks in Beijing	the US and China continue to have differences, but agree to keep talking in Washington the following week.	Decrease
54	2/24/2019	Deadline extended by US.	Trump extends the March 1 deadline, leaving the tariffs on $200 billion of Chinese goods at 10% on an open-ended basis.	Decrease
55	3/29/2019	US and China hold trade talks in Beijing after one month break	Officials call the trade talks constructive, with an enforcement mechanism to monitor China's commitment to trade concessions reportedly a sticking point.	Decrease
56	4/1/2019	China bans all types of fentanyl on April 1st; China extends the suspension of additional tariffs on US autos and auto parts on Mar 31th.	China announces that it will ban all variants of the synthetic opioid fentanyl, effective May 1, 2019, in what is considered a concession to the US amid trade talks	Decrease

57	4/5/2019	US and China hold trade talks in Washington	On Thursday, April 4, Trump meets with Liu He, and says that the two sides will know "over the next four weeks" whether they can strike a deal. US and Chinese negotiators agree to continue talks the following week.	Decrease
58	4/10/2019	US and China agree to establish trade deal enforcement offices		Decrease
59	5/5/2019	Trump tweets that he intends to raise the tariffs rate on $200 billion of Chinese goods to 25% on May 10.		Increase
60	5/8/2019	The Trump administration gives formal notice of its intent to raise tariffs on $200 billion of Chinese imports to 25% from 10%, effective May 10.		Increase
61	5/13/2019	China announces tariff hikes on US products, China launches tariff exemption system	China announces that it will increase tariffs on US$60 billion worth of US goods from June 1, 2019, in response to the tariff increases imposed by the US on May 10.	Increase
62	5/16/2019	US places Huawei on its 'entity list', banning it from purchasing from US companies		Increase
63	5/31/2019	China establishes its very own 'unreliable entities' list	China announces that it will establish its very own unreliable entities list in retaliation to the US' entity list.	Increase
64	6/1/2019	China increases tariffs on US$60 billion worth of products	Tariffs of 25 percent, 20 percent, and 10 percent, which were first announced on May 13, 2019 are now in effect on US$60 billion worth of American goods exported to China.	Increase
65	6/18/2019	Xi and Trump rekindle trade talks ahead of G20 meeting		Decrease
66	6/19/2019	US Tariff Exemption Process for Chinese Imports	The Office of the US Trade Representative (USTR) announces a process by which US interested parties could request the exclusion of certain Chinese products – subject to additional tariffs – as per the September 2018 list (List 3).	Decrease
67	6/21/2019	US adds another five Chinese entities to its 'entity list'		Increase
68	6/26/2019	Tentative truce reached days before G20 Summit		Decrease
69	6/29/2019	Trade talks to restart, ban on Huawei relaxed		Decrease
70	7/9/2019	US exempts 110 Chinese products from 25 percent tariffs, issues licenses to American Huawei suppliers		Decrease
71	7/16/2019	Trump threatens tariffs on US$325 billion of Chinese goods, new member on China's negotiating team		Increase
72	8/1/2019	Trump says US will impose 10 percent tariffs on another US$300 billion of Chinese goods starting September 1		Increase

73	8/6/2019	Chinese companies suspend new US agricultural product purchases; US declares China is a currency manipulator.		Increase
74	8/13/2019	US delays tariffs on certain products and removes items from the list	US and China agree to talk again in two weeks	Decrease
75	8/23/2019	China announces US$75 billion in tariffs on US goods, Trump threatens tariff increases on Chinese goods		Increase
76	8/26/2019	Liu calls for calm, Trump says talks will proceed		Decrease
77	9/2/2019	China lodges WTO tariff case against the US	On Sep 1st, tariffs come in force as scheduled (from both sides).	Increase
78	9/5/2019	China and US agree to 13th round of trade talks		Decrease
79	9/11/2019	China unveils tariff exemption list for US imports		Decrease
80	9/13/2019	China exempts various agricultural products from additional tariffs		Decrease
81	9/20/2019	US releases new tariff exemption lists, which exempt over 400 Chinese goods from tariffs	US-China mid-level trade talks in Washington. The two countries agreed to keep communicating on related trade issues and discussed the details of the 13th round of bilateral high-level economic and trade consultations scheduled for October as reported by state media.	Decrease
82	9/23/2019	Purchase of US goods.	Chinese companies the following monday buy about 600,000 tonnes of U.S. soybeans, resuming modest purchases started earlier in September that would reach 3.5 million tonnes by early October — about 10% of China's annual pre-trade war volumes.	Decrease
83	10/7/2019	The U.S. Commerce Department puts 28 Chinese companies on its "entity list".	Largely banning U.S. firms from selling to them, over their alleged involvement in human rights abuses against Uighur Muslims in Xinjiang.	Increase
84	10/10/2019	High level talks held.	High level delegates from China and the U.S. meet in Washington for two days of talks.	Decrease
85	10/11/2019	US announces "Phase 1" deal, delays tariff increase for Chinese goods	As part of the Phase 1 agreement, China will reportedly purchase US$40-50 billion in US agricultural products annually, strengthen intellectual property provisions, and issue new guidelines on how it manages its currency.	Decrease
86	10/18/2019	US tariff exclusion process for US$300 billion of Chinese imports		Decrease
87	11/1/2019	China wins WTO case, able to sanction US$3.6 billion worth US imports		Decrease

88	11/8/2019	US and China Talk Tariff Rollback	US, China negotiators talk over phone, agree on trade points "in principle"	Decrease
89	11/26/2019	US releases new regulatory guidelines for its telecom networks procedure to protect telecom networks from national security threats	While the document makes no mention of Huawei or ZTE equipment, it might impact the two Chinese companies as they were placed on the US entity "blacklist", earlier in May, and on Friday, November 22, were voted unanimously as national security risks by the US Federal Communications Commissions.	Increase
90	12/13/2019	US, China agree to 'phase one deal' just before next tariff hike	China releases second set of US products to be excluded from additional tariffs	Decrease