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Trade war in the new era of Trump

Supervisor

Ch. Prof. Carlo R. M. A. Santagiustina

Graduand

Yangxiaoshi Gao

875547

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Abstract

It has been hypothesized, in the theory of reciprocal effects, that there exists a direct interdependence between the narratives diffused by new outlets, and, the actions and strategies of decision makers in the areas of politics, business, and finance. In the modern era of online social media, President Trump himself is among the reciprocal effects: Through his twitter profile, he steers the interpretations and reaction of the public, as if people and other media relied on the information he provides to make sense and gauge the relevance of events of public interest and their implications.

This paper aims to investigate this hypothesis by studying the relations among media coverage, President Trump communications, and public perception of events related to US-China trade relations, using English data from Twitter, Which is the online social network through which Trump enacts his communication strategy. US media discourse about the Trade war is compared to that of Chinese media and British media, to try to distinguish their impact on the perception of the trade war of the general public. By applying text mining tools to Twitter posts published by major information outlets, I analyze chronologically the online reactions to signals concerning trade-related events and public announcements from March 2019 to May 2019.

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Introduction

A trade war is a relatively abstract concept for most individuals. Because at first, and concerning a military conflict, a trade war does not produce easily noticeable effects on an individual's daily life. Before being able to observe the economic impact of a trade war, most people get to know about it from newspapers, television, and online social media. Without markets and the media, who anticipate and rapidly spread signals concerning the conflictive and disruptive economic nature of trade wars, people would probably understand the implications of these "wars" only when their negative effects on the prices of imported goods and on the profitability, salaries and jobs of exporting industries would become evident, which is too late to avoid them.

Nowadays, online social media extremely widely used communication platforms. People from all over the world use them to express their opinions, to gather information, and to send feedback. Also, online social media are the most rapid way of spreading and obtain information about recent events, thanks to the massive amount of users who upload contents and news on these platforms. Through online social media, people can communicate with their acquaintances and with those who have the same interests, which makes social media a valuable source to study the dynamics of the perception of a large number of individuals toward specific topics or events, like trade wars.

In this thesis, rather than measuring the expected economic effects of a trade war through financial markets' reactions, we will try to highlight the foreseen impact of the ongoing trade war between China and the United States (US). By analyzing the online debate on this issue and by studying the narratives and the dialectical disputes among the involved parties, through Twitter.

In the last year, President Trump has been intensively using his Twitter account to announce the trade negotiation progress and to spread his views and narratives in relation to trade policies and negotiations with China. By using Twitter as a tool to communicate directly with the public, the US President has been grabbing much public

attention all over the world. The strategy of using Twitter to declare his opinion or decisions in relation to trade negotiations with China can impact the public in both a direct and an indirect way. Due to the fact that once a tweet has been published by Trump's profile, other news media will keep on reporting on his tweet. US media extensively discuss the declared intentions and the possible impact of Trump's tweets on the public's opinion and the negotiations with China.

Traditionally, mass media have always been used by politicians and governments for explaining and storytelling public policies to people. However, they hadn't been used before as instruments for trade policy negotiation. Nowadays, international public affairs are permeating online social media. As a result, these instruments are becoming real-time policymaking and policy justification tools. Trade policy narratives, the public's feedback to those narratives and trade negotiations, reciprocally influence and reshape each other because readers and viewers of these narratives process these online signals and eventually make reactions directly on social media platforms. These reactions can then affect others' perception and hence published contents, also that of news outlets, which preferably discuss socially "hot-topics" to attract more readers and viewers. *"In the first step, media reports influence users; in the second step, users' media-affected behavior might have consequences on others, which also has to be regarded as an effect of media reports; in the third step, the behavior of others might in turn influence the behavior of users (feedback). This may also set in motion a chain reaction that sometimes removed from the initial effect on the subjects of media reports by feeding controversies, affecting careers, or causing changes in policies or institutional practices."* (Mathias Kepplinger, 2007) To analyze this process, I have collected data from different twitter profiles of news media, and also, targeted twitter messages that contain the expression "trade war" or "trade tariffs". I then apply a tailored combination of text mining tools and NLP techniques to analyze and compare the collected data-sets.

By doing so, we can obtain a "window" on the perceptions and reactions of the general public and news media. More specifically, we can see how people represent and react to risks associated to the trade war between China and the US. In addition, we will analyze separately how American and Chinese news media convey the information

about the trade war and in which terms they differ from each other, and with respect to “third party” media. After analyzing each group, I will highlight the main differences and similarities, this should help the analysis of the interdependencies between twitter communications by President Trump, by the news media, and observations with specific keywords produced by the general public. The thesis will be focusing on the period between March 15th to May 8th 2019, after the temporary truce agreement that lasted from January 1st to March 1st 2019.

The reason why we study this phenomenon is related to the severe public concerns on this issue at a worldwide scale. The trade war between the US and China may irreparably damage the international trade order and generate a long-lasting climate of uncertainty for the global economic system that was built ever since World War II, with rising concerns for the reproposal of protectionism as an alternative to the actual “free” trade system that, despite many faults, has generated a global golden age, both in terms of economic growth and of technological advancement. This trade dispute is also bringing political instability at the worldwide scale, because a trade war between the rising and the actual economic superpowers will undoubtedly produce some rippling effects for other countries, which will suffer from the closure of two among the largest markets, given the existing strong interdependencies among their production and financial systems.

This exploratory study wishes to investigate if it is possible to proxy the strategic positions and narratives of the two negotiating parties through their online communication on Twitter and that of their media. We will also see if the signals contained in Trump’s tweets about the trade war are useful to interpret and foresee the possible outcomes of the negotiations between China and the US.

Besides, by looking to online social media, we will collect empirical evidence that will allow us to evaluate if, and in which terms, the media, President Trump, media and Twitter users reciprocally influence each other in the trade war negotiating and storytelling process.

In chapter 1, I describe the background of the trade war and how the decisions of imposing tariffs affected the stock market. I illustrate the role of the trade war in worldwide changing bilateral and multilateral commercial relations. I also describe the observed impact of such conflicts for Chinese firms.

In chapter 2, I introduce the investigation strategy and methodology. In particular, how I used R to obtain Twitter data, and, how I processed and analyzed this textual data. I describe the source of data, how it has downloaded from Twitter API endpoints. After that, I explain how to preprocess the data before analyzing it. Finally, I give intuition behind employed research tools and introduce some terminology related to text mining.

In chapter 3, I analyze data about the US-China trade war collected from twitter. I will focus on the year 2019. The Twitter data that will be studied has posted by the US and China media, as well as from president Trump before and during the trade war. Tweets with specific keyword related to trade war will also be analyzed separately to evaluate the opinion of the general public. This to determine in which terms these narratives are interdependent and related to real world events, in particular, in relation to new trade barriers, public prosecution of Chinese firms, and, to the negotiation process between the US and Chinese governments.

1. Outlining the scenario of the China-US trade war

1.1. A brief history of trade relations between the United States and China

“For almost three quarters of a century, the US had led the world into a rules-based system of trade-globalization, culminating in the creation of the WTO in 1995 and a rash of subsequent bilateral and multilateral trade agreements. Trump thus proposed a major change to US international economic policy.”

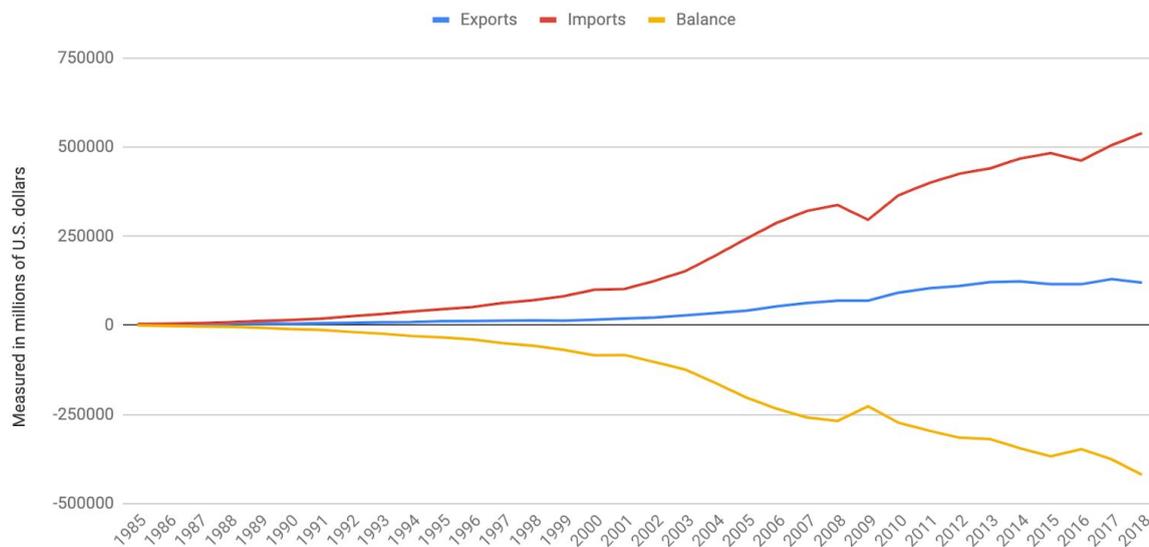
Stiglitz, 2018

Historically, ever after 1979, when China and the US started to normalize their diplomatic and commercial relations, the US was suffering from production overcapacity and declining rate of profit, while China was still facing the problem of poverty. At that time, the two countries were satisfied with the mutual benefits generated by their trade agreements: the US could take advantage of lower costs of raw materials and labor, while China could benefit from US's foreign direct investments (FDI) and the possibility of exporting its products to the US market. China's trade surplus, which grew over those years, enabled the high GDP growth rates of China over the past three decades.

The total amount of trading goods (measured by the dollar on a nominal basis) has been increasing each year since 1985, except for 2009, when the recession took place. As the graph below shows, the trade deficit increased dramatically around the year 1995. Moreover, the trade balance and the import from China are almost changing with identical magnitudes but opposite sign. The export to China is increasing overall at a much slower speed compared to the import.

Because of the “America first” stand, President Trump was targeting many countries with whom the US has a trade deficit. China is one of the most important targets, not only for the trade deficit but also for concerns related to property rights, rising industrial and technological leadership, etc.

Fig. 1: US trade with China



Source: US Census Bureau Foreign Trade, 2019

1.2. Tariff imposed by both countries and the reaction of stock markets

Following the new political agenda of President Trump, called “America First,” the trade war between the US and China was begun. It was January the 22nd 2018 when the US imposed new tariffs on more than \$250bn worth of Chinese goods which cover both industrial and consumer items.

In order to decrease the trade deficit, on the other hand, China government stated that China hit back with tariffs on \$110bn of US goods including coal and chemical products and also has targeted to agricultural products such as soybeans.

The trade war that followed that tweet can be divided into three stages:

- 1st stage: from July 6 2018 to December 1 2018

In the former date, the Trump administration set a tariff of 25 percent on 818 categories of goods imported from China worth \$50 billion, which led China to accuse the US of instigating a trade war.

- 2nd stage: from December 1, 2018 to May 5, 2019

The trade truce was announced by president trump's chief economic adviser Larry Kudlow, beginning from December 1, 2018, with a duration of 90 days. However, the US and China did not reach an agreement. Until President Trump tweeted that he was planning to impose additional tariffs on imported Chinese goods on May 5 2019, the trade dispute escalated ;

- 3rd stage: from May 5, 2019, to now

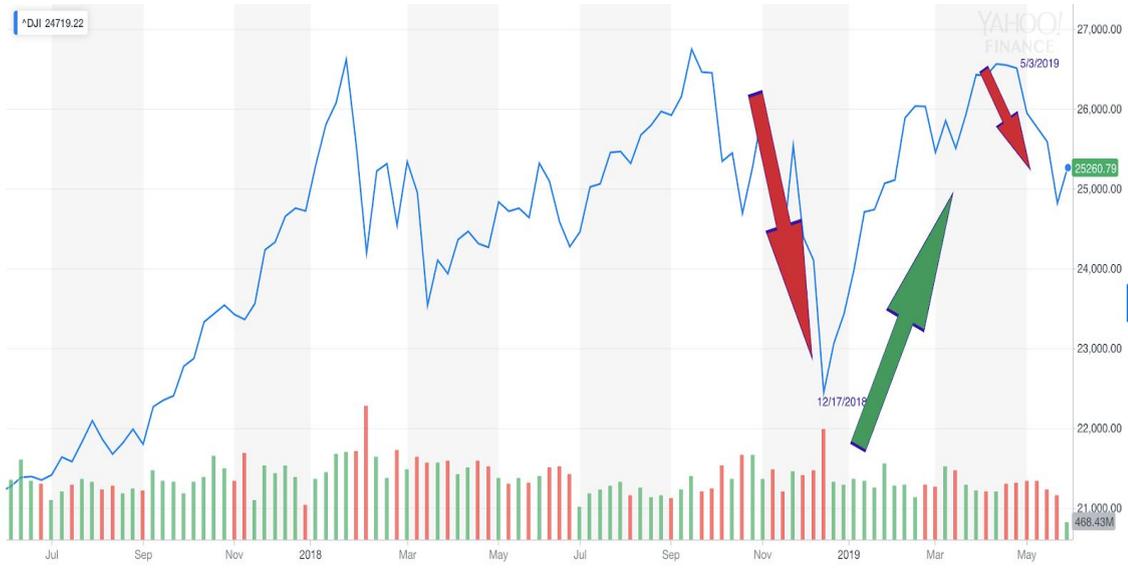
Fig. 2: Tweet from President Trump



Source: tweets from account @realdonaldtrump

During the first stage from Jan 2018 to Dec 2018, both countries imposed tariffs on each other. Dow Jones index dropped about 17%, and the Chinese stock market about 30% since the declaration of the trade war. Also, the global market was getting hurt, as well. The stock index of German, France, Japan were all decreased by more than 10%.

Fig. 3: Dow Jones since July 2018



Source: Yahoo Finance, 2019

Fig. 4: Shangzheng Index



Source: Finance Sina, 2019

December 2018 appeared to be a turning point, and the two countries decided to have a truce, which lasted from December 2018 to March 2019 and stated that they should reach a new trade agreement. As we can observe the global stock trends reversed, the trade truce had a positive effect on global financial markets. The reasonable explanation is that, after suffering for almost one year of market uncertainty and market tensions caused by the trade war, the message of a trade truce provided to people and market agents new reasons for being optimistic about the possibility of a new agreement being reached between the involved parties. The ceasefire was interpreted as a signal that the situation was getting better, especially in the views of investors. The Dow Jones index went up about 20% in three months.

However, after President Trump tweeted, on May the 5th, that he will again increase tariffs negotiations slowed down. The Chinese government responded by imposing more tariffs on US agricultural products. The message of Trump imposing additional tariffs was interpreted as a new threat by markets generating, again, increasing tensions. The stock market indexes of both China and the US had a negative trend during stage 1 when there were rising trade tensions. During stage 2 (trade truce), both markets started to rise again, i.e., positive direction. When stage 3 took place, both market indexes began declining still. As we have seen, stock markets in both countries tend to be very reactive to news about the trade tensions and their possible effects for the profitability of corporates in both countries.

1.3. Bilateral relation VS multilateral

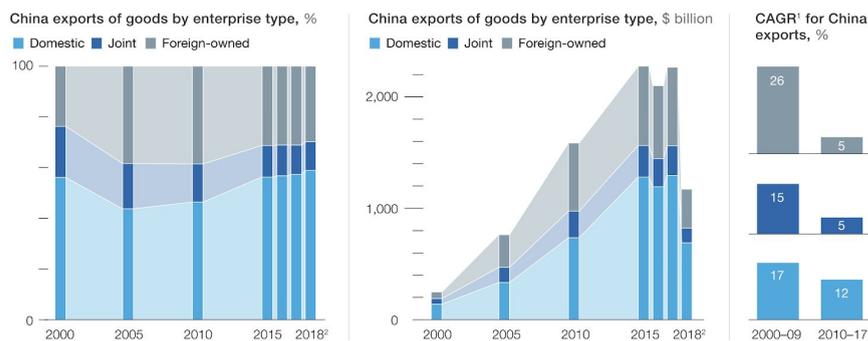
“trade is based on comparative advantage, not absolute advantage. Whether a country has an overall trade surplus is a matter of macroeconomics, whether capital is flowing into the country, to offset a gap between domestic investment and domestic savings. These capital flows affect exchange rates, and exchange rates in turn determine the trade balance.”

Stiglitz, 2018

As stated by Stiglitz (2018), it is the multilateral trade deficit that matters, not the bilateral deficit. Despite the fact that the US has a significant trade deficit, they can still benefit from trading with China: As the data shows, about 77% of the number of goods imported from China are either capital goods or intermediate goods, which are mostly used by US firms to produce final goods. The US can take advantage of purchasing these intermediate products at a lower price, and export to the rest of the world final goods produced in the US with foreign components to earn a higher profit (Mckinsey 2018). If we look at the data, 40% of the firms that export their goods from China to the US are foreign-owned or jointly owned. The trade war is not just hurting China, but all the foreign firms that were investing in China, including foreign investors from the US.

Fig. 5: Domestic, joint, and Foreign-owned firms

China’s value chains are global—more than 40 percent of exports are from foreign-owned enterprises or joint ventures.



¹Compound annual growth rate.
²First half of year.

McKinsey&Company | Source: CEIC; McKinsey Global Institute analysis

The US president is using tariffs as an instrument to protect US firms in order to increase their competitiveness in the domestic market. These tariffs are mostly paid by US consumers, which will find, in US shops' shelves, Chinese products at a higher price, which results in a contraction of sales and a loss of competitiveness of exporters from China. However, the intention of protecting domestic products cannot be achieved by simply imposing tariffs to Chinese goods. Because, the most probable outcome of these tariffs would be a shift of US consumer purchases towards goods produced in India, Vietnam, or in other countries which are specialized in manufacture, which will benefit from these US tariffs on Chinese products. As a consequence, the trade deficit with China will eventually decrease, but jointly, there would be an increase in the US's trade deficits with other countries.

According to the data from the US census bureau, during the first three months of 2019, US imports from China started decreasing, and, since China was also imposing tariffs on American products, the amount of US exports to China also reduced. The total amount of trade between China and the US is showing a decrease of 15% in total, compared to the first three months of 2018. If we compare this with the US trade balance with India and Vietnam, the tendencies are the opposite. Both of the aforementioned countries are having an increase in trade surplus with the US, especially Vietnam, which had an increase of about 45%, in trade surplus with the US in the first three months of 2019, with respect to 2018. Since the trade tensions, the higher prices of Chinese products are driving US companies to shift to producers of intermediate goods from Vietnam. The unilateral tariffs are decreasing the trade deficit with China and increasing the trade deficit with other countries.

Fig. 6: US trade balance with China 2019 and 2018

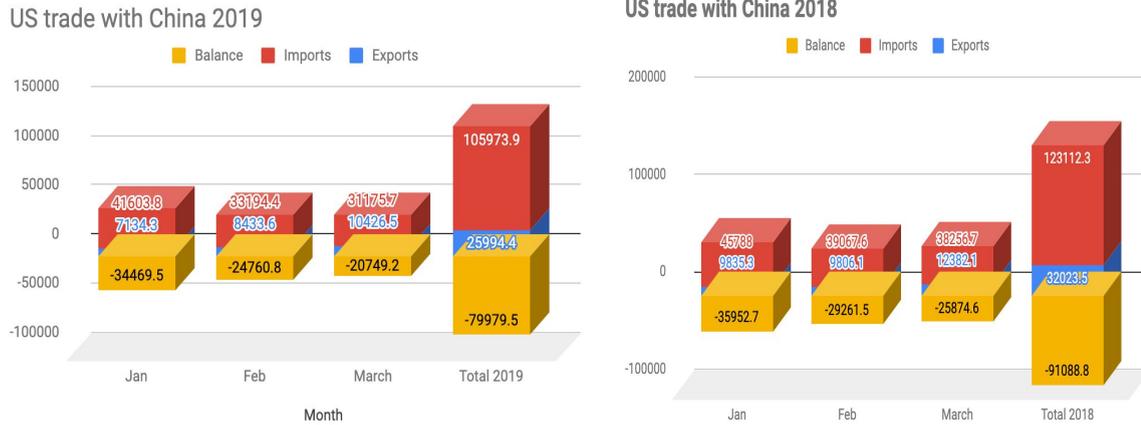
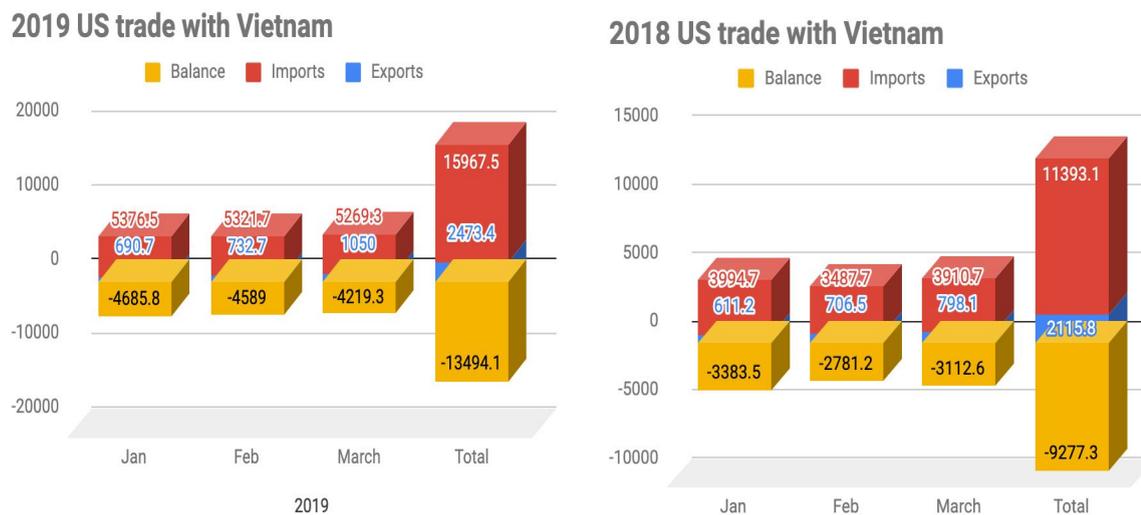


Fig. 7: US trade balance with India 2019 and 2018



Fig. 8: US trade balance with Vietnam 2019 and 2018



Source figures 6,7,8: US Census Bureau Foreign Trade, 2019

1.4. Conflicts between Chinese firms during the trade war

During the trade war between the US and China, there were specific events that caught much attention; in particular, events related to Huawei and ZTE. In the last decade, Huawei transformed from a component manufacturer to a self-branded cell phone maker. The Huawei business group became the third largest smartphone manufacturer by market share in 2017, commanding 10% of the global market. Even more, the company is currently focusing on 5G technology which is also causing many concerns and worries by the US and other western countries, these concerns go as far as claiming that *“China is using Huawei 5G as a proxy”*, and that *“5G is a tool Chinese government is using to spy on the western world”*, etc. Another company involved in the trade war is “ZTE”, which, before the trade war (in 2017), had a 12.2% market share and was the fourth largest phone brand in North America, behind Apple, , and LG.

During April 2018, a US high-tech supplier of ZTE announced that they would stop providing components to ZTE. The declared reason for this decision was that ZTE was selling technology to Iran. ZTE was pleaded guilty in a US federal court, for conspiring to violate US sanctions by illegally shipping US goods and technology to Iran, and face for this reason a 1.2 billion fine. Events related to Huawei started at the end of December 2018, when the CFO of Huawei was arrested in Canada. The US accused Huawei of breaching of US-imposed ban on Iran. Those very particular events happened during the trade war, and these issues led to the US government accusing Chinese companies of threatening their nation’s security. Despite whether or not these problems are consequences or causes of the trade war, people are globally connecting these events with the trade war between the US and China.

However, since the event of ZTE, China realized that the lack of US imported technology could cause shortages for high-tech firms in China. As a result, President Xi decided to establish one particular stock board called *“Science and technology innovation board”* in order to motivate investments in the high-tech areas. The China Securities Regulatory Commission said later that the new board is an important reform measure to carry out the innovation-driven development strategy and promote

high-quality development. It will also strengthen its management of science and technology investors, so they invest rationally. Moreover, it will encourage small and medium-sized investors to participate in science and technology investment through public funds and other ways so they can share the achievements of innovative enterprises". (Chen, 2019)

The following figures, produced with google trends, show the volumes of searches on Google for the expressions "trade war," "ZTE," "Huawei," "Trump AND China" The search term "Trump AND China" seems to have a higher frequency overall than "trade war", these time series exhibit similar fluctuation patterns and tendencies. They indicate that people believe that President Trump is considered a key factor affecting the trade relations between the two countries, and also trump represent his country in the trade war. In the first graph, the search term are "ZTE" and "Huawei" "Trump AND China.", "Trump AND China" capturing the tendency of "ZTE" and "Huawei" which indicate that people are actually relating these events with the trade war. When the event happened, people are not only searching for the name of a particular company but also seek the "Trump AND China".When people feel the need for additional information, they tend to search for it on the Web and other sources until they feel confident enough to make a judgment(Trumbo & McComas, 2003). The occurrence of these events attracted people's attention in the first place, and then people study to learn the details behind the event. The conflicts of the two events acting as the shreds of evidence of the ongoing trade war where people are using them as the information structure to build up their knowledge toward the trade war. Even more, the events were changing Chinese firms' business decisions after the US banned government agencies and contractors from using Huawei equipment with a fear that it might provide a backdoor for Chinese spying effect. According to an interview to the founder of Huawei, Ren Zhengfei, *"if the trade relation or investment policy in US is not getting better, we will probably decide to invest in the British instead of US."* ("Huawei's Founder Speaks To BBC - YouTube," 2019) Many Chinese companies or firms are slowing or suspending their investments in the US and waiting to see whether or not the situation is getting better. Since people believe that the events of Huawei and ZTE connected to the trade war, besides their effects for Chinese firms, these events may also cause uncertainty and concerns for firms from other countries, especially in the long run.

Fig. 9: Time-series of Google searches from the US for the terms ZTE, HUAWEI, Trump China

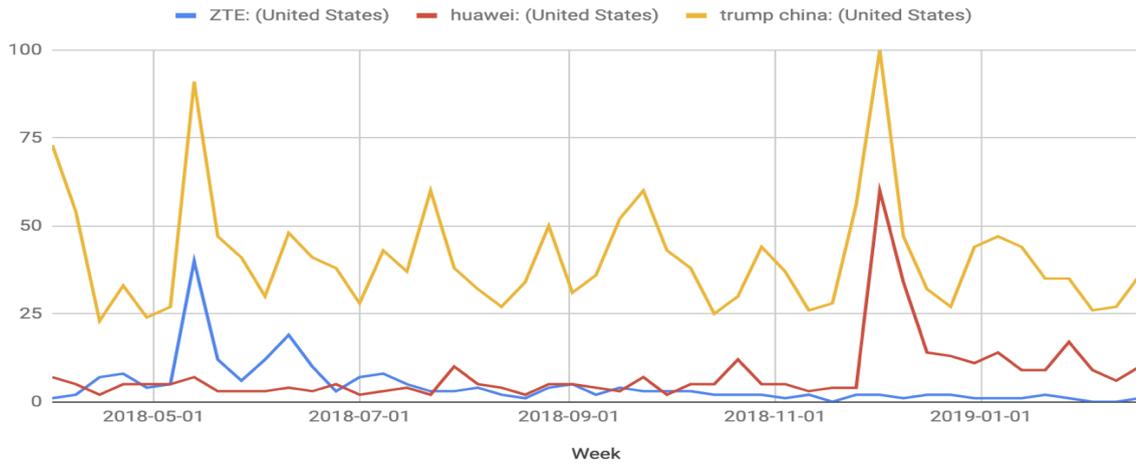
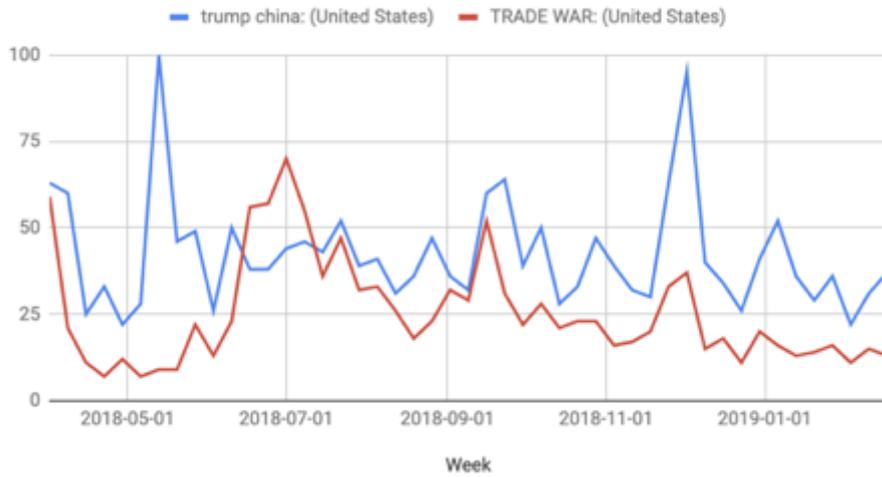


Fig. 10: Time-series of Google searches from the US for "Trump AND China" and "Trade AND War"



Source of figures 9 and 10: Google Trends, 2019

2. Data strategy and methodology

In this chapter, we will illustrate the methods used to download, preprocess, and analyze Twitter data about the trade war between the US and China. All the methodologies illustrated in this chapter were implemented using R, RStudio, and some of its text mining libraries, in particular, Quanteda.

Text mining refers to the process of extracting the implicit information from textual data. This technique has been contributing to many different areas. In business, firms can use text mining to analyze consumers' reactions to their products. Investors can benefit from using text mining to analyze discussions of analysts and media about specific market products and use them to try to predict price fluctuations.

Moreover, textual data from social networks contain the stories and narratives behind traditional statistical data, and allows us to observe how events and news about quantitative indicators are interpreted and discussed by the public. Since Twitter provides us the opportunity to freely download its textual messages, called tweets. I will apply text mining methodologies to data from this social network to study the US-China trade war. Thanks to this massive amount of data available in real-time and the ability to analyze it systematically through text mining tools, we can create a valuable alternative to the analysis of the trade war through classical statistical data.

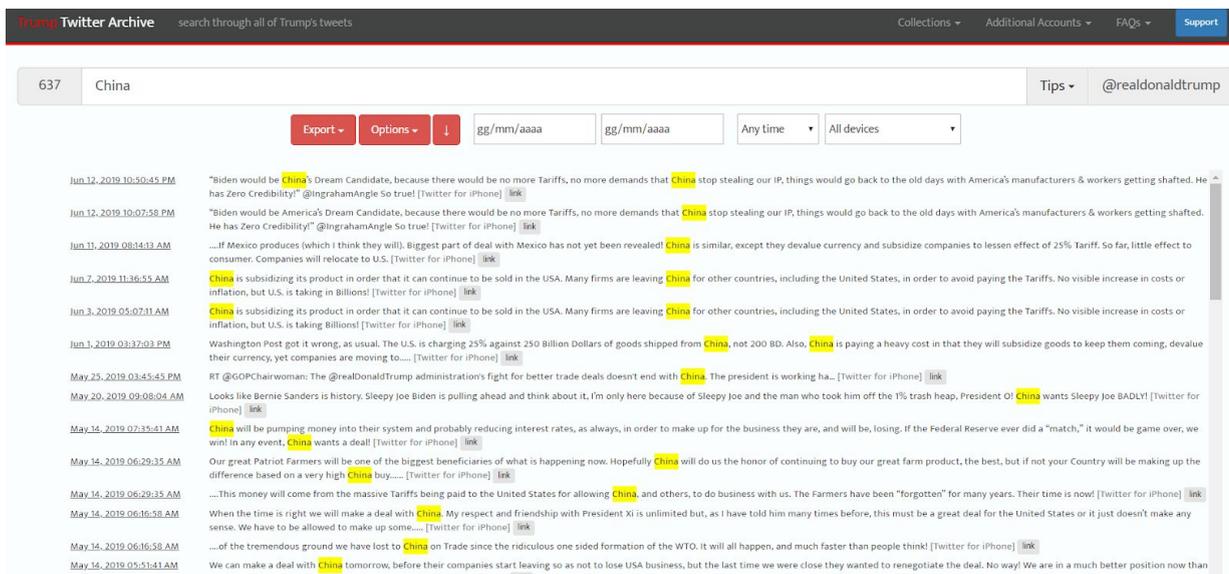
President Trump joined Twitter in 2009, from the official declaration of candidacy 2015 June until May 2019, he sent around 17,000 tweets, which is more than ten tweets per day. He tweeted his opinions on the newest events globally, and his decisions and thoughts about political, economic, international relations, etc. These tweets are a rich source of information on how President Trump creates and diffuses his narratives concerning China and the trade war with China. Through text mining techniques can analyze the relationship between his narratives, people's expectations and actual policy actions or outcomes, which cannot be achieved by using traditional aggregate statistics. (ChicagoBootReview, 2015) For instance, by comparing the discussions of Twitter users and media about the trade war with those of President Trump, we can have a

contextual understanding of the degree of discourse alignment between the public, the media, and President Trump. (Pal, 2017)

2.1. Downloading social media data about the trade war

2.1.1. Data from Trump's twitter profile

The tweets were obtained from the website <http://www.trumptwitterarchive.com/archive>.



The screenshot shows the 'Trump Twitter Archive' website interface. At the top, there is a search bar with the text 'China' and a search button. Below the search bar, there are several filters: 'Export', 'Options', and a date range filter set to 'gg/mm/aaaa'. The main content area displays a list of tweets from President Trump's profile, with the word 'China' highlighted in yellow in each tweet. The tweets are dated from May 16, 2019, to June 12, 2019. The interface also includes a navigation bar at the top with 'Collections', 'Additional Accounts', 'FAQs', and 'Support' links.

The website contains all tweets from President Trump since he joined Twitter in March 2009. After applying the search term “China,” the website showed us all the tweets about China from Trump. The tweets were downloaded in the JSON format. In order to import them in R, the package jsonlite was used.

2.1.2. Data from news media twitter profiles

Using the timelines Twitter API endpoint, I have collected tweets posted by the profiles of the most relevant US, China, and worldwide English-speaking news media. The timelines API endpoint allows users who registered for a Twitter developer account, to obtain the posts of multiple selected twitter profiles at once by repetitively querying this endpoint. By doing so, we can see which profile tweet more often about the trade war or China and exclude the profiles that are not active. In order to get the timeline from a particular user profile, we have to put its **user_id** as parameter. A single request will

give us up to 3200 tweets of the target profile, starting from the newest (more recent) tweets (“GET statuses/user_timeline,” 2019). Once we have obtained the tweets from the different profiles, we can study the textual content of the posting activity of the various news media, and explore the frequency of news related to the US-China trade war and the pace at which they write and update their contents in reaction to a new trade-related event. The time interval per query of the media profile that tweets more frequently is around 15 days, which is equivalent to an average of about 200 tweets by day. In order to avoid missing data for each news media profile, the data has been downloaded at intervals of 13 days during the whole data collecting period, which ranges from March the 18th 2019 to May the 13th 2019. The tweets obtained are in JSON form, and each tweet has almost a hundred variables; however, the essential information (variables) that are used in the analysis are:

Table 1: Attributes Type and Descriptions

Attribute	Type	Description
Status_id,	String	The integer representation of the unique identifier for this Tweet.
Created_at:	In64	UTC time when this Tweet was created.
Screen_name:	String	The screen name, handle, or alias that this user identifies themselves with. screen_names are unique but subject to change.
Text	String	The actual UTF-8 text of the status update.

Source: Developer Twitter 2019

Here follow the criteria that I have used to select the news media profiles, from the US, China, and Britain that we analyze in this study in relation to the trade war.

US media

The news media I have selected are amongst the most well known and reputable, and they are active at a daily of the infra-day basis on Twitter. Also, they have many

followers, so the tweets they sent would be seen by many other Twitter users, which indicates that they have more influence than others. After obtaining the US media timeline tweets, the profiles, which have tiny tweets about China were excluded, since they can not provide enough information for the research. Some profiles are selected due to the fact that they are international media and focus on the global economy.

Table 2: Selected US media

UserTag	Description	Followers
@Time	Time page (Joined April 2008)	16.1 Million
@WSJ	Wall street Journal Page (Joined April 2007)	16.7 Million
@WSJ Business	Wall street Journal Business Page (Joined April 2009)	1.48 Million
@Business	Bloomberg Page (Joined April 2009)	5.38 Million
@ABC	ABC News Page (Joined April 2009)	14.3 Million
@CNBC	CNBC Page (Joined February 2009)	3.18 Million
@CNN	CNN Page (Joined February 2007)	42.1 Million
@CNNBRK	CNN breaking News Page (Joined January 2007)	55.3 Million
@MSNBC	MSNBC Page (Joined March 2007)	2.48 Million
@nytimes	New York Times Page (Joined March 2007)	43.5 Million

Source: Twitter, 2019

Chinese Media

Since very few Chinese news media have Twitter profiles, and only a small share among them write tweets in English, we choose those profiles that have more followers among the set of Chinese media on Twitter that writes in English.

Table 3: Chinese media

UserTag	Description	Followers
@XHNews	Xinhua News Page(Joined February 2012)	12.4 Million
@CGTNOfficial	China Global Television Network Page (Joined January 2013)	13.3 Million
@ChinaDaily	China Daily Page (Joined November 2009)	3.9 Million

Source: Twitter, 2019

British (international) Media

The study is about the trade war between the US and China, and British media can be seen as a neutral third party. When choosing the British media, we have selected the most well known international media with many followers on Twitter.

People who speak English and wish to learn about the trade war on twitter are very likely to use these sources to gather information about the trade war. In addition, many among the selected sources are renown for their reporting on international economic and business issues.

Table 4:British media

Twitter account		Followers
@Theeconomist	The economist Page (Joined May 2007)	23.8 Million
@FT	Financial Time Page (Joined April 2007)	3.57 Million
@Reuters	Reuters Top News Page (Joined March 2007)	20.5 Million

Source: Twitter, 2019

These selected news media, except for XINHUA and News China Global Television Network, joined Twitter between the years 2007 and 2009. They started to use social media as a new way to report news, due to the increasing number of Twitter users and the increase in average usage time. At the same time, President Trump also joined Twitter in March 2009. He noticed the influence of social media and started to use Twitter to express his personal opinions, which are mainly about political and economic events.

Twitter is a source of information that is very convenient to get updates about the news from all around the world, and, to discuss or comment on them. Twitter allows the worldwide public to interact more intensively and directly, by exchanging their opinions and expectations in relation to issues of public interest, for example, by commenting or exchanging ideas with others in relation to the possible consequences on new tariffs. Even more, news media can study the interests and the reactions of their public, through their comments or retweets, which may also have an indirect effect on the communication choices of news outlets. In particular, in relation to which topics/events, given the reactions of the public, should receive more updates and additional insights in the news media profile, and at which frequency.

2.1.1. Twitter data by keywords

Each request sent to the Search API endpoint will give us data of the past 6-9 days. We can do up to 180 requests every 15 minutes, each of which will deliver up to 100 tweets. Therefore, the maximum number of tweets that can be obtained in a 15min interval is 18,000, with a waiting time of 15 mins between calls. In order to collect 100,000 tweets, we also set the parameter “retryonratelimit” to TRUE (default to false), by setting it to TRUE R will automatically download data every 15 mins until 100,000 observations have been downloaded or no more tweets are available to download. (“Standard Twitter search API,” 2019)

In order to search the tweets about the trade war, using the keywords that will return a collection of relevant tweets matching a specified query. We set as query the following set of keywords:

'trade war" OR "tradewar" OR "tradetariffs" OR "trade tariffs"

Since the trade war is actually occurring, using the keywords "tradewar" OR "trade war" will give us the observations which are talking about the event that we wish to study.

The query will capture both the words "trade" and "war" written separately in a single tweet and "tradewar" altogether. Same for "trade" "tariffs" and "tradetariffs". Even more, since the trade war that the US triggered is not only with China, but also with Mexico, Canada and, to a lesser extent, the EU, in the results, we will also obtain the tweets that discuss the trade war with other countries, rather than China. This will also provide the opportunity to compare the overall discussion on "trade war" with the discussion of "trade war" relate to China.

"Tariffs" is also used as a search query, because we can consider this word a signal related to the trade war. Until now, the first moves in the trade war by the US and China have consisted of imposing tariffs. Thus, this query will allow us to focus on discussions about tariffs rather than about the trade war in general. When people tweet about the trade tariffs instead of directly mentioning the trade war, they still discuss the trade war topic, but from the trade barriers perspective. In order to obtain more observations about the trade war, we hence choose to include tariffs as a query.

Query (q) is the parameter used for searching tweets by keyword through the Twitter Search API. Since English is the universal language used by the US media, by selected Chinese media, and by the British media, in order to be sure that all downloaded tweets are in the same language, we will use another parameter (lang) to require only tweets in English. ("Standard Twitter search API," 2019) In twitter, sometimes one particular message may be retweeted many times, by default, when querying Twitter's APIs we also receive retweets, and the query results contain all retweets of every single tweet in the dataset, which may bias the text analysis results if several thousand users retweet a single tweet. Thus, in the function (rtweet::search_tweets) used to download tweets through R, we set the include retweets (include_rts) parameter equal to FALSE.

The tweets obtained by the Twitter APIs are natively in JSON format, and each tweet has variables. However, the primary columns are used in the analysis are :

Table 5: Attribute Type and Description

Attribute	Type	Description
Status_ id,	String	The integer representation of the unique identifier for this Tweet.
Created_at:	In64	UTC time when this Tweet was created.
Text	String	The actual UTF-8 text of the status update.

Source: Developer Twitter 2019

2.2. Preprocessing

Since the data were collected at different time points, initially, we need to combine the data according to their categories, which are US media, British media, Chinese media, and tweets downloaded by the query. Once combined, the duplicate observations need to be removed, during those procedures functions of the package dplyr are used. Since the technique to collect data from media is through the timeline endpoint, and each media is tweeting at different frequencies, which will occur duplicate data. The next step is using the package dplyr we arrange the observations in chronological order when will when we plot x-ray the result will be shown chronologically. (Wickham, François, Henry, Müller, & RStudio, 2019)

After removing duplicates, the number of observations obtained for each category are:

- 156,688 tweets downloaded by query: "trade war" OR "tradewar" OR "tradetariffs" OR "trade tariffs"; 102,714 of which contain the term China;
- 143 tweets from Trump's profile about China;
- 64,618 tweets from selected US media;

- 17,106 tweets from Chinese media;
- 19,006 tweets from British media;

The primary purpose of the preprocessing procedure is to prepare the data to the form that can be used by text analysis libraries like Quanteda.

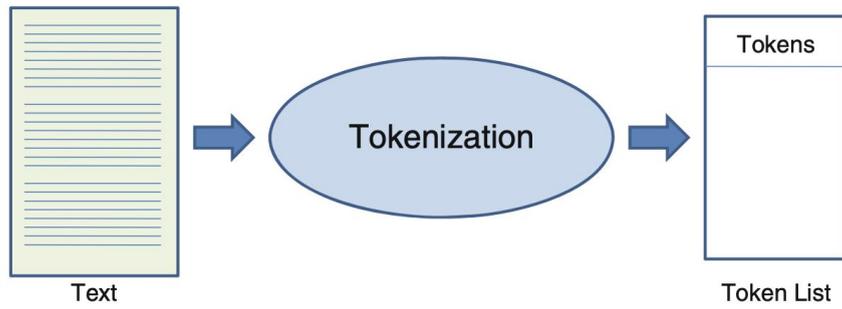
Here follows an ordered list of the procedures used to clean the texts of our tweets:

1. eliminate all non ASCII characters
2. clean multiple/trailing empty spaces
3. extract URLs
4. extract user tags @[tag]
5. remove @ characters of user tags
6. remove # characters of topic tags
7. extract finance tags \$[tag]
8. remove \$ characters of finance tags
9. extract standard character emoticones
10. remove emoticones
11. Remove stopwords

Non-ASCII characters are eliminated because they are unreadable by the text-mining library Quanteda. Multiple or trailing empty spaces have no meaning, and it's unnecessary to keep them in the text. If we didn't remove the URLs, they will be recognized as texts and would be cut at each punctuation character by the tokenizer, creating noise in the results. Emoticones have also been removed.

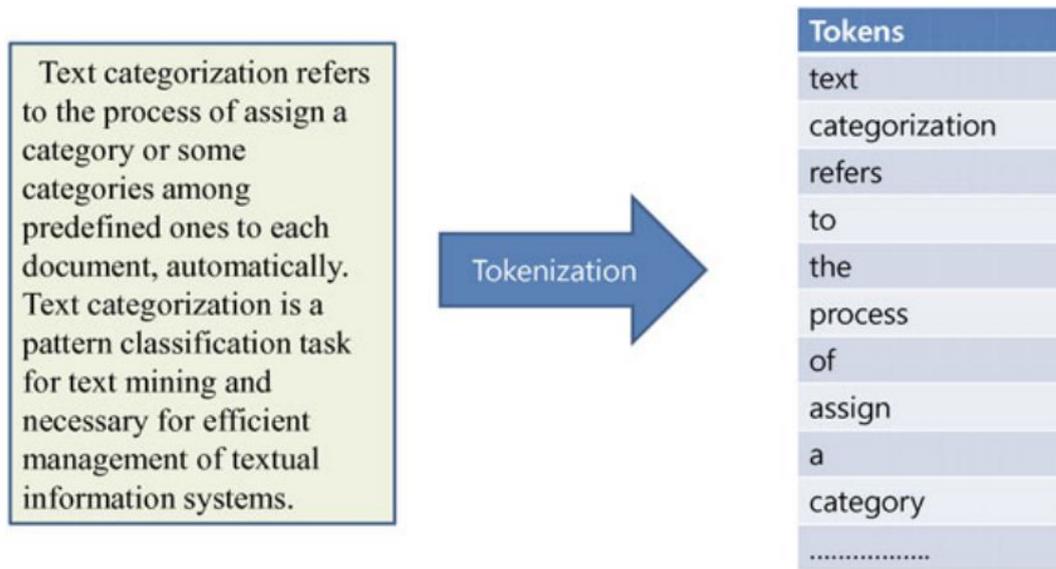
The process of segmenting texts into tokens using punctuation marks or white space is known as tokenization. The technique used for tokenization can be applied to any text and is language independent. Through this technique, a sequence of characters representing a text, is split into a set of word/term tokens, this process is shown in figure 11. URLs and special characters or numerical values are removed, and the tokens are transformed to lowercase. As is shown in figure 12, the first character of the first sentence is given as the uppercase character, after applied tokenization, it will be shown in lower case. Moreover, the list of tokens becomes the input of the next steps.

Fig. 11: Tokenization



Source: Jo, 2018

Fig. 12: The example of tokenizing text



Source: Jo, 2018

After the procedure of tokenization, we will apply the function of stopword removal, which is referred to as the process of removing stop words from the list of tokens. Stop words are words which are irrelevant to the meaning of the text, so they need to be removed for having cleaner results. The stopword list is loaded from a file, and if the words are in the list, they are removed. For example, we would remove prepositions, such as “in,” “on,” “to”; and so on, and conjunctions words such as “and,” “or,” “but” and “however”, the definite article, “the,” and the infinite articles, “a” and “an” are also more frequent stop words. Usually, after the stop words removal, the remaining words are

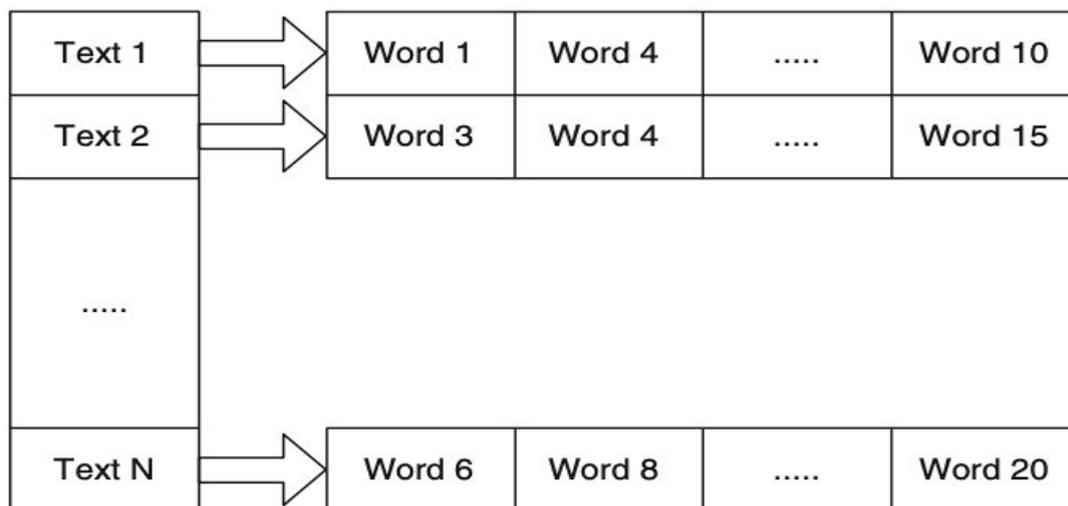
nouns, verbs, and adjectives. Then, we will check again, whether the nouns, verbs, and adjectives, and keep removing the irrelevant or meaningless words. (Jo, 2018)

2.3. Textual data mining and analysis

Frequency of words and document-feature matrix

The document-feature matrix, which is also called document-word matrix, is built from the tokenized observations, as shown in figure 13. Each row of the matrix corresponds to a document, which is a textual observation (in our case a tweet). Whereas, each column corresponds to a word/feature. The value of the cell i (row index) j (column index), gives us the number occurrences of the word/feature j in the textual observation i .

Fig. 13: Frame of document-feature matrix



Source: Jo, 2018

As we can see from figure 14, the document-feature matrix has a row for each textual observation in the corpus, i.e. one row per tweet, and, a column for each word/feature that is contained in at least one tweet.

Fig. 14: document-feature matrix

$$\begin{array}{c}
 \text{words} \\
 \left[\begin{array}{cccc}
 W_{11} & W_{12} & \dots & W_{1n} \\
 W_{21} & W_{22} & \dots & W_{2n} \\
 \dots & \dots & \dots & \dots \\
 W_{N1} & W_{N2} & \dots & W_{Nn}
 \end{array} \right] \text{texts}
 \end{array}$$

Source: Jo, 2018

In the following example of document-feature matrix, we have eight texts (observations), which are identified by their file names and four words. The weights may be given either as binary values which indicate the presence or absence of corresponding words or as counts; in both cases, a zero means that the word was not contained in specific textual observations.

Fig. 15: Example of binary document-feature matrix

	business	company	computer	information
Text 1	1	0	1	1
Text 2	0	1	1	0
Text 3	0	1	1	1
Text 4	1	0	1	0
Text 5	1	0	0	1
Text 6	1	0	0	0
Text 7	0	1	0	1
Text 8	0	1	1	0

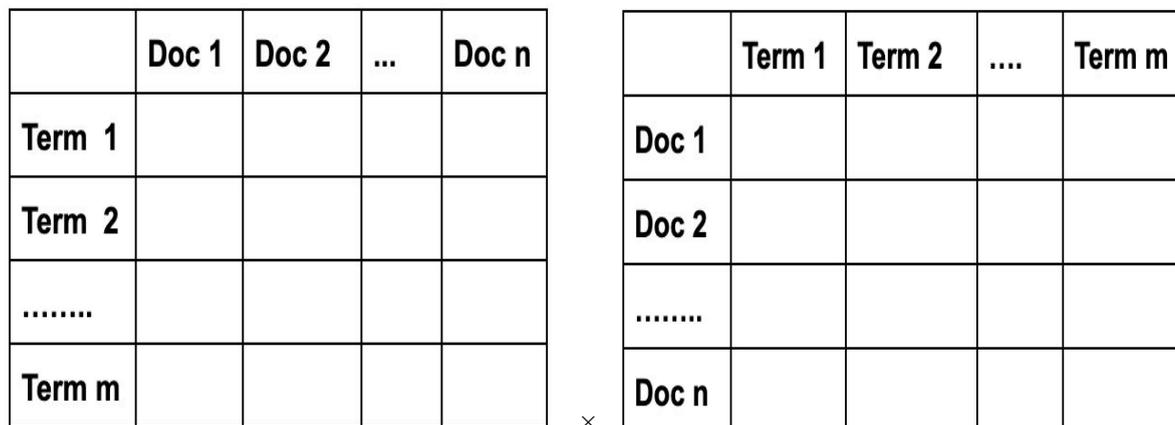
Source: Jo, 2018

Wordclouds

A wordcloud is a visual diagram made of words, where the area of each word is proportional to its frequency in the corpus (set) of textual observations (tweets). Wordclouds can be obtained simply by computing the column sums of the document-feature matrix and then plotting the words in such a way that their area is proportional to their frequency.

Word/feature co-occurrence matrix

Fig. 16: Computing the co-occurrence matrix from the document-feature (DF) matrix



transpose of the DF matrix (size $M \times N$)

DF matrix (size $N \times M$)

Source: my production

Imagine that we have a document-feature (DF) matrix of size $N \times M$. In order to obtain the co-occurrence matrix, we multiply the transpose of the DF matrix by the DF matrix and obtain a new matrix of size $M \times M$, which is known as the co-occurrence matrix.

Fig. 17: Co-occurrence matrix structure and content

Size $M \times M$	Term 1	Term 2	Term M
Term 1	# of occurrence Term 1	# of co-occurrences of Term 2 and Term 1	...	# of co-occurrences of Term 1 and Term N
Term 2	# of co-occurrences of Term 2 and Term 1	# of occurrence Term 2	...	# of co-occurrences of Term 2 and Term N
...
Term M	# of co-occurrences of Term 1 and Term M	# of co-occurrences of Term 2 and Term M		# of occurrence Term M

Source: my production

On the diagonal, the entries represent the number of occurrences of a specific term in the whole corpus. Outside the diagonal, we can see the number of co-occurrences of different terms in the whole corpus, as you can see from figure 17 the co-occurrence matrix is symmetric.

Co-occurrence network

Then the network is based on the co-occurrence matrix, and edges represent co-occurrences, nodes represent features. The width of edges represents the number of co-occurrences of two features (nodes) that co-occur in at least one textual observation and are therefore connected by an edge.

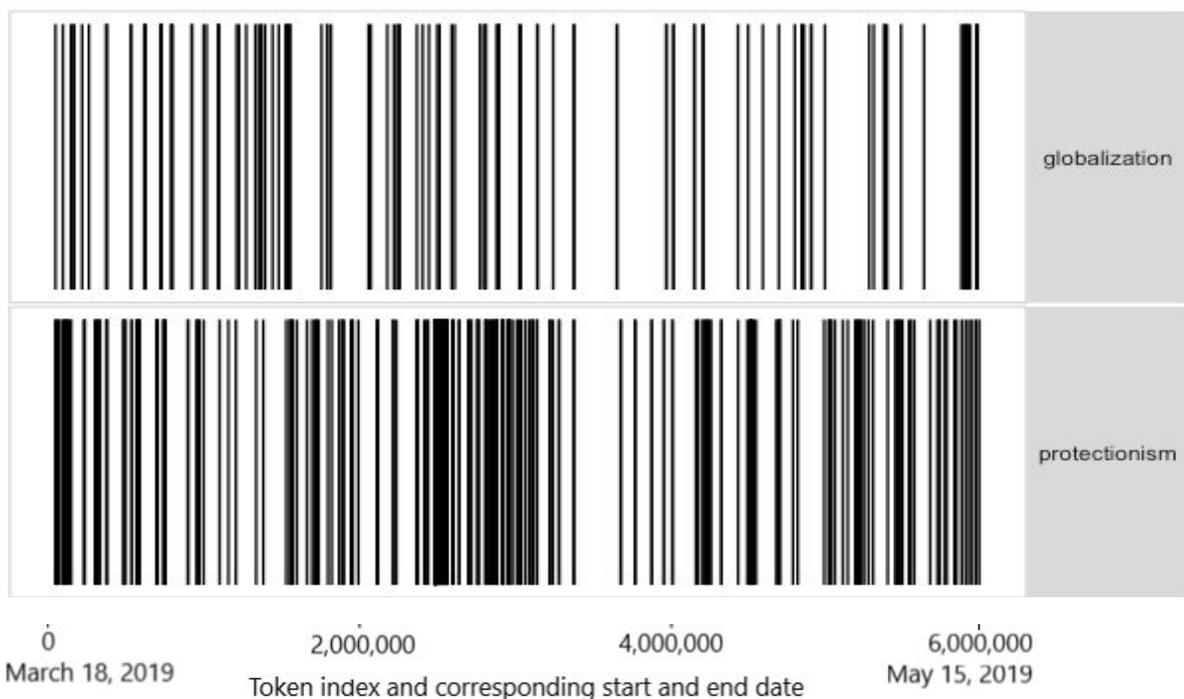
X-ray (lexical dispersion)

To obtain the lexical dispersion of features/words in the corpus, we first need to order the observations from the oldest to the newest. Then we concatenate all observations

(tweets) together, to obtain a unique “flow of tweets” which is then tokenized, then we can see for any feature that is present in the corpus the index of the tokens that match it and their dispersion.

By so doing we can observe if different features, or sets of features, are used together or follow closely one another in the narratives of the trade war as if a corpus of tweets was transformed in an ordered sequence of signals, i.e. the sequence of its features. The width of the token bins depends on the length of the sequence, i.e. the number of elements in the “flow of tweets”. When a token matches the feature query, the corresponding bin is colored in black, and else it is colored in white (Benoit et al., 2019). For example, the following x-ray is used for analyzing and comparing the occurrence of the features “globalization” and “protectionism” in a subset of the collection of tweets downloaded by the query (“trade war” and “tariffs”) who also mention “China.” For example, From the x-ray, we can see that even if the word globalization is used less frequently than the word protectionism, many of their most dense clusters overlap, probably the two opposed world-views are put into relation in the narrative of the trade war, especially close to mid-May.

Fig. 18: X-ray of the features globalization and protectionism in tweets by query containing the term China

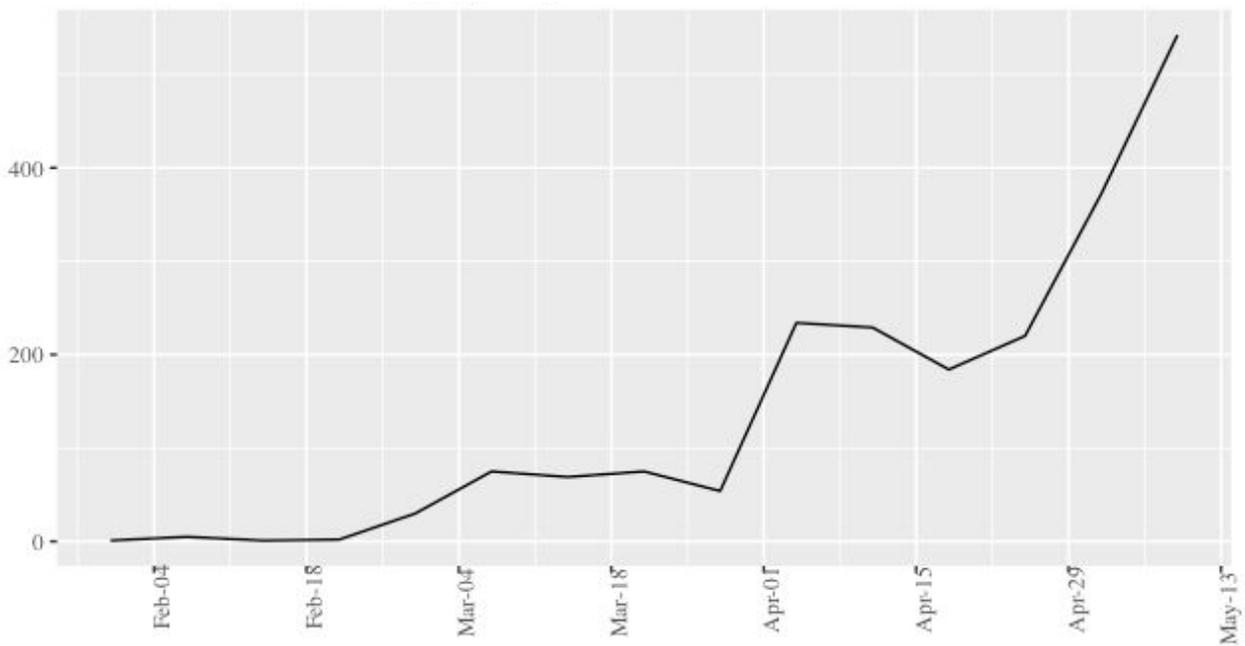


Source: based on data collected from the Twitter Search API

Count/frequency of tweets by time interval:

We can transform our corpus of tweets in a time series, by applying a filter by keyword, only tweets that match some conditions are kept, and then by counting the number of textual observations (tweets) contained in time bins, where time bins can be any unit of time from seconds to months. By so doing, we can obtain a time-series of the frequency of tweets that contain a specific keyword, which is used as a filtering parameter. The following figure is the time series of US media tweets about China. From the time series, we can see how many tweets in that corpus mention “China” over the observation period, as we can see the time-series is increasing exponentially across time.

Fig. 19: Counts, by week, of tweets downloaded by query containing the term China



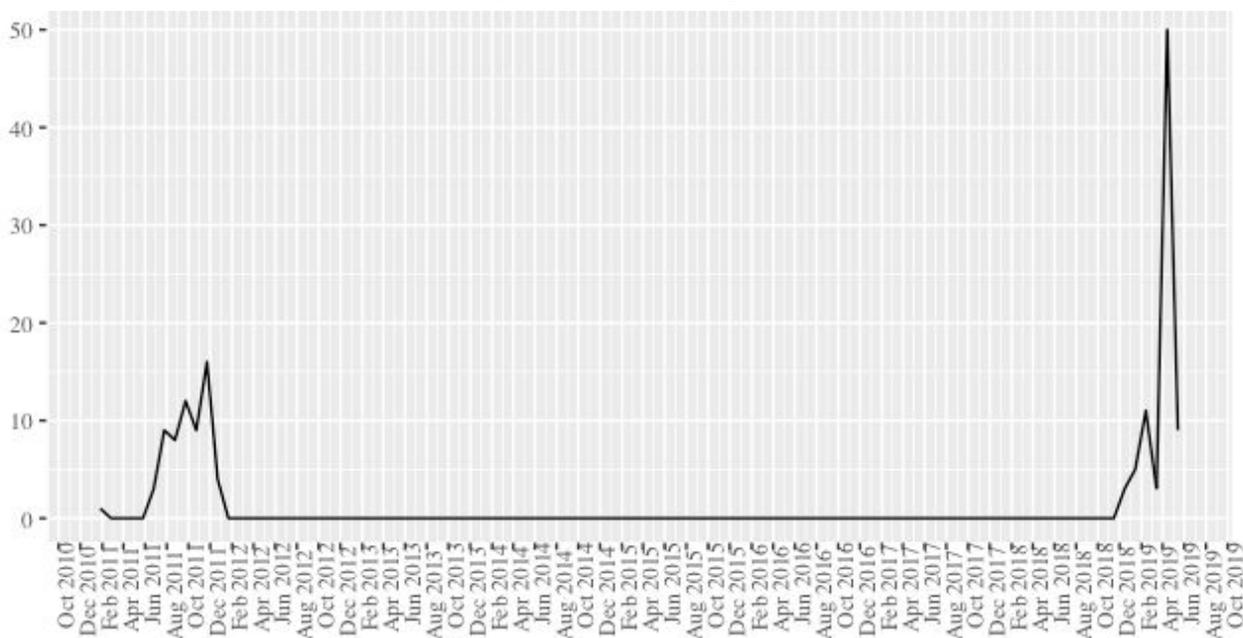
Source: based on data collected from the Twitter Search API

3. Analysis and results

3.1. Tweets from President Trump (@realDonaldTrump)

President Trump is a significant figure for this study because the trade war emerged from his “America First” policy. Since the trade war started, Trump was using Twitter to communicate with the public and storytelling his policy decisions, opinions, and expectations. Analyzing his tweets can help us understand how the latter are related to the trade war and the negotiations between the US and China. In further steps, with the tweets sent by US media, we can also highlight the differences between Trump and media from the two implied countries and a third party (British media), to see how they influence each other, and, observe their impact on worldwide English-speaking Twitter users.

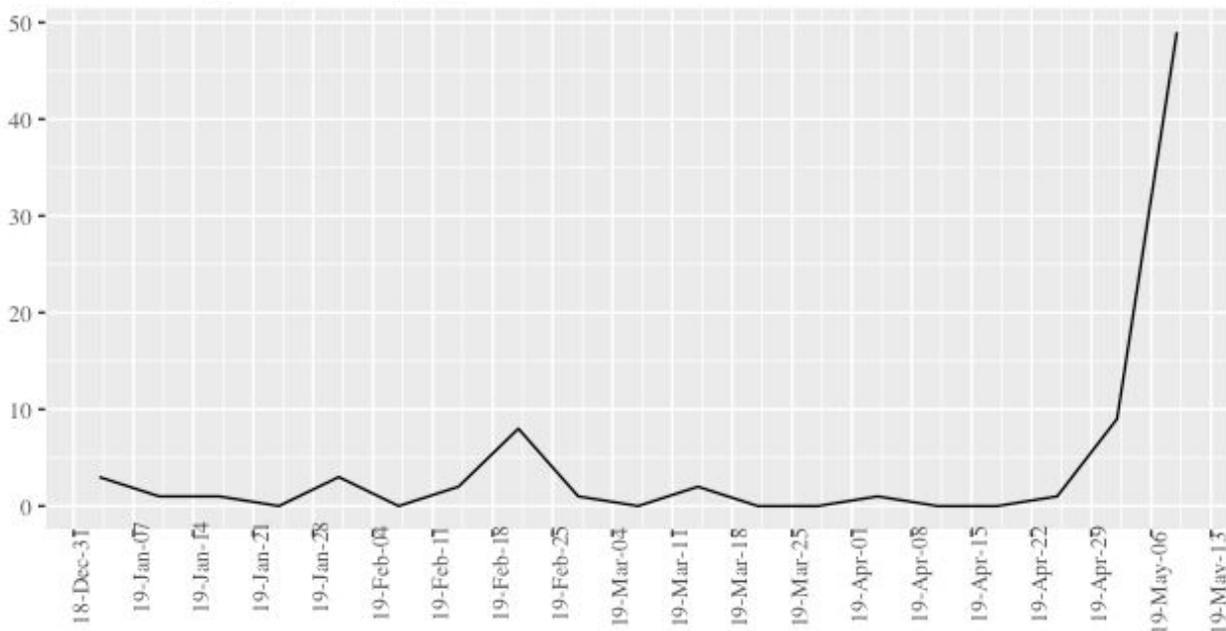
Fig. 20: Counts, by month, of tweets about China by Trump from jan. 2011 to may 2019



Source: based on data collected from “Trump Twitter Archive”, 2019

From Fig. 20 we see that the first tweeting activity peak of Trump in relation to China, is in the year 2011, at that time he expressed his disagreement concerning the trade policies proposed by President Obama with China, and, in relation to the US sovereign debt being in the hands of China. He was also dissatisfied with the negotiations strategies with China, the phrase “time to get tough” that dates back to 2011 is an anticipation of his future position. In 2011, he also claimed that China is a threat, and insisted on this belief through his tariffs decisions as US president, and, through his ban of targeted Chinese firms. The second peak takes place after he claimed to increase tariffs from 10% to 25%.

Fig. 21: Counts, by week, of tweets about China by Trump from jan. 2019 to may 2019



Source: based on data collected from “Trump Twitter Archive”, 2019

President Trump started to tweet more about China again around 2019. As the figure 21 shows, there is a relatively small peak between February 18 to February 25, during this week he thanked China for helping arrange a meeting between the US and North Korea, and, he claimed that negotiations of the new trade deal with China were going great, in the way which would benefit the US. In 2019, the tweets by week were often below ten; President Trump did not tweet randomly about China; the high frequencies happened when events occurred. The second peak, in May 2019, is five times larger

U.S. in recent years, “the debt held by farmers rose from 385 billion to 409 billion during the last year” (Reuters, 2019).

If a new deal was to be negotiated between the US and China, the party that, according to Trump, should have the most considerable benefits would be that of the US farmers. However, in contrast, if the trade dispute continues its escalation, farmers or agriculture will be probably the most damaged category, because of the retaliation of China in this sector.

Later, the president decided to increase another tariff from 10% to 25% of Chinese imported products for a value of 300 billion dollars.

Instead of reaching the agreement to buy new agriculture goods from the US, as desired by Trump, China raised its tariffs on US agricultural products to 25%.

Rural voters are strong supporters of President Trump, and, determined his victory back in 2016. Through these sanctions, and about the last US electoral results, China targeted the states that made significant contributions to his election campaign in 2016, and, weakened further an already weak US economic sector. As a result, the retaliation by China is expected to cause additional troubles for President Trump, with his upcoming reelection campaign for the US presidential elections of 2020.

Fig. 23: tweet from Bloomberg

Bloomberg @business [Follow](#)

China could as much as triple its purchases of U.S. farm goods as part of a trade deal, U.S. agriculture secretary says

China Could Triple Buying of U.S. Farm Products, Perdue S...
China could as much as triple its purchases of American farm goods as part of a trade deal between the nations, U.S. Agriculture Secretary Sonny Perdue said.
bloomberg.com

6:18 PM - 18 Mar 2019

31 Retweets 52 Likes

11 31 52

Source: Bloomberg, 2019

The tweet from Bloomberg in Fig. 23, is reporting on the agreement made by the two countries in mid-March 2019, when China promised to buy an additional 30 billion on agriculture goods from the US. This news also discusses how this agreement could benefit US farmers and the agricultural sector, and how this agreement could represent a milestone to end the trade dispute between China and the US. US Agriculture Secretary, Sonny Perdue, claimed that *“Increased farm purchases by China is one of the ‘easiest’ things for the nation to promise as part of the more meaningful negotiations”*.(Bloomberg, 2019)

**Fig. 24: Wordcloud of Tweets about China published by Trump
From jan. 2011 to dec. 2018**



Source: based on data collected from “Trump Twitter Archive”, 2019

The above word cloud is applied to all tweets from President Trump when mentioning “China” from 2011 to 2018. Compared with the previous word cloud, there are some differences:

- “Currency” is more frequently mentioned, President Trump was strongly accusing China of manipulating currency in 2011.
- The hashtag “#Timetogettough” was used frequently, Trump had, since 2011, a strong personal attitude towards trade with China, and, he has mentioned many times that the trade deficit had to be corrected back then. He did not use this tag

Source: based on data collected from "Trump Twitter Archive", 2019

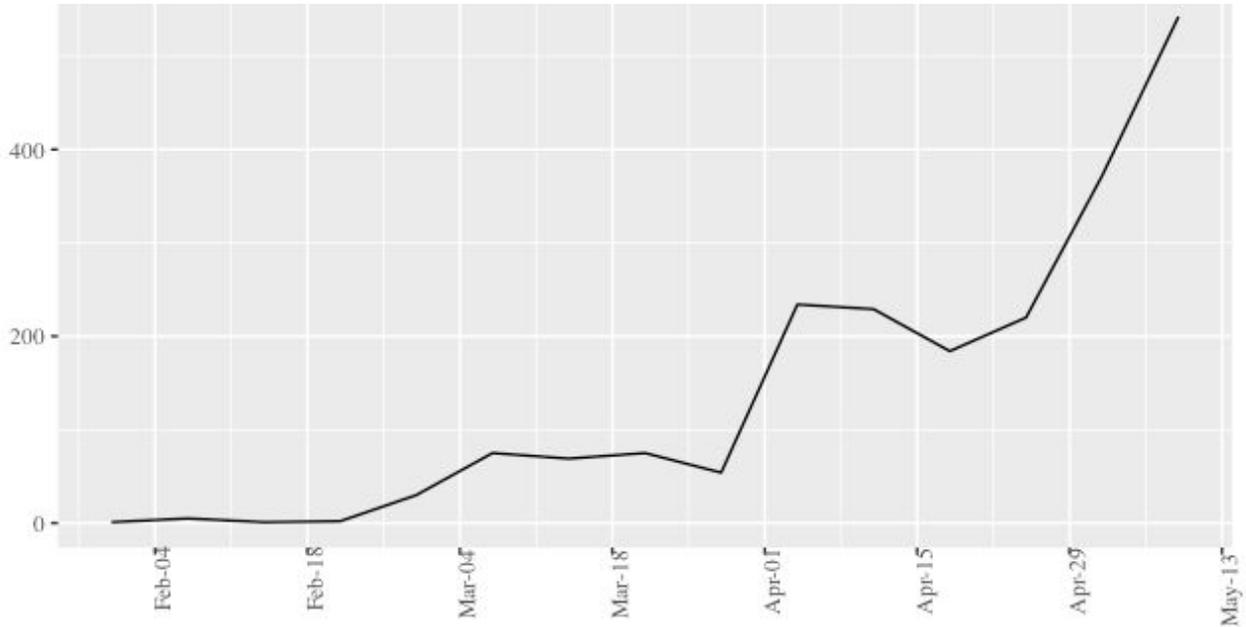
As we can see from the co-occurrence network in Fig. 25:

- "Tariff" and "trade" are the words that co-occurred the most in tweets by President Trump that mention China, and, have strong connections with other terms.
- "farmer" co-occurred frequently with "negotiation," "continue," "starving," and "deal" suggesting that President Trump is fighting for the farmers to reach a deal for their benefit. "Farmer" does not have a direct correlation with tariffs, which indicates that he is not expecting the tariff to impact the farmers and their sector directly.
- Joe Biden, whose name and surname form a separate component in the network, is a former vice president and visited China multiple times. Joe Biden is likely to be a competitor to President Trump for the presidential election in 2020. President Trump is using his trade policy toward China as a political stand against Biden. He has accused the Democrats of the long-term trade deficit and the ignorance of unfair trade practices with China. Since Trump has 61 million followers, and Joe Biden only has 3.59 million, the former could be using twitter and the trade war as a tool to influence the US electorate on twitter through his narratives on this major international policy issue.
- On the other side, President "Xi" co-occurs frequently with "relationship", and "great", we can hypothesize that, despite the ongoing trade war, Trump is sending optimistic messages that the US and China still have a good diplomatic relationship, through the relation between their Presidents.

3.2. Tweets from U.S media

In this section, we will analyze tweets from U.S. media about China and the Trade War and put them concerning those of Trump.

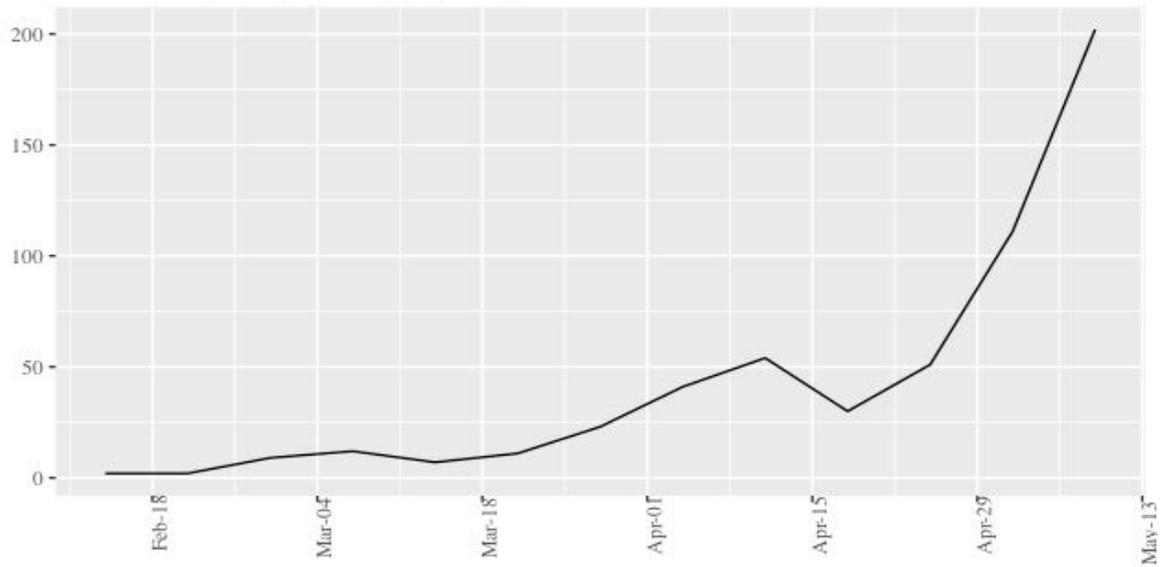
Fig. 26: Counts, by week, of tweets about China by US media from feb. 2019 to may 2019



Source: based on data from Twitter Timeline API endpoint, 2019

From Fig. 26 we see that the frequency of tweets about China by US media keeps increasing over time. Before April 01, there weren't rather few tweets by US media that mentioned China explicitly. The trade truce officially ended on March 01, 2019. After the trade truce and before the announcement of raising tariffs, the two countries claimed that they were working on a new trade deal, and the tariffs were "freezed". The turning point occurred when President Trump tweeted that he would further increase tariffs on Chinese goods; at that point, the frequency of US media mentions of China is rising dramatically.

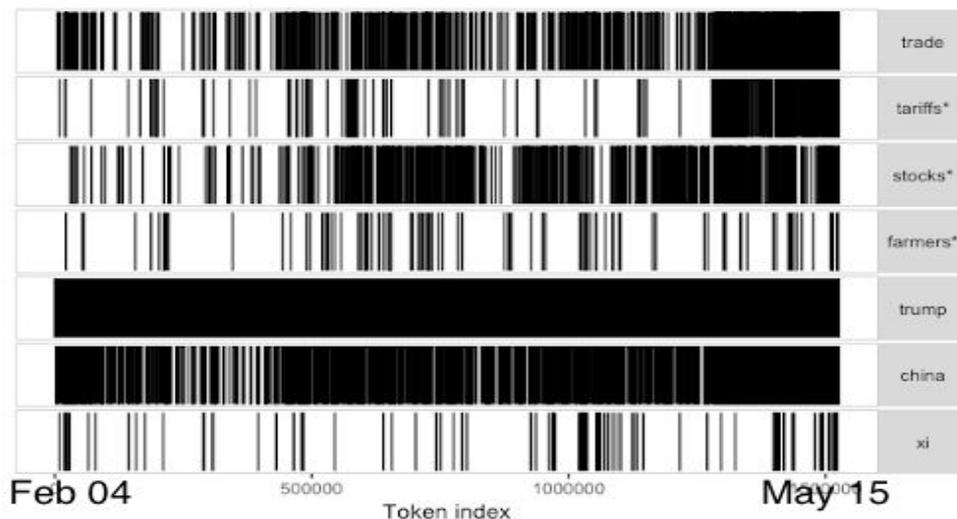
Fig. 27: Counts, by week, of tweets about trade AND China by US media from feb. 2019 to may 2019



Source: based on data from Twitter Timeline API endpoint, 2019

The pattern of the tweeting activity of US media about “China” and that about “China” AND “trade” (remember that tweets about “China” AND “trade” are a subset of those about “China”) are almost identical. They share most of the peaks and the exponentially increasing tendency, which indicates that one of the main drivers of the change in US media tweeting activity about China is trade. Due to the trade war, US media are also reporting more on China even from other, non-tradewar related perspectives.

Fig. 28: X-ray of selected features in tweets from US media



Source: based on data from Twitter Timeline API endpoint, 2019

As we can see from Fig. 28, the density of Trump mentions in US media tweets is rather constant across time, as we could expect the US president's name is one of the most frequently mentioned words in the US media discourse. The mentions of China are also preferably uniform across time, with decreasing mentioning holes (white areas in the X-ray) across time. As we can see, China and Trump are core topics for US news outlets. "Stocks" and "tariffs" also have very dense x-rays, whose mentioning densities are increasing across time. Similarly, the increase of mentions of the words "tariff/tariffs" by US media follows the tweeting pattern of President Trump about imposing tariffs closely.

The increase in tweets about the stock market tends appears to be a side effect of increasing trade tensions with China, after the new tariffs announcement, the Chinese stock market decreased by 5.4%, German and French stock markets decreased more than 1%. Both S&P 500 and the Dow Jones Industrial Average slumped more than 2%, and the technology-heavy Nasdaq drops over 3% on May 7, 2019, which was the day after China government's official announcement that it would impose retaliatory tariffs on US goods. This strong reaction of stock markets drove the US media to report more on the stock market in relation to US-China negotiations. While the US stock market indexes were falling, Trump sent many tweets about China, stating that the Chinese were pulling back the negotiation because China was hoping the Democrats to win the coming election and that the Democrats would be weak in the bargaining with China. Besides political problems, he also states that tariffs were having positive effects on the economy as the following tweet in Fig. 29 shows.

Fig. 29: Tweet from President Trump



Source: Twitter, 2019

Trump cleverly selects an optimistic tweet about the US economy, written by the Former Chief Economist at USITC, to give a signal of US' economic strength to the global media, to his electorate and China, the trade war counterparty, whose economic growth is compared to that of the US in the tweet. Very likely, the dramatic increase of US media reports about the trade war with China and about financial markets is the consequence of the negotiating strategy of Trump. After all, President Trump chooses when to impose new tariffs and how to communicate this decision to the public, and, the market reaction is immediate and unambiguously negative. We should probably speak about reciprocal causation between the policy implementation and communication strategy, the media discourse and market reactions. Because of the president's policy and the coming 2020 election, President Trump is both concerned with this market reaction, and, with the opinions of his financial supporters and voters. Especially the agricultural sector which suffered Chinese sanctions since the trade war began. As the number of tweets about stocks increases, President Trump never mentions this topic directly, or, relates it with the trade war, probably because he knows that this could highlight the risks and vulnerabilities of his "#Timetogettough" negotiating strategy. Trump has willingly avoided diffusing information about stock market reactions because he knows the reputation damage that these negative market outcomes could cause him, especially if the situation doesn't improve before the 2020 election campaign.

Fig. 30: X-ray of selected features in tweets from US media about China

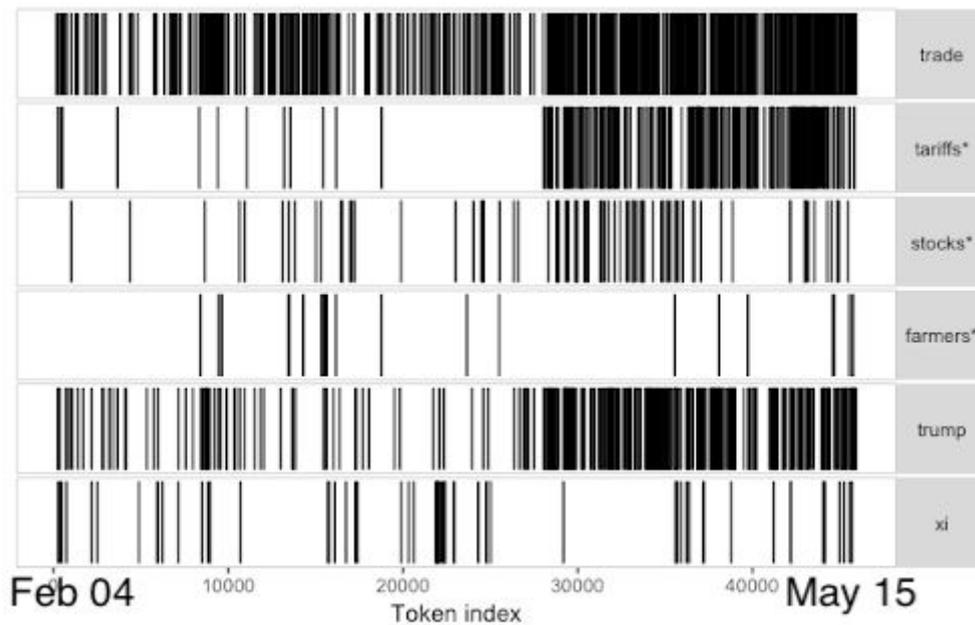
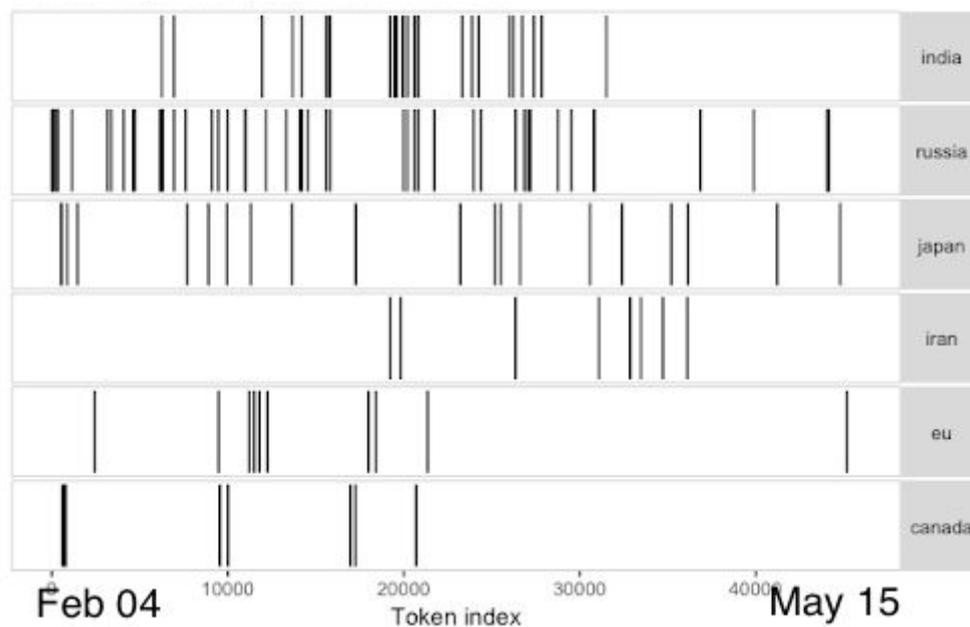


Fig. 31: X-ray of country names in tweets from US media about China



Source of figures 30 and 31: based on data from Twitter Timeline API endpoint, 2019

After filtering the US media dataset to keep only the tweets with the term "China, in Fig. 30 we apply the X-ray method to the same words that we were interested before, this to be able to highlight possible differences between the US media discourse in general and that about China. As we can see, the word densities of "Trump," "trade," "tariffs"

relevant issues concerning China are related to business and economics. Besides the tweets related to the stock market, US media also mention companies which are impacted by the trade tension, such as Huawei and Apple. CNN reported that *"Apple re-entered bear market territory amid Monday's market sell-off, which was sparked by worries over an escalating trade war between the United States and China. Its shares were down 5.81% on the day and are off roughly 20% from a high of over \$233 in October."* (Garcia, 2019) Whereas Huawei, who a worldwide leader in the 5G technology; is being banned in the US, and the US is using its political and economic influence to try to prevent his western allies from using Huawei products and technology. US media are also mentioning China in relation to "Boeing," as Fig. 33 shows:

Fig. 33: Tweet about Boeing By US media



CNN @CNN [Follow](#)

Boeing is the largest American exporter, and China is its most important export market. The China-US trade war is not good news for the already troubled company.



The trade war is coming at a terrible time for Boeing
Boeing is the largest American exporter, and China is its most important export market. The China-US trade war is not good news for the already troubled company.
cnn.com

10:01 PM - 13 May 2019

Source: Twitter, 2019

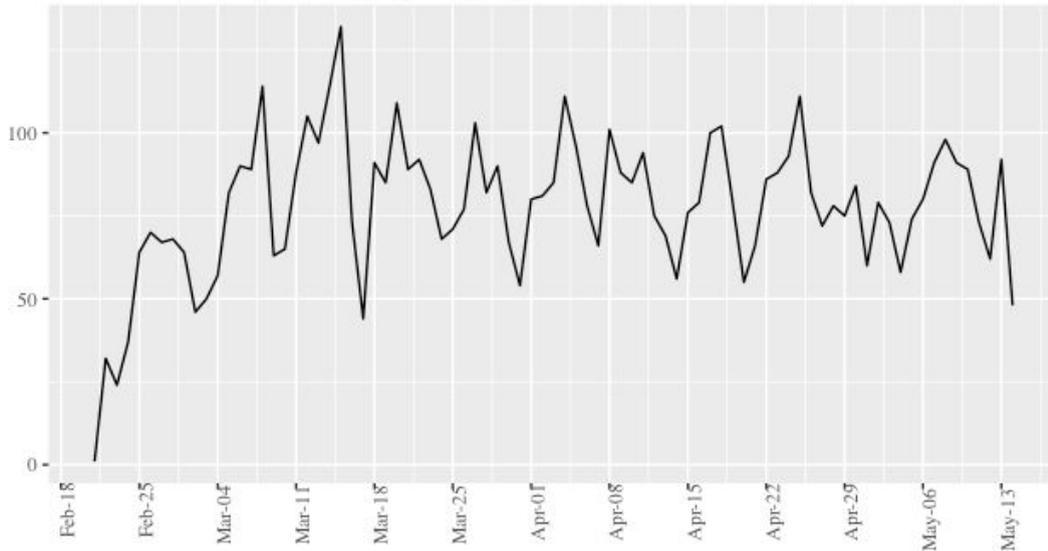
Boeing started having more difficult times after one of his airplanes crashed in Ethiopia, killing 157 people. According to US media, the trade war would make the situation even worse for Boeing. Despite the association between China and Boeing is rather frequent in US media, Trump never mentions Boeing in relation to China. However, without even tweeting about this issue, President Trump threatened to impose customs duties on EU, claiming a wrong behavior by the EU, which subsidizes Boeing's competitor Airbus. (Leparmentier, 2019)

"Technology" and "tech" are among the most relevant terms showing up in the word cloud of US media discourse about China, since the US stopped providing specific technology components to Chinese companies, and, because of the growing rivalry in high-tech sectors between US and China. For China, technology has become a central issue during the trade war.

Finally, different from the word cloud of President Trump, the word "farmer" was not frequently mentioned by US media. Another critical difference is that US media are talking about the relations with China as a "world" scale and "global" issue, which shows that US media are concerned and aware of the global implications of a trade war with China.

1.3. Tweets from Chinese media

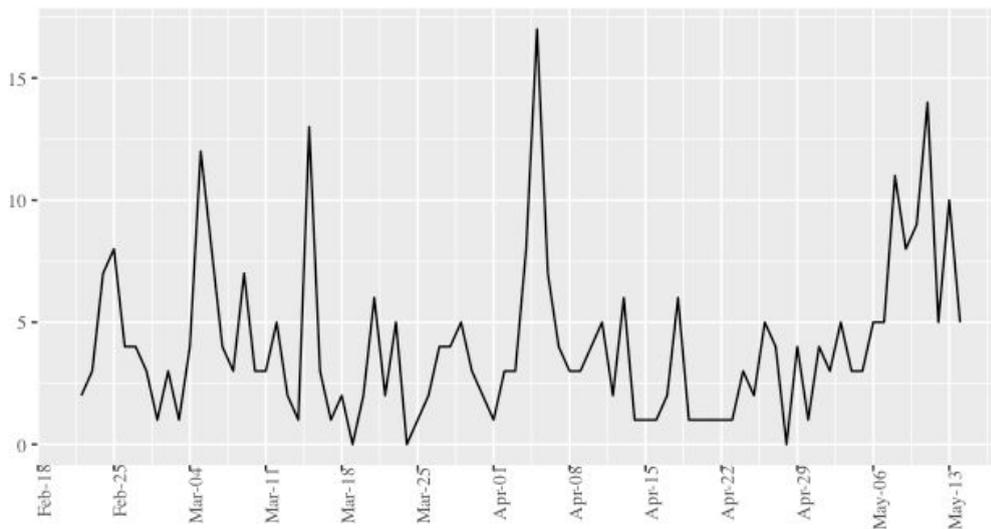
Figure 37: Counts, by day, of tweets about US by China media from feb. 2019 to may 2019



Source: based on data from Twitter Timeline API endpoint, 2019

The frequency of tweets about the US from Chinese media, seems to exhibit different patterns with respect to US Media. Overall the number of daily tweets about the US did change after the announcement of additional tariffs by Trump. Indeed, the tendency of tweets follows the day of the week cycles, Chinese media tweet less about the US during the weekend, and more on business days.

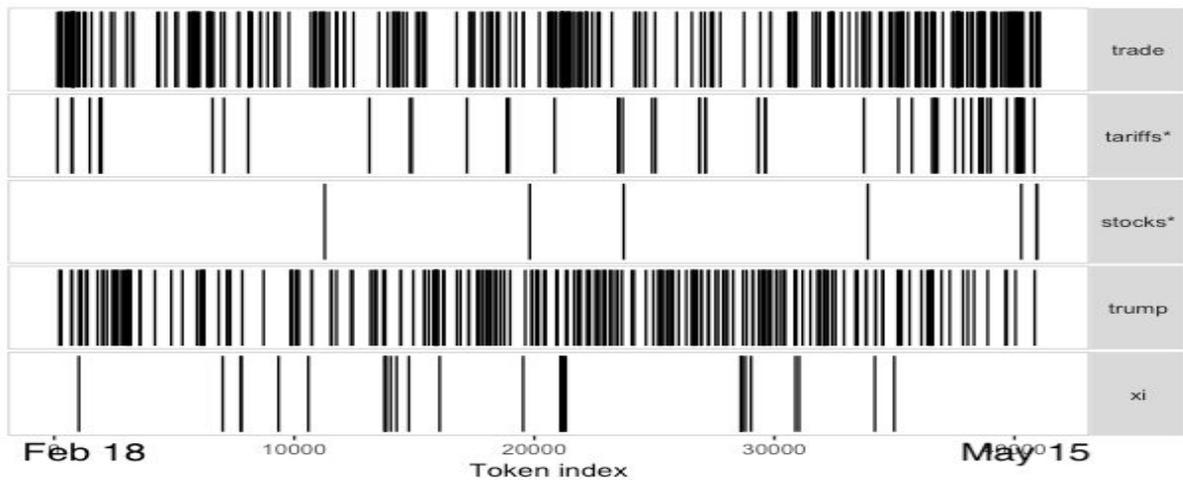
Figure 38: Counts, by day, of tweets about US and trade by China media from feb. 2019 to may 2019



Source: based on data from Twitter Timeline API endpoint, 2019

Even though the frequency of tweets about the US by Chinese media has not been affected by the tariffs announcement, that about “US” AND “trade” has peaked in the period corresponding to Trump’s announcement.

**Fig. 39: X-ray of selected features in tweets from Chinese media about US
From feb. 2019 to may 2019**



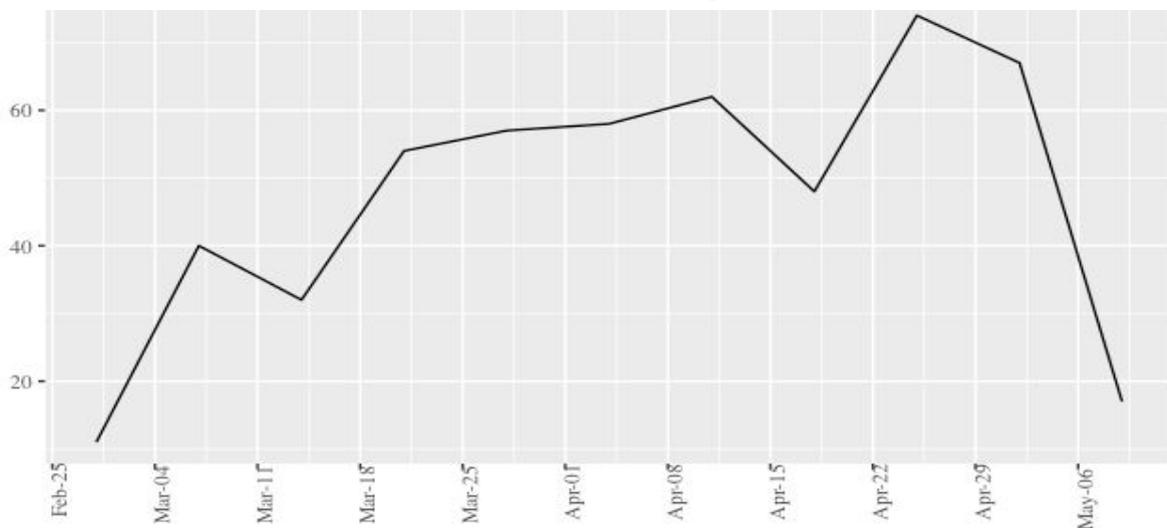
Source: based on data from Twitter Timeline API endpoint, 2019

After filtering Chinese media data, keeping only observations that explicitly mention the US, we can see that, in Fig.30, tariffs are increasingly mentioned across time together with trade. For Chinese media trade tariffs appear to be the main subject of trade disputes between the two countries. Unlike US media, Chinese media is not paying attention to stock markets. “Stocks” are rarely mentioned in the Chinese media discourse. As the trade dispute escalates, the density of “Trump” in Chinese media tweets about the US is not increasing. In the Chinese media, “Trump” is more intensively mentioned from Feb the 18th to May the 15th. Chinese media tweets who talk about Trump don’t mention the Chinese President Xi. From the frequencies and the x-ray, Chinese media are not as affected as US media their posting activity, by the trade war escalation and its events.

From the co-occurrence network (Fig.41), we can see signals of the trade conflict escalation during the negotiations. When Chinese media mention “trade”, the most frequently co-occurring words are “talks” and “negotiations”. Chinese media are reporting on the negotiations between the US and China. Chinese media are also reporting on the “wrong behaviors” and the disputable actions by the US administration, especially in terms of foreign policy. In addition, Chinese media are reporting on the barrier built between the US and Mexico, which is another policy brought up by President Trump, which is also related to his “America first” vision. The US media are reporting more on the stock market, and, on Chinese and US companies impacted by the trade war, which is considered as the actual effect. In contrast, Chinese media report more on the negotiations, the expected agreements, and, the political escalation of the trade war.

1.4. Tweets from British (international) Media

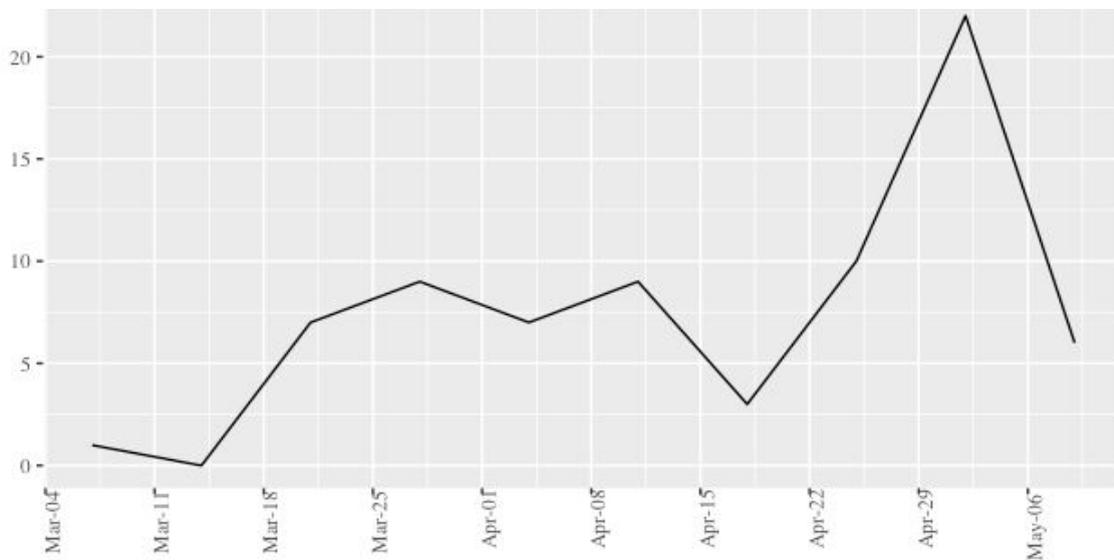
Figure 42: Counts, by week, of tweets about china by British media from mar. 2019 to may 2019



Source: based on data from Twitter Timeline API endpoint, 2019

The time series (Fig. 42) of counts of tweets from British media about China touches a maximum around April the 25th 2019, which is before the tweet from Trump about that the US imposing additional tariffs on China. After the tweets from Trump, there are little changes in the weekly count of tweets. The British press is talking more about China before the trade announcement of additional tariffs with respect to US media.

Figure 43: Counts, by week, of tweets about China and trade by British media from mar. 2019 to may 2019



Source: based on data from Twitter Timeline API endpoint, 2019

“China” and “China and trade” have similar fluctuations. However, those of “China and trade” are more pronounced. From the time series of British media, it seems that these international news outlets were trying to anticipate trade war outcomes before they actually occur. Here follows a tweet from the Economist, published on April 29 st 2019, that illustrates this type of tweets. British media often start to question and speculate on the negotiations before observing their official outcomes.

Figure 44: Tweet From The Economist

 **The Economist** Verified 
@TheEconomist [Follow](#) 

Negotiators are tight-lipped, but China-America trade deal seems near. What's left to be agreed? Our US economics editor @[SoumayaKeynes](#) Sheds Some Light, in "The Intelligence"



The Intelligence

 Listen to the podcast

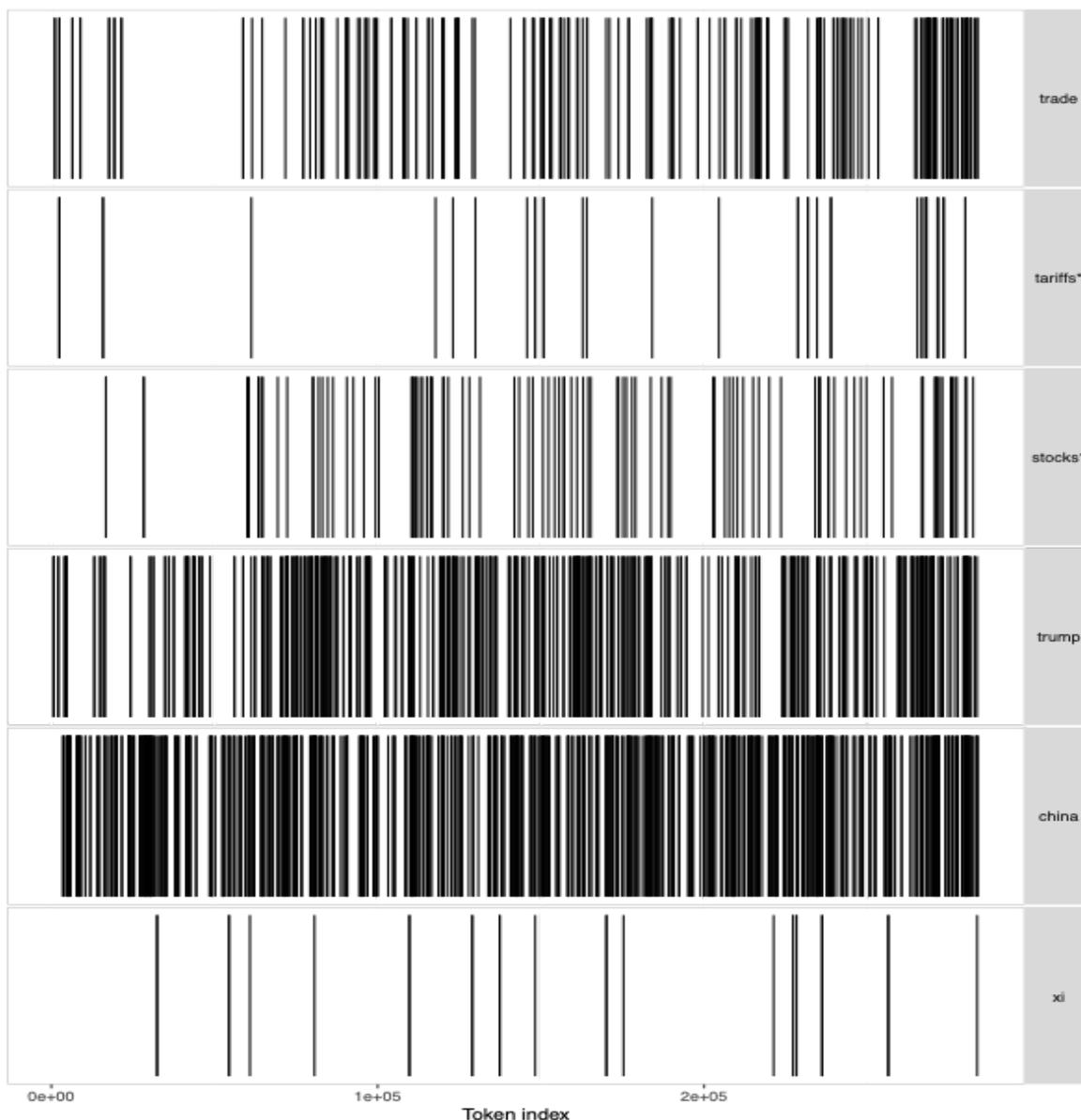


China-America trade talks, and more from our daily podcast
Also, America as energy superpower and Egypt's deadly holiday treat
economist.com

5:04 AM - 29 Apr 2019

Source: Twitter, 2019

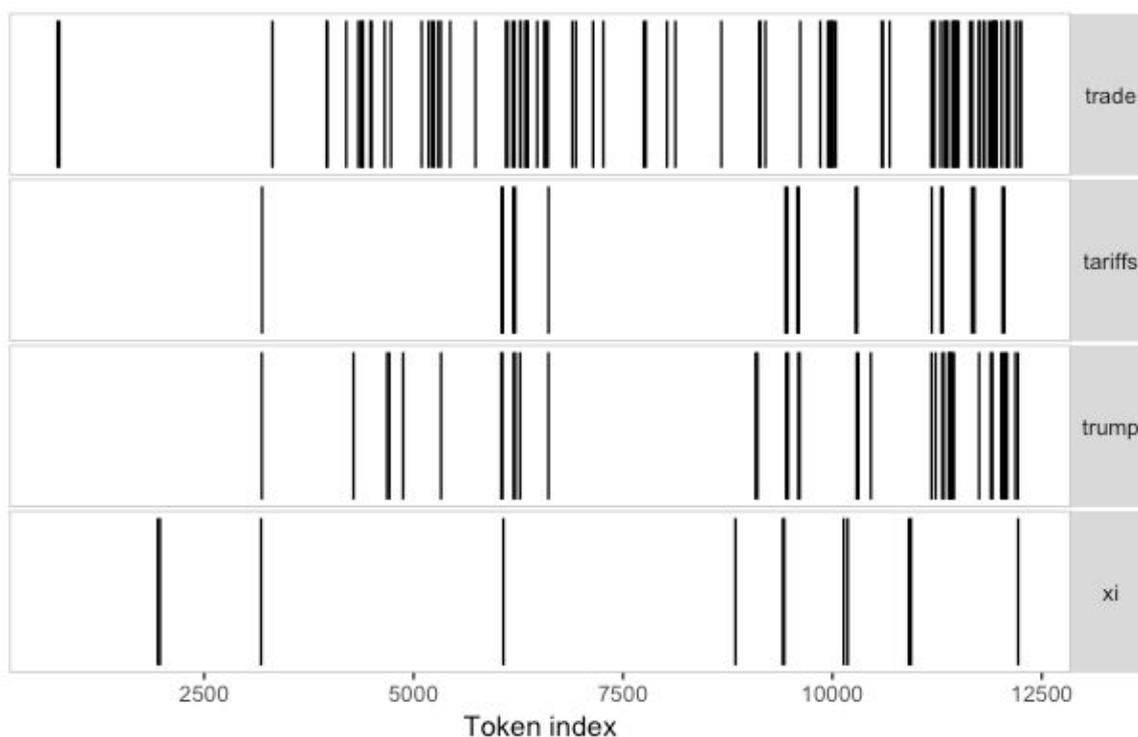
**Figure 45: X-ray of selected features in tweets from British media
from mar. 2019 to may 2019**



Source: based on data from Twitter Timeline API endpoint, 2019

In tweets from British media, China is intensively mentioned through the whole period of study. Moreover, the density of mentions of the word Trade is increasing across time. Stock is also mentioned relatively frequently and increasingly across time. Trump and China are frequently mentioned, also together, by British media, whereas tariffs are mentioned with trade at an increasing frequency.

Figure 46: X-ray of selected features in tweets about China from British media from mar. 2019 to may 2019



Source: based on data from Twitter Timeline API endpoint, 2019

After filtering British media data, keeping only observations that explicitly mention China, we re-apply the x-ray to the previous terms. We observe that "Stock" is never mentioned with China, so it didn't show up in the x-ray. The frequency of "trade" in tweets about China is similar to the previous. After the new tariff announcement, the density of trade in tweets by British media slightly increased. According to the x-ray, President Xi is often mentioned close to mentions of president Trump in tweets from British media about China, and both terms are increasingly frequent across time.

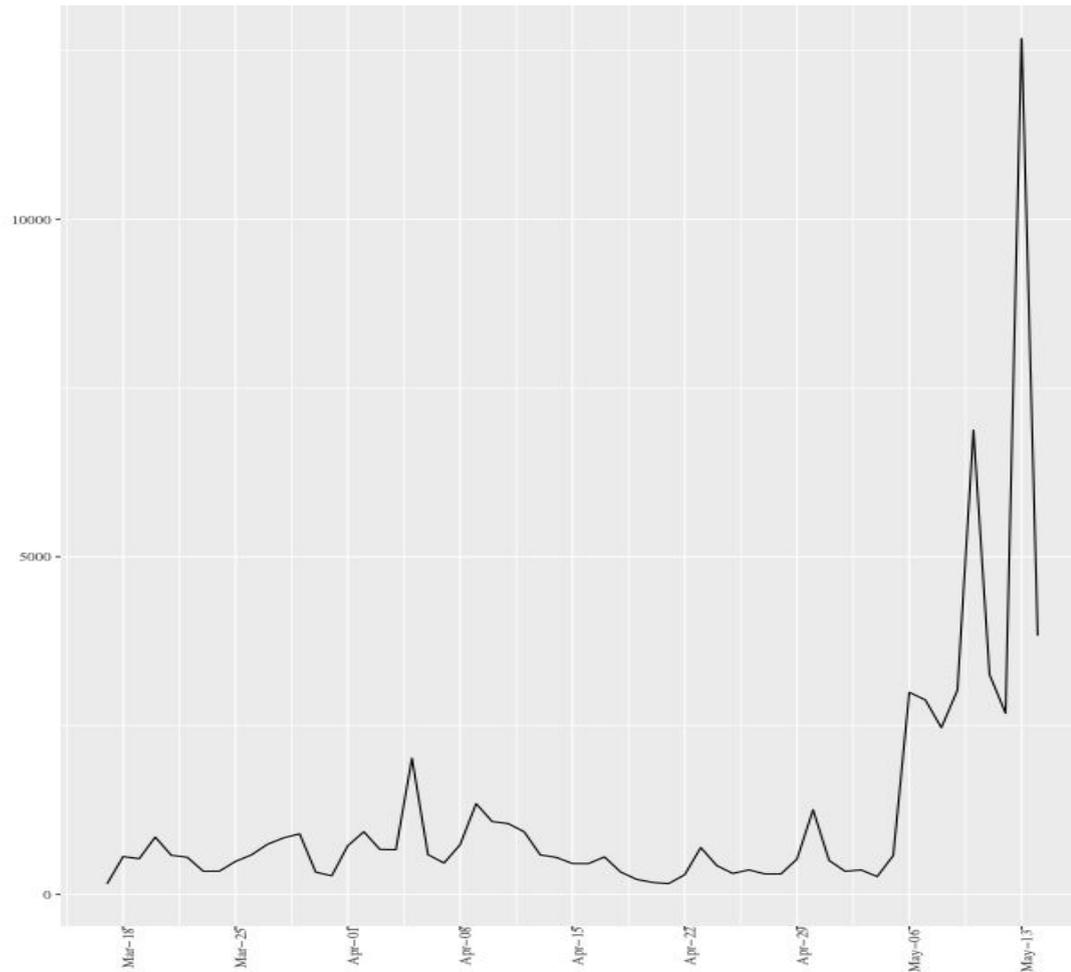
1.5. Tweets by query: (trade AND war) OR (trade AND tariff)

“The majority of citizens rely on intuitive risk judgments, typically called “risk perception. For those people experience with hazard tends to come from the news media, which rather thoroughly document mishaps and threats occurring throughout the world.”

(Slovic, 1987)

As we can see from Fig. 49, the daily count of tweets for our queries, concerning the trade war, is rapidly increasing after Trump imposed additional tariffs (May the 10th), this was for the worldwide public perception interpreted as a signal of an escalation of the trade war and the risks associated with a China-US relation centered rise of protectionism, for worldwide producers, consumers, and investors.

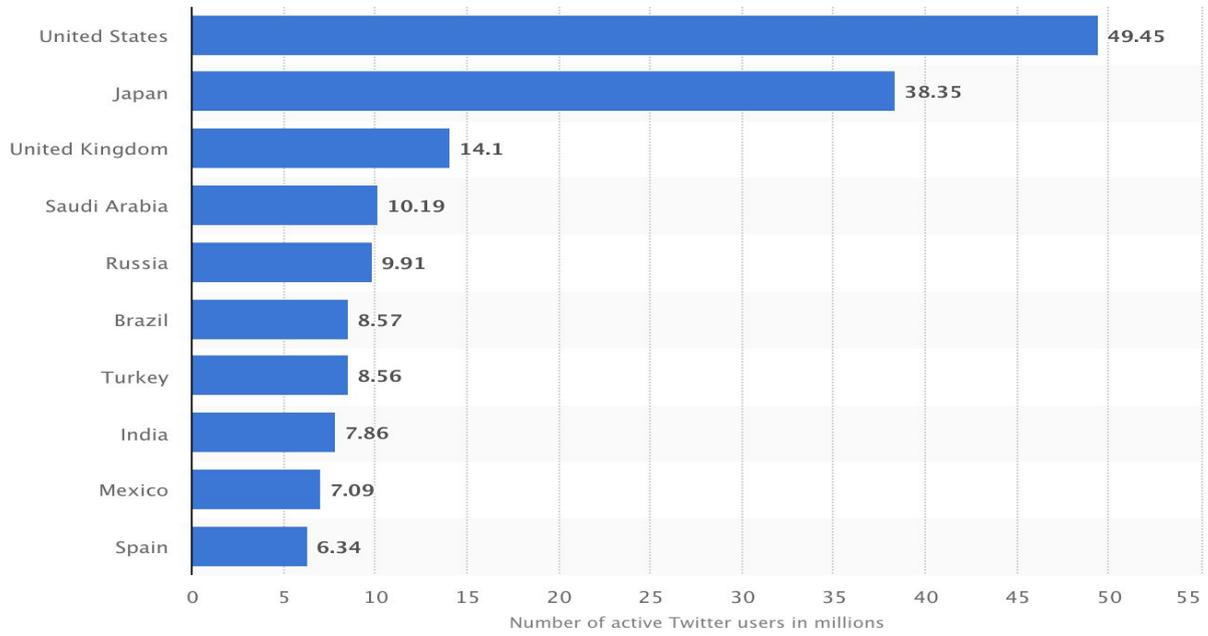
**Figure 49: Counts, by day, of tweets by query
from mar. 2019 to may 2019**



Source: based on data from Twitter Search API endpoint, 2019

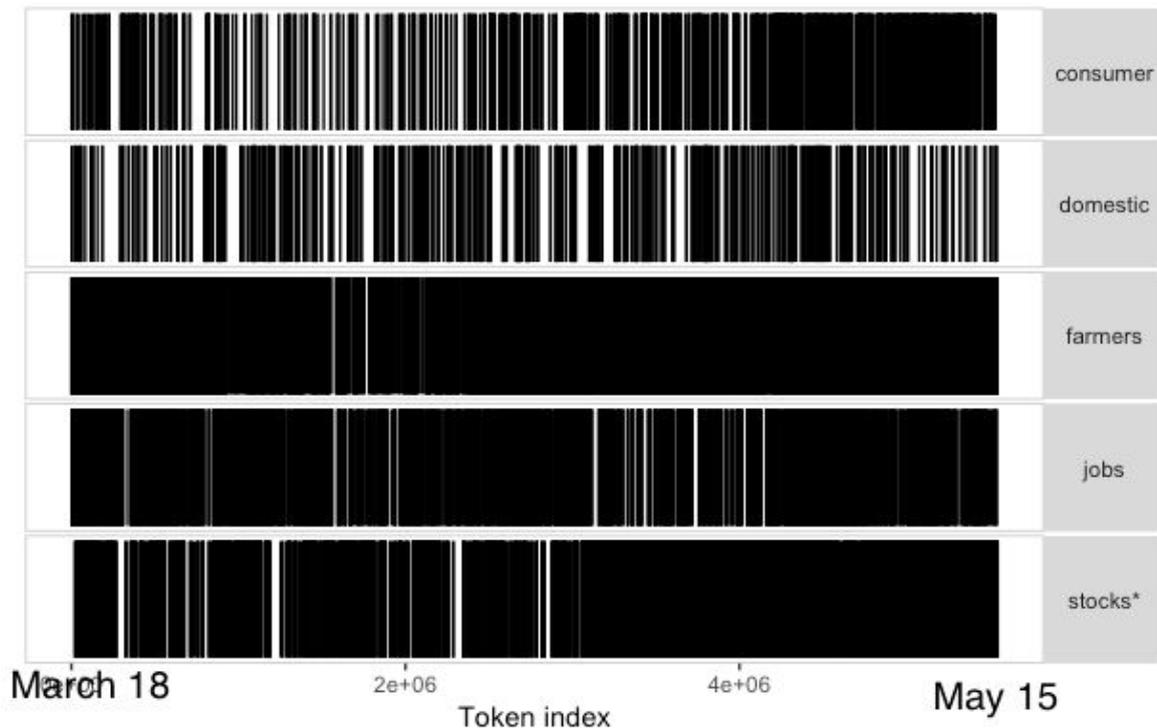
When comparing the fluctuations of the time series of the data downloaded by the query to that of specific groups of users, we observe that the patterns are similar to that of US media and of President Trump, and, is different from that of Chinese media and British media. The English-speaking Twittersphere discourse appears to be more similar, in terms of activity, to the US media rather than British media and Chinese media. The possible reason may be that most Twitter users are from the US, as Fig. 50 shows, as well as, that Twitter users rely on more, and retweet more frequently, US media for what concerns the trade war.

Figure 50: Leading countries based on number of Twitter users as of April 2019



Source: "Countries with most Twitter users 2019 | Statistics," 2019

Fig. 51: X-ray of selected features in tweets by query from mar. 2019 to may 2019

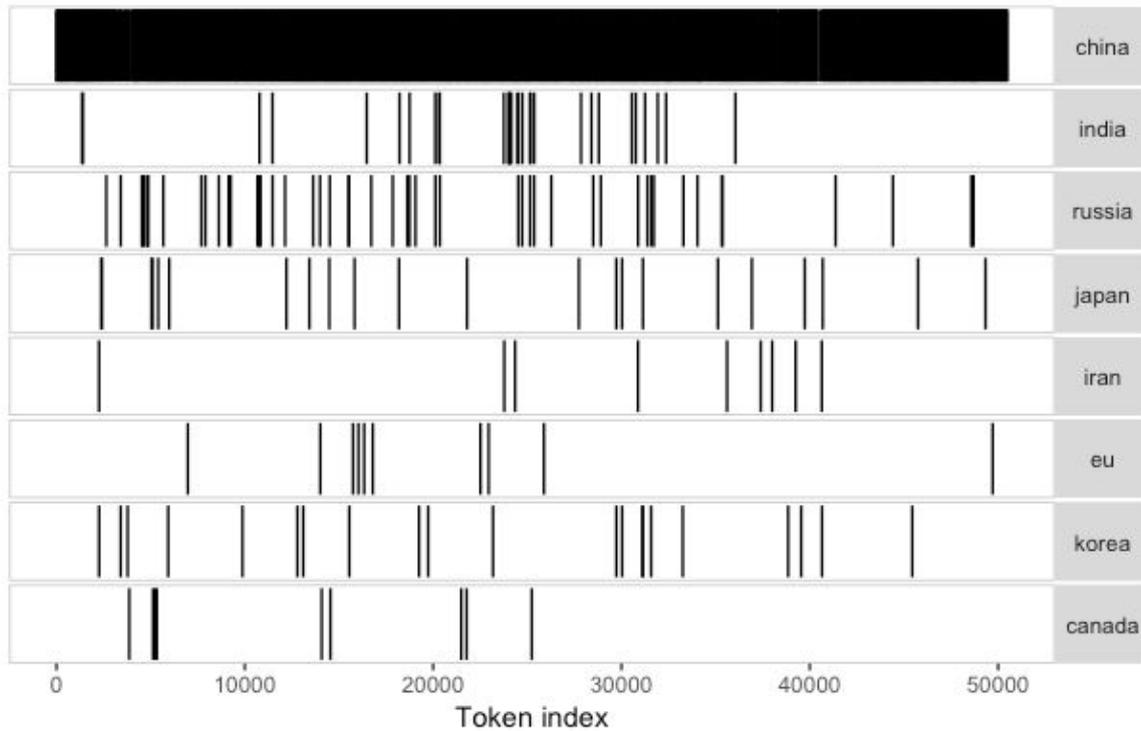


Source: based on data from Twitter Search API endpoint, 2019

As we can see from Fig. 51, the major concerns of the Twittersphere, in relation to the trade war and trade tariffs, are related to its effects on consumers, jobs, and stocks. These words, which represent the areas where the public expects the most harmful impacts of the trade war, are mentioned intensively across the whole period of investigation. Since Chinese products have a relatively low price, compared to US ones, when the tariffs imposed, the cost of Chinese products will increase, and US consumers will suffer from the change in prices. Farmers are also intensively mentioned, and due to the previous results, this pattern related to farmers was not present in media, who did not mention farmers so frequently and uniformly. However, President Trump did.

It would look like if the narrative of Trump, concerning farmers were able to spread and diffuse across the Twittersphere even though the “mainstream” media that we have analyzed didn’t support its diffusion. Jobs is also a primary concern when talking about the trade war. People are talking about how the tariffs or the trade war may influence the employment rate in both countries.

Fig. 52: X-ray of country names in tweets by query from mar. 2019 to may 2019

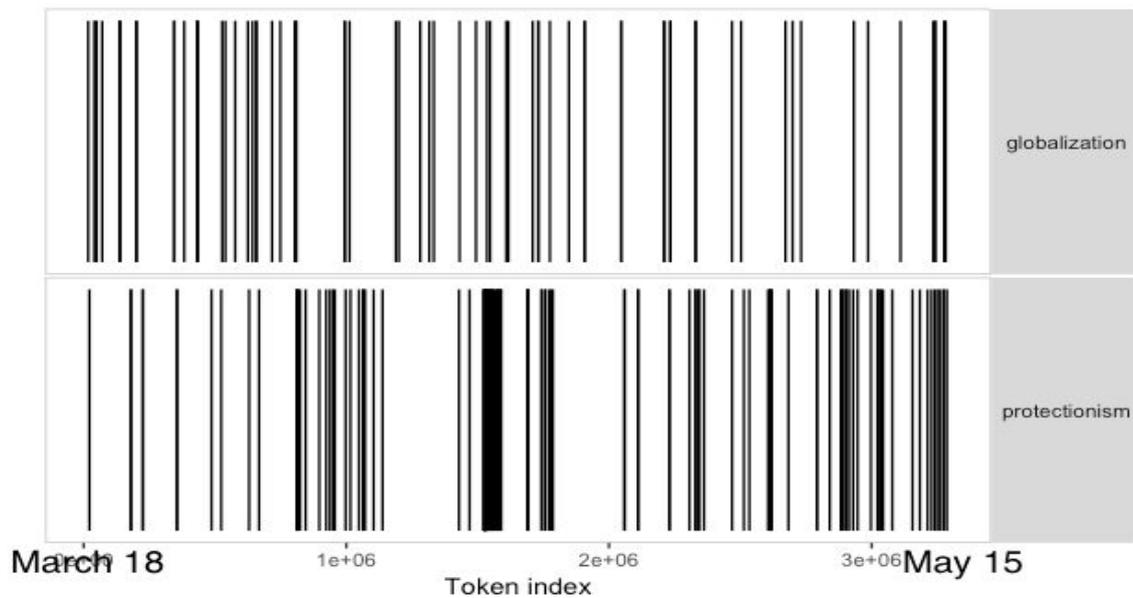


Source: based on data from Twitter Search API endpoint, 2019

In the x-ray of country names, we can clearly see that the Twittersphere is talking about trade war or trade tariffs in relation to China. Even though there are increasing trade tensions between the US and other countries, such as the EU, Canada. People often relate similar situations together when speaking about the trade war between the US and China, and they are also comparing the situation to other disputes. Korea and Russia are not in good diplomacy with the US, whereas China maintains a good relationship with both of them, and this fact is often related by Twitter users to the trade war. Even though Russia is not directly involved in the US-China trade war, people are still inserting Russia in the trade war narratives.

Iran was one of the main arguments for initiating the US legal and commercial dispute with Chinese hi-tech firms and is for this reason frequently associated with China, in relation to the violation of the US embargo.

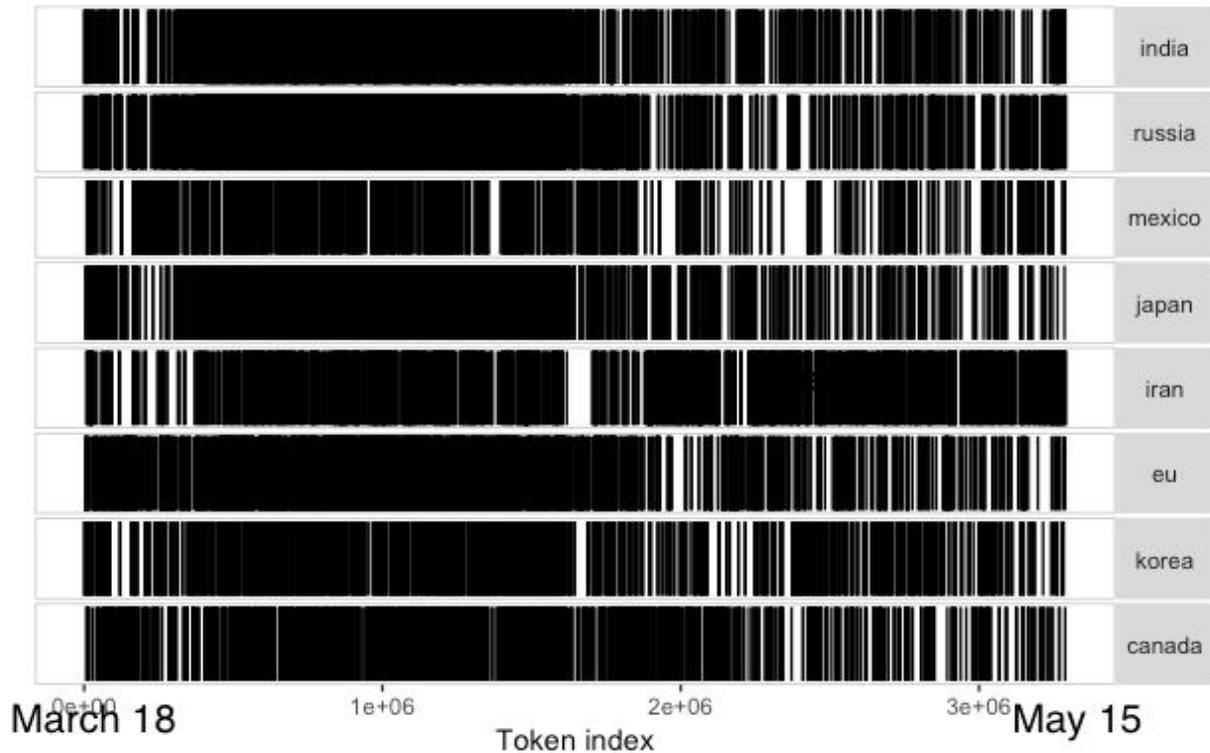
Fig. 53: X-ray of globalization and protectionism in tweets by query from mar. 2019 to may 2019



Source: based on data from Twitter Search API endpoint, 2019

When talking about trade, there were concerned that the tariffs would hurt the global economic system, generating further uncertainties linked to a worldwide resurgence of protectionist policies. In particular, the usage of bilateral tariffs to reduce the trade deficit has always been a protectionist lever. (Mayer & Phillips, 2019) We are interested in how people are addressing those concerns. In Fig. 53 we can see that people are talking about those concerns in relation to the trade, which shows that people are interested in discussing in more general terms the impact of protectionism and globalization as alternative economic and geopolitical world-views.

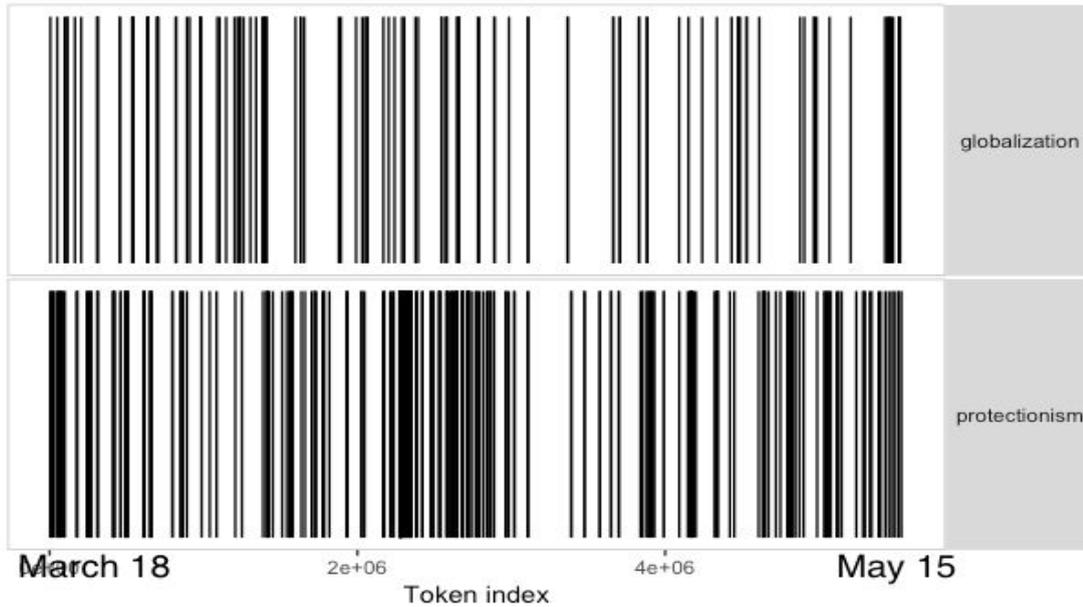
**Figure 54: X-ray of country names in tweets by query and about China
from mar. 2019 to may 2019**



Source: based on data from Twitter Search API endpoint, 2019

After filtering the data, keeping only tweets downloaded by query also containing the term “China,” there is a dramatic increase in the X-ray of the names of other countries. People discuss the trade war by associating China with other countries. However, the frequency of country names in tweets by the query about China slightly decreases across time. As the trade dispute between the US and China escalates, people are shifting their attention towards China alone, rather than to China and other countries together. The only exception is Iran, which is the reason causing the conflicts of the US with ZTE and HUAWEI. Iran is the country mentioned together with China the most often, and, almost uniformly across time.

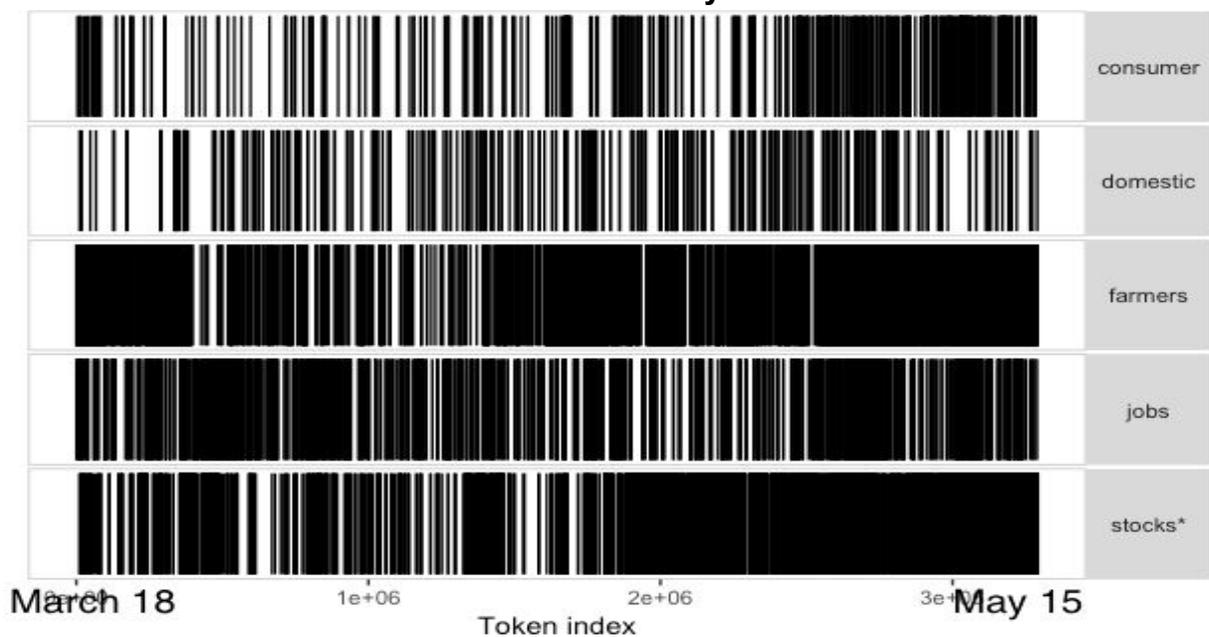
Figure 55: X-ray of globalization and protectionism in tweets by query and about China, from mar. 2019 to may 2019



Source: based on data from Twitter Search API endpoint, 2019

The X-ray of globalization and protectionism is different after filtering with the term China: both densities, of the globalization and protectionism, are increased. From this, we can conclude that people are addressing this general world-view choice concerning China.

Fig. 56: X-ray of selected features in tweets by query and about China from mar. 2019 to may 2019



People are talking a lot about “tech,” “Huawei,” “stocks,” “investors,” which are terms also highlighted in the US media narratives.

Until here, we could find the media and President Trump are following and influencing the issues that people are talking about or caring about in relation to the trade war. People are also referring to Brexit according to the word cloud, which also considered an issue that could hurt the economic globalization process. Observations are speaking about international affairs at a worldwide scale, and they mentioned many countries, as well as “global” and “world.” However, a particular term rather frequent in data downloaded by the query is “bitcoin,” which is not appearing in any media and in the tweets from Trump. Figure 52 shows a tweet that claims that the increase in the value of bitcoin is because of the ongoing trade war. Because of the trade war, there are increasing concerns with respect to national currencies, which drives people to the cryptocurrencies, like Bitcoin. Even though this issue is not reported on a high number of observations, the retweeting rate of matters relating the trade war to the bitcoin is rather high. (Rooney, 2019)

Figure 58: Tweet from observations by query



the information provided by the media and relevant political figures. (Nisbet et al., 2002)
From observations by query, the dilemma of farmers is also a significant issue, and it firmly associates the focus of the Twittersphere to Trump's vision.

In the word cloud, "Reuters," "CNN," co-occurred with "trade", which shows they are affecting the public perception about the trade war because people are using these media as a reference and their information as evidence when talking about the trade war.

There are several countries mentioned in data by the query about the trade war, such as Russia, Canada, Mexico, Korea, Japan, Iran. The connection of "escalating", "dow," "stock", and "trump" is showing people believing that the market reactions are due to the trade war escalation, and, to the role of Trump in this escalation.

The uncertainties the stock market is experiencing is driving investors to pay closer attention to the trade war. Because of this, investors have become one of the categories of Twitter users that more likely comment on news concerning the trade war, and this can also explain why observations that are mentioning stock market have high and increasing proportions. (Sjöberg, 2000)

The term "bitcoin", which frequently co-occurs with "china-us", "trading", "stock", and "dollar", shows people are searching for alternative safe-heavens to protect their investments from the trade war, and its side effects, which also coincides with the previous article by CNBC in figure 55. The term "win", which in the co-occurrence network is linked to "Chinese," and "Trump" reveals that the trade war is seen as an exacerbated competition for global economic and geopolitical leadership between, the US, under Trump's "America first" vision, and China.

Conclusions

As we have seen through this work, through the trade war with China, President Trump tried to impose his “America first” policy and narratives, whose origins can be traced back to 2011. Since he became President of the United States, he used his influence on social media to move US voters perceptions and opinions on this issue towards his viewpoint, probably, to have their support during the next elections. He tried to convince the public that the “#Timetogettough” had come, criticizing the negotiating weakness of the Obama administration and the democratic party. He strategically conveyed through Twitter only optimistic information concerning the present and future economic situation of the United States, to make the collateral effects of the trade war, that many US consumers and producers will have to bear, go unnoticed. He claimed that protectionism would allow the US economy to accelerate and that US corporates and investors would finally benefit from a more aggressive negotiating strategy with China.

On the other side, the media also played a significant role in influencing how people who express themselves online think about the trade war. The stock market played the part of the pivot for its function of signaling the changes in investors’ expectations of profits during the trade war, and, for his saliency in the narratives of US media. Among all the selected media groups, British media, being the neutral party, appears to present the more accurate and forward-looking vision concerning where the trade war between China and the US could be heading. Whereas, US media and Chinese media appear to be less forward-looking.

Both Trump’s administration and the Chinese government are targeting the most vulnerable economic sectors of their counterpart, as the trade dispute escalates new sectors will be likely involved, and investors are already discounting these risks. Interestingly, US media are not attacking the Chinese and their media, but, they are focusing on the economic effects caused by the trade war. In contrast, the Chinese media are reporting on the controversial behaviors of the US administration, to delegitimize the foreign policies of Trump, without damaging too much the relations with the US, position which coincides with the strategy of the Chinese government.

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