



Faculty of Humanities and Social Sciences
Degree on International Relations

Final Degree Project

US-China: The eternal contest for leadership

An analysis of their relations under the
technological war

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Madrid, May, 2020

ABSTRACT

The relationship between China and the US is going through one of its worst historical moments, due to the trade war in which they are immersed. This paper will address specifically the technological contest between the two parties, which is taking a particularly important position in the commercial war, to assess whether technological leadership is the key determining for the world's hegemony. The beginning of this project investigation will start by analyzing the Chinese-American relations in recent years, along with the evolution of the commercial war. A detailed analysis will be carried out of the technological war, with the companies Google and Huawei as major players and, where the current geopolitical situation and social aspects such as cybersecurity and markets become especially important.

Key words: war, technological, leadership, China, US

RESUMEN

La relación entre China y Estados Unidos está atravesando uno de sus peores momentos históricos, debido a la guerra comercial en la que están inmersos. Este estudio abordará específicamente la competencia tecnológica entre las dos partes, que está tomando una posición particularmente importante en la guerra comercial, para evaluar si el liderazgo tecnológico es la clave principal para determinar la hegemonía mundial. El comienzo de la investigación de este proyecto comenzará analizando las relaciones chino-estadounidenses en los últimos años, junto con la evolución de la guerra comercial. Se realizará un análisis detallado de la guerra tecnológica, con las empresas Google y Huawei como actores principales y, donde la situación geopolítica actual y los aspectos sociales como la ciberseguridad y los mercados cobran especial importancia.

Palabras clave: guerra, tecnológico, liderazgo, China, Estados Unidos

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1. INTRODUCTION

1.1. Purpose and motivation

There are several reasons to carry out research on the Sino-American trade war. To start with, the importance of both players in the international scenario and their impact.

After WWII the United States became the world hegemon, they were better positioned in terms of manufacturing, trading, military development and food supply than the rest of the world. Therefore, during that era, the world system was based on economic interdependence between countries, although this international order was under the control of the US.

China is an international player which is gaining high importance and arousing special interest because of its culture, its society and its governmental organization. It is fascinating how a country reached incredible growth levels, As Hu Xijin, editor in chief of the Global Times stated, "*China has too many secrets, and secrets become bombs at the end*" (Sonmez, 2016). In spite of its many problems, China has transformed itself as an inward power to an outward power; and has shown both flexibility and continued pursuit of wealth and power. It has been capable of attracting international companies due to the cheap materials or the low labor costs, converting a great number of the products in a "made in China" product.

Apart from being one of the biggest trading partners of the US, China is also the largest creditor, in 2018, China held U.S Treasury securities that accounted for 7.1% US total debt. Therefore, this show how China is capable of influencing the United States more than they would want to.

The US and China are the two main world economies, the sum of their GDP's represent a 45% of the global economy. Therefore, the two powers have an enormous impact globally. While the world is trying to focus on continuous growth, the two major economies are immersed in a trade dispute and this makes the task more difficult because of the interdependence (Liu, 2018).

Secondly, not only its relevance derives from economic impact, but also because it is considered a security issue. The trade war becomes a security problem when referred to technology, since there are violations of intellectual property rights by China, and also problems related to privacy, encryption authentication or integrity protection. And the worst part of this, is that it is not a problem that has easy solution, as Bruce Schneier, expert in technology security, asserts:

“keeping untrusted companies like Huawei out of Western infrastructure is not enough to secure 5G. Neither is banning Chinese microchips, software or programmers. [...] Chinese, Iranians, North Koreans, and Russians have been breaking into U.S. networks for years without having any control over the hardware, the software, or the companies that produce the devices” (Schneier, 2020).

Third, the impact in our daily lives, not only because of the slowdown of the global growth due to a reduction of sales in the American industries; but also because the war trade could impact as well in the prices. The war could generate a globalized inflation and an increase of prices of the products and services that we buy daily. Moreover, this provokes a widespread deterioration of confidence, a reduction of the world's GDP and a tightening of the global financial conditions. Therefore, this situation could end up being a battle that nobody wins, everyone loses.

1.2. Objectives and hypothesis

The aim of this paper is to analyze the relationship between the United States and China in the trade war context, specifically in the technological realm of the dispute. The study purpose is to determine whether the technological hegemony is key when defining the world's leadership.

The commercial war between China and the United States has particularly shaken the technology market, with two companies as the main protagonists: Google and Huawei. Therefore, one of the objectives will be study how these companies work, how are they connected and the main issues regarding the blockade of one of these countries.

Additionally, one of the objectives of the study is to magnify the security issues that are directly connected to the technological war between both powers. Due to the technology development, cyber security becomes a global issue that has a special relevance.

Moreover, it is interesting as well to study the possible effects related to other countries and global trade due to the globalization.

The main hypothesis of the paper is that both powers are immersed in a trade war, in which they are fighting to lead the technologic sector. The US wants to maintain its technological superiority in order to maintain its superpower status; and China aims to achieve this technological leadership to unseat the US and become the first global power.

1.3. Methodology

The research approach to be followed will be an inductive analysis through a case study. The trade war between the US and China with a special focus on the technological scope. The methodology used will be based on biographical review and database analysis, focusing on the qualitative approach of the case.

The commercial war between China and the United States, and more specifically, the tech war that arose from it, will be analyzed from a realistic perspective, considering that states make selfish decisions through which they fulfill their own objectives. Always focusing on their own security and survival, considering all other actors as a threat.

The paper is divided into five main parts: the introduction, the theoretical framework, the state of affairs, the analysis and the conclusions. After a brief introduction, a theoretical review of the main contributions to the issue will be carried out, based on the International Relations theory of realism, the commercial war, and the role of technology. Afterwards, the state of affairs will be addressed, introducing the general situation and background of the issue to be studied. Thereafter, the analysis will focus on the factors that define the world's leader and whether technology is one of the key aspects, which could explain the eternal contest for leadership in technology between the two superpowers. Finally, the results of the study and conclusions will be exposed.

2. THEORETICAL FRAMEWORK

2.1. Realism theory

The approach used in order to explain the trade war between the two states, China and the US, will be based on the realism theory, which explains how both parties are trying to reach their own good above the other. These results in a constant distrust and security search of the two superpowers.

Realism is a theory that has dominated the study of the International Relations. Realists believe that countries pursue their own interests, seeking to increase their economic and military power and their international influence. Realism transform the international relations a dimension driven by interest and power. Realists give primary emphasis to egoistic passions and the tragic presence of evil in all political action which irretrievably leads to conflict (Donnelly, 2004).

According to this theory, the state is the principal actor and each state is responsible for its own welfare and survival. Thus, power becomes the central element of interest for each state. We can refer to the power in this case as economic preponderance, military capacity, international perception among others and capacity for political mobilization. For this reason, it is the responsibility of each state to obtain as much power as possible, even if it is necessary to do so at the expense of others states (Subgerencia Cultural del Banco de la República, 2015).

There are different approaches that derive from realism. On one hand, the Classic Realism, which define the nature of human as evil an cruel. For them, man lives in a hierarchy state where the "law of the strongest" prevails (Donnelly, 2004). The philosopher Thomas Hobbes developed the Hobbesian realism which affirms there is a lack of objective moral distinctions which implies that human actions take place outside any moral consideration. Human beings therefore, live in a

state of nature that Hobbes characterizes as a state of "*permanent war of all against all*," a state in which the "*man is a wolf to man*." (Korab-Karpowicz, 2018)

On the other hand, neorealism or structural realism sustains that it is not the nature of man, but the Westphalian system of states that has an anarchic nature. The theory receives this name as it focuses its attention on analyzing the effects of the structure of the international system on the overall results of international politics. For Waltz, two fundamental elements in the conception of structure stand out: anarchy, and the distribution of capacities (Donnelly, 2004).

States are rational organisms, however, there are some elements that can disturb this rationality and make states misunderstand the processes of International Relations, such as the false perception that the security of some is the insecurity of others, and the conception of security as something limited. This is how the "Security Dilemma" approach arises. In it, the realists analyze in the first place, the logic of the behavior of states before certain situations, and in turn, the importance and the necessity to establish laws and institutional organisms, although in reality, they do not serve for anything. Inevitably, military improvements, arms acquisitions or military exercises cause uncertainty and insecurity in other states. It does not matter if the improvements are offensive or defensive, an increase in the security of one state will cause insecurity of the rest. As a consequence, the rest will also increase their safety, creating a spiral known as the security dilemma (Wivel, 2017).

The maintenance of the national interest is the only law at the international level. In this maintenance, they are not guided by moral behaviors, because if they had moral behaviors the national interest and even survival would be affected. States, in their search for self-interest, carry out different, more or less lasting, results that cause the search for an international balance and in the creation of alliances that nourish this balance.

Therefore, realism assume that states are rational actors and try to find a balance in order to achieve economic prosperity and physical integrity, with the sole objective of favoring their own interests. States, in their search for self-interest, carry out different, more or less lasting, results that result in the search for an international balance and in the creation of alliances that nourish this balance (Tucker, 1952).

Attempts to maximize power ultimately lead to a balance of power between actors and stability in the international system. Violence can be mitigated if the means to maintain the status quo are put in place. However, the international balance can be altered by the so-called "*bandwagoning*". In the game of International Relations, any small apparent change of one player or another can cause small states to join the great powers, those that are noted in a stronger way, the so-called winning states. The more changes are made in a bandwagoning way, the lower the international balance (Donnelly, 2004).

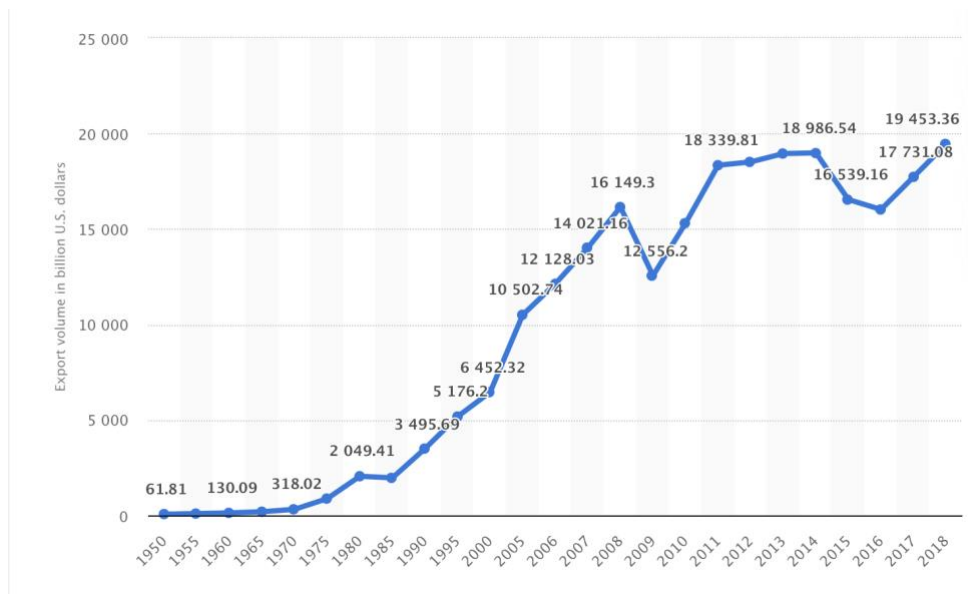
2.2. Trade War

Trade is "*a basic economic concept involving the buying and selling of goods and services, with compensation paid by a buyer to a seller, or the exchange of goods or services between parties*" (Hayes, 2019). International trade refers to transactions of goods and services between countries, which derives in higher competition and reduction of prices and also permits all countries to be able to have goods that are not available in their own nations. For instance, this allows that when you decide to buy a car, you can choose between a German, an American or a Japanese car (Hayes, 2019).

The international trade enables countries to use their resources more efficiently and promotes the opportunity of Foreign Direct Investment (FDI), which refers to the money that individuals invest into foreign assets and companies. However, this can also produce trade deficit, where countries spend more money buying

goods from other countries than what they are actually able to sell to foreign markets. Nonetheless, global trade has exponentially grown throughout history as shown in the following graph.

Exhibit 1. **Trends in global export volume of trade in goods from 1950 to 2018**
(in billions U.S. dollars)



Source: (Statista, 2020)

A trade war consists in a form of retaliation carried out by a country based on the imposition of tariffs, trade barriers, or other sort of restrictions to imports from other country or countries. A trade war can have many repercussions not only in the economics including businesses and consumers, but also in social and cultural issues in the long run. Trade wars normally are product of protectionism, when governments become aware that they need to protect their countries, products and businesses, or it is also used in order to balance trade deficit (Chen, 2019).

There have been many trade wars across history, it is not the first time that the United States decides to impose tariffs to other countries. For instance, in 1930, just a year after the US stock market sank in 1929, dragging half the world into the biggest economic crisis of the twentieth century, the US government passed

the Smoot-Hawley Act, which imposed the largest increase in tariffs in the last centuries. In total, between 1930 and 1934, were the tariffs were eliminated, the volume of world trade fell by 66%. Although the main responsible for the collapse of the system was the economic crisis, the surge of protectionism aggravated the situation.

Nevertheless, the US has not been the only country immersed in a commercial war. For instance, the Opium Wars between the United Kingdom and China that took place between 1839 and 1860 (year in which the second Opium War ended). As is happening now with the United States, during the eighteenth centuries, the trade balance between the two empires was clearly tilted in favor of China. China sold tea, silk and porcelain to Europe larger quantities, greater than the European goods they bought. To compensate for this imbalance, the British East India Company began to introduce opium smuggling in the country, until it managed to tip the trade deficit in its favor. Opium consumption grew exponentially until it became a serious public health problem. In 1839, faced with this situation, Emperor Daoguang ordered the fight against drug trafficking to be hardened, to confiscate all opium and block British merchant ships. In response, the European monarchy, with superior military power, deployed to the Royal Navy and subjected China, which was forced to cede Hong Kong and open several of its ports to British commerce (National Army Museum, 2020).

More recently, the US has also been immersed in other trade disputes such as the battle for leadership in aircraft production in 2005 with European Union, or the imposition of 15% tariff on imports of steel products by Bush in 2002 (Self Bank, 2018). In July 2019, they have also imposed Anti-Dumping measures on hot-rolled flat-rolled carbon-quality steel coming from Russia, an action that has received many complaints from the Russian Federation (World Trade Organization, 2019).

One of the principal consequences of a trade war is the reduction of international trade. In the short term, a trade war could help to create jobs in a country, since

the products that have been manufactured there, would have a competitive advantage and would be cheaper than those of other countries, and therefore this could help the businesses of the former country to increase their revenues, grow, and thus, create a high number of jobs. Nonetheless, in the long run, there are also negative effects such as the increase of the inflation, or the reduction of exports to other countries and the lack of prospect to expand a business outside your own barriers (Amadeo, The Balance, 2019).

2.3. Role of technology

As Laura Denardis states: *“Technologies of Internet governance increasingly mediate civil liberties such as freedom of expression and individual privacy. They are entangled with the preservation of national security and the arbitration of digital commerce and innovation”* (DeNardis, 2014).

A superpower can be understood as a state that shapes the global history, and that plays a superior role on the world stage. Historically, a superpower was a state that possessed advanced military capabilities, a wealth economy and a great influence over other states. Nevertheless, with the digital era this definition needs to be expanded to the technologic realm. According to the World Economic Forum, this definition should include: *“four extraordinary technological superpowers that promise to wield as much influence over the next 20 years as a nation state: mobile technology, the cloud, artificial intelligence (AI) and the internet of things (IoT)”* (Gelsinger, 2018).

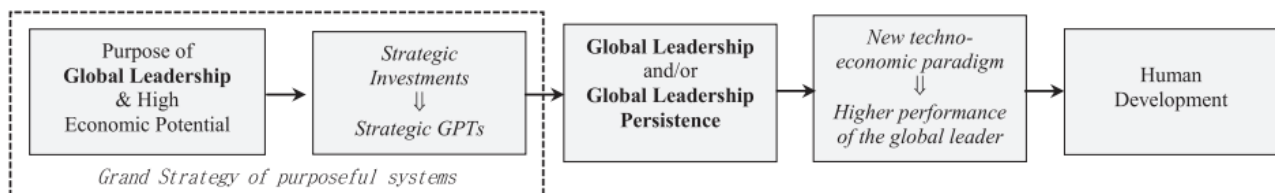
As these technologies move ahead at a staggering speed, they reshape the society in which we live in, from education to healthcare, economy or communication. Within the four fields included in technology there are transformative opportunities. Mobile technology enables people to be constantly connected all over the world. The cloud provides an enormous capacity of storage, enabling companies to add and remove instantaneously components to their

infrastructure (Gelsinger, 2018). AI permits us to extract immense amounts of data in real-time and shows “the ability of a system to correctly interpret external data, to learn from such data and use that knowledge to achieve specific tasks and goals through flexible adaptation” (Haenlein & Kaplan, 2019) and “the IoT connects the physical and digital worlds, bringing technology into every dimension of human progress” (Gelsinger, 2018).

There is a study carried out by Mario Coccia, member of the National Research Council of Italy, which shows that:

“The sources of strategic General–Purpose Technologies (GPTs) are, de facto, associated to the goal of global leadership of a purposeful system in the presence of effective and/or potential environmental threats. In particular, a purposeful system (e.g. a complex society), with high economic potential and purposeful institutions having the purpose of achieving/sustaining a global leadership, tends to engender GPTs that are spread in the long run” (Coccia, 2015).

Exhibit 2. Global leadership - driven innovation diagram



Source: (Coccia, 2015)

Throughout his research he explains how across history there have been different global leaders, which have been directly correlated with the generation of innovative and useful technologies. For instance, the Romans were able to develop the civil engineering and used the technology to build aqueducts, roads and water mills enabling transporting the water efficiently, and generate energy from it.

The Great Britain followed them, with the industrial revolution and the introduction of the steam engine and electricity generation, innovations that were revolutionary and promptly diffused in Europe and North America. The British Empire developed the first house that was electrically powered, and the first hydraulic plant. These innovations also permitted to develop the Empire's Royal Navy and helped Great Britain establish itself as a global power (Coccia, 2015).

After this, the United States was able to become the world hegemon through their investments in different tech fields and developing items such as computers, satellites, aircrafts or transistors. The introduction of Internet and the computer network in the 1960's was also a key milestone in the American history. According to Mario Coccia: *"This U.S. technological performance is likely due to a strong economic potential and the goal to sustain the global leadership with a technological superiority worldwide"* (Coccia, 2015, p. 211).

In the same way, realists and neorealists intellectuals affirm that the international politics scenario is defined by the number of superpowers, which as explained before, there is normally one great power, and there have been different ones across history such as the one's there have been just explained: the Roman Empire, the British Empire or the United States. Nevertheless, this explains how the international stability is determined by whether we live in a unipolar, bipolar or multipolar world (Munro, 2018).

Given this information, we can affirm two things: first, that we live in an era in which technology is defining the power of states; and second, that international stability, peace, and war are determined by the number of superpowers. Hence, we could assert that, there is a need of the states of excelling in the technological field, in order to have a greater role and influence worldwide, which could explain the current tension created between China and the United States (Munro, 2018).

3. STATE OF AFFAIRS

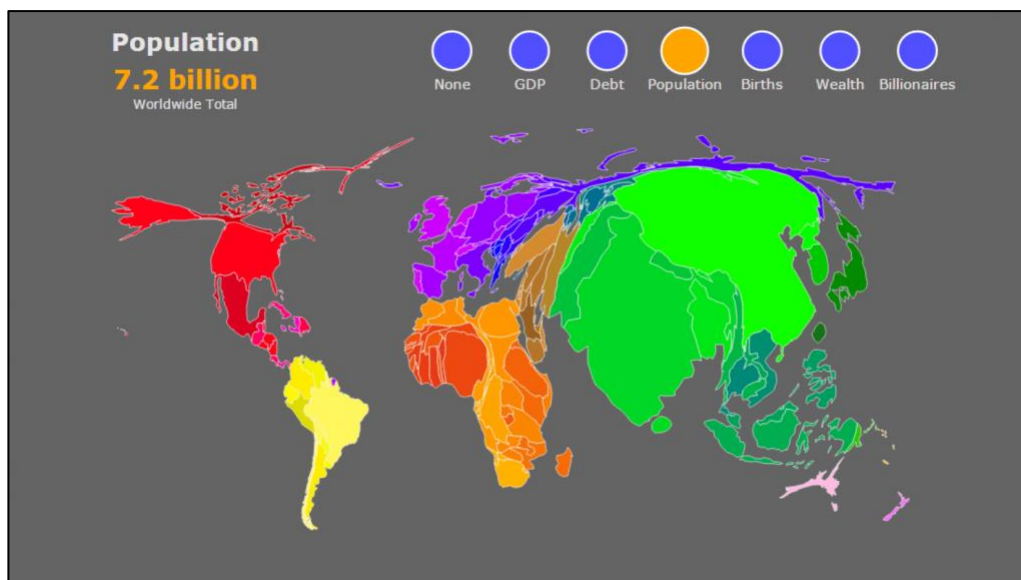
3.1. Key actors

3.1.1. China

China, also referred to as The People’s Republic of China, is located in Middle and East Asia, bounded on the east by the Pacific Ocean. China encompasses the 4th largest country in the world, being 20 times bigger than Spain. It comprises twenty-three provinces, five autonomous regions, four municipalities and two Special Administrative Regions (SARs): Hong Kong and Macau, which maintain two different legal, judicial and administrative systems.

Historically, China has been known for being one of the most populated countries in the world, along with India. In fact, at some points in history, both countries had a 60% of the world’s population living in their territories (CIA World Factbook, 2015).

Exhibit 3. **China’s population**



Source: (Swanson, 2015a)

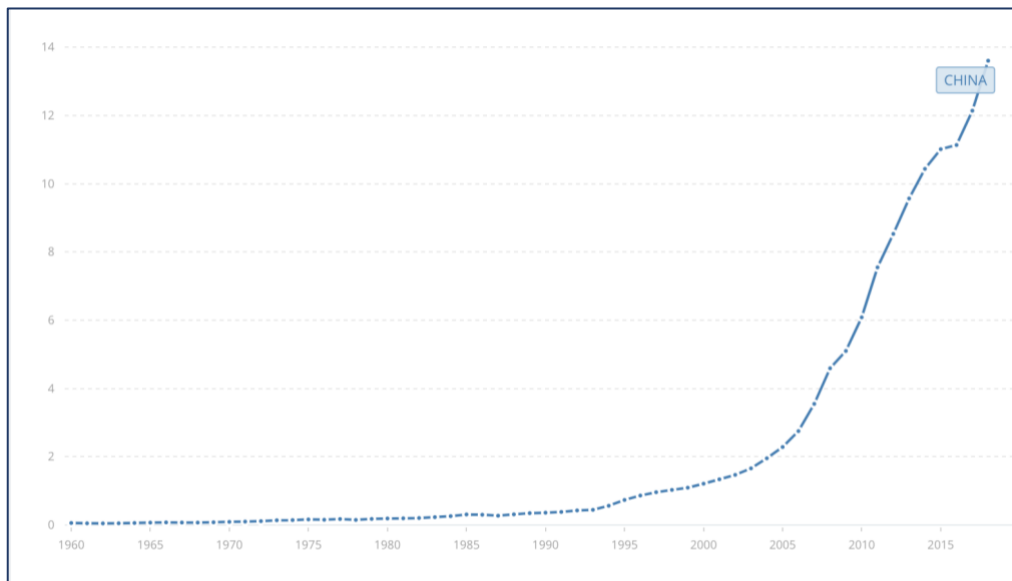
In terms of political structure, China is a one party communist state, this means that the party controls all branches of government. Western researchers and think tanks absolutely agree that China is not a democracy. "*Today, of course, China is not a democracy. The Chinese Communist Party (CCP) has the monopoly of political power, and the country lacks of freedom of expression, independent judiciary, and other fundamental attributes of a pluralistic liberal system*" verbalizes John L. Thornton in an article in the Foreign Affairs magazine (Torrent, 2011).

In 1990, China established its current open door policy, which meant that all countries could trade with them. On one hand, it laid great number opportunities for other nations, especially for the US. On the other hand, a great number of countries lost jobs owing to the relocation of their largest companies. Eleven years after the establishment of the open door policy, in 2001, China joined the World Trade organization, which establishes the rules of international trade. This decision impressed the rest of the world given that China is a communist country (Monahan, 2016).

Nowadays, China is reaching an important and influential role in terms of global economy, its GDP amounts to 12.24 billions USD ([See Exhibit 4](#)). Nevertheless, it is still a developing country since its GDP per capita, which accounts for 8,826.99 USD, is not comparable to the Western's countries (The World Bank, 2016).

Exhibit 4. China's GDP evolution

(in trillions)



Source: (The World Bank, 2018)

China has transformed itself from an inward power to an open power, especially after its entry in the World Bank. As the [Exhibit 4](#) shows, its GDP has grown exponentially after 2001. Since that year, China has become a global player regarding trade. In 2009, they became the world's largest exporter of goods and in 2013, after increasing its imports, the largest trading nation. China's share of global goods trade in 2017 accounted for 11.4 percent, whereas in 2002 it was barely a 2 percent. The consulting firm McKinsey, conducted an analysis in 186 countries and concluded that China was the largest export destination for 33 out of those 186 countries, and the largest source of imports for 65 of them, which shows not only that China has become a key source of goods for many countries, but also that they export more than they import (Woetzel, et al., 2019).

Additionally, the number of Chinese corporations that operate globally has grown since 2010 approximately a 16 percent per year, currently accounting for 37,164 companies. In a nutshell, China has exponentially grown during the last twenty

years and due to this, McKinsey affirms that 76 percent of the Chinese urban population will be earning between \$9,000 and \$34,000 by 2022, considering this range as middle class in the region, bearing in mind that in 2000 it was only a 4 percent of the population (Woetzel, et al., 2019).

Regarding economy, population and military, China has almost every tool to become a world superpower; and, undoubtedly, it has already become one. According to the World Bank, *“the number of domestic Chinese companies listed on stock exchanges around the world has more than tripled from 1,086 in 2000 to 3,485 in 2017”* (Center for Strategic & International Studies, 2018). At present, China is part of the BRICS (group of emerging economies) and of the G-20. Firstly, it evolved into a regional power, becoming more assertive economically and politically in the Asia-Pacific region. Over the years, the country has considerably improved its relations with these ASEAN states as well (Kamrany & Jiang, 2014).

China overtakes the United States in terms of Internet users; China is more connected than what we think they actually are. It has more than twice as many Internet users as the U.S population. According to Statista, there are 875 millions of Internet users in China, while the US population accounts for 328 millions (Thomala, 2020). Nevertheless, there is an exhaustive control of the sites to which the Chinese population have access. For instance, most of the foreign news sites are blocked in China. This censorship became more extensive after the prodemocracy protests that occurred in Hong Kong on September 2014. Following these protests, sites such as BBC, Reuters, Facebook, Twitter, the New York Times or the Wall Street Journal were completely blocked (Swanson, 2015a).

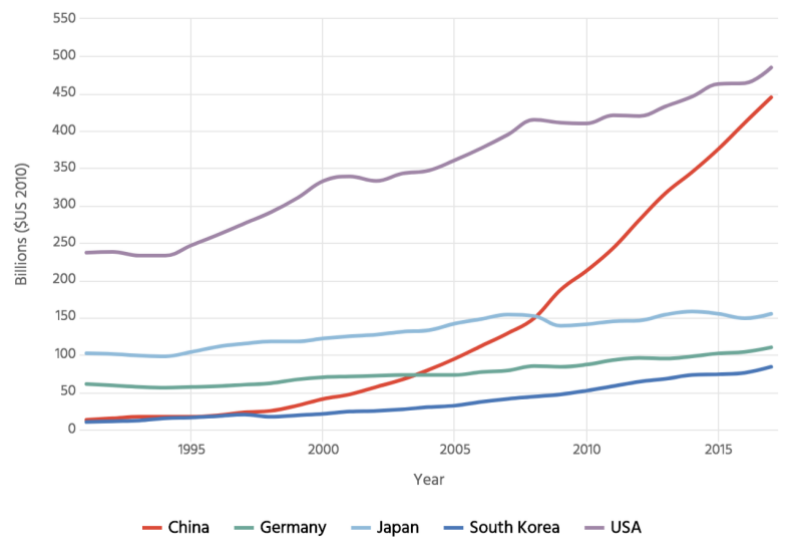
The path that China has followed in the technological field in the last 20 years has been impressive. They have evolve from copying the inventions of others to creating innovative technologies. To understand this phenomenon we can explore the large Asian companies, such as Alibaba which is in position of competing with the American quintessential company: Amazon. In 2015, China’s government

launched the “Made in China 2025” strategy, which aimed to enlarge its manufacturing capability and technological innovation (Center for Strategic & International Studies, 2018).

In terms of Research & Development (R&D), which is the backbone of innovation and development of new products and services, China currently spends 2% of its GDP according to Unesco. They have historically destined money to grow in the technological sphere. However, this has increased steeply through the past years, as it is shown in the following graph. As [Exhibit 5](#) shows, from 1991 to 2016 China has changed its allocation of money in R&D from 13 billion to 410 billion US dollars. In 2016, China’s spending in R&D accounted for approximately the 20% of the whole expenditure worldwide (Center for Strategic & International Studies, 2018). According to the McKinsey Global Institute: “China’s technology import contracts are highly concentrated geographically, with more than half of purchases of foreign R&D coming from three countries—31 percent from the United States, 21 percent from Japan, and 10 percent from Germany” (Woetzel, et al., 2019).

Exhibit 5. Nation’s Gross Domestic Spending on R&D from 1990 to 2016

(Billions US dollars)



Source: (Center for Strategic & International Studies, 2018)

During the last decades the Chinese tech giants were created, for example, Huawei in 1987, Tencent in 1998 or Xiaomi in 2010. These companies have transformed Shenzhen, an area in the city of Hong Kong that has become the Chinese Silicon Valley with a GDP of 2.6 trillion yuan (\$374 billion US dollars) in 2019 and a growth rate of around 7% (Leng, 2020).

China has endeavored to develop both its military and soft power capabilities; as explained by the Brookings Institution “*a retention of the traditional value placed on hard power is complemented by a dramatic increase in the importance of soft power*” (Jia, 2010). On one hand, China has increased its military power even though it still not comparable to United States military capabilities. On the other hand, China has also developed its soft power due to its economic growth and its rapprochement to the developing countries and global powers. China has destined its efforts to enlarge its soft power by increasing international assistance, opening the country to foreign students or increasing the number of international events conducted in their territory such as the Olympics in 2008 (Jia, 2010).

In reference to their influence worldwide, we could consider China as a player who exercises an influence mainly regional. Historically, China has maintained close relations with many of its neighbors such as Australia, Thailand, Vietnam, the Philippines or Japan. China has also established close ties with North Korea, becoming their closest ally and trading partner and they are also now increasing its presence in the African region. However, China has tried to change its image during the past years in the international sphere, and has strived for changing the foreign policy and becoming more an international influence than a regional one. This evolution has resulted in an increase of tensions with some its neighbors and also other global leaders such as the US which perceives this as an important threat (BBC, 2020).

As Lee Kuan Yew, Singaporean president for 31 years, observed: *“the size of China’s displacement of the world balance is such, that the world must find a new balance. It is not possible to pretend that this is just another big player. This is the biggest player in the history of the world”* (Allison & Blackwill, 2013).

3.1.2. The United States

The United States, situated in North America, is one of the biggest countries worldwide. Composed by 54 states, the US is the first world’s economy according to their GDP, which equals to 18.39 billions USD. The country is the main capitalist economy on the planet, besides being a leader in other areas such as scientific research and technology (Sotelo, 2015).

The U.S. political system is a representative federal democracy based on elections. The United States government is divided into three branches: legislative, executive and judicial. The President is elected every four years and is the one in charge of the Congress.

The US economy is still the largest economy in the world, with China growing behind in terms of GDP per capita, where there is a significant difference with the US’s totaling 59,531.66 USD per capita compared to China’s 8,826.99 USD. The US Economy is characterized by technological change and cyclical terms with periods of expansion and periods of contraction.

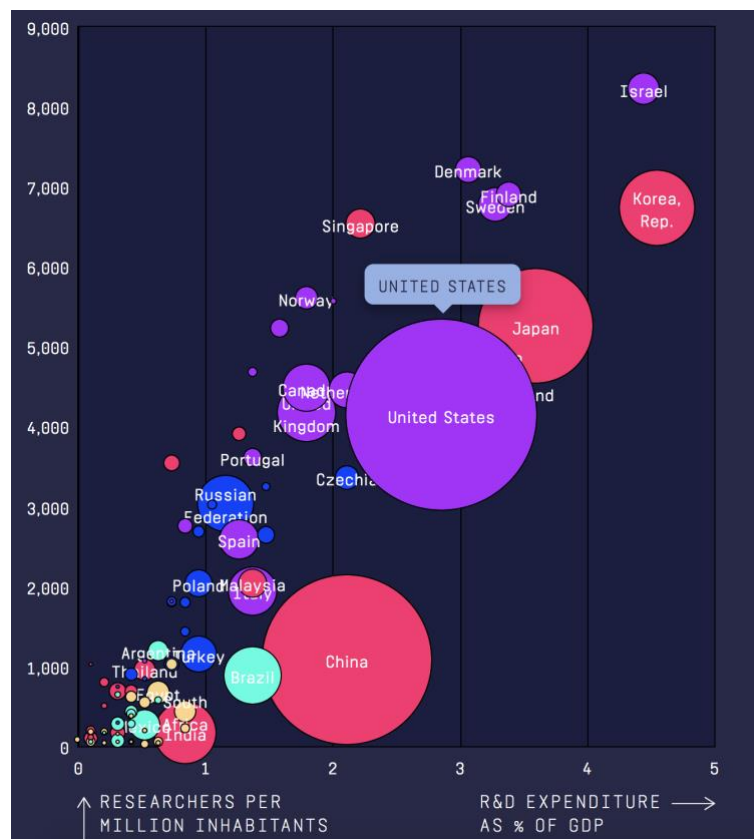
The US became the world hegemon in part due to the development of technology. In the Second Industrial Revolution, also referred to as the Technological Revolution, they performed a primary role in terms of developing revolutionary mass production techniques and introducing electrical machinery and new technologies. However, even though the United States remains very strong in the technological field, they are increasingly being harshly challenged in the

international scenario due to the appearance of new robust competitors (National Research Council, 1997).

In terms of R&D¹ expenditure, the US is considered the country with the highest investment, with a 2.7% of its GDP according to Unesco statistics ([See Exhibit 6](#)). However, according to different estimates, China has set the goal of surpassing the US in the near future, reaching a 2.5% spending of its GDP by 2020 (Center for Strategic & International Studies, 2018).

¹ R&D: stands for Research and Development. “The term R&D is widely linked to innovation both in the corporate and government world or the public and private sector. It includes activities that companies or governments undertake to innovate and introduce new products and services” (Kenton, 2020).

Exhibit 6. R&D Spending by country



Source: (Unesco Institute for Statistics, 2020)

However, the United States is still a leader in radical innovation, which refers to the innovations that cause greater risk for companies because of the uncertainties it entail, but are able to produce a shift in history, and produce a change for the better, creating new markets, products, services or transforming business models (Benedetto, DeSarbo, & Song, 2008).

In reference to the role of the US in the international arena, we could affirm that the USA has a strong influence, compared to China's role which is predominantly regional. It is the world's biggest economy, with a leading role in almost all international organizations including NATO and the UN, in addition to a forceful military. The US has not only influence economically, but also culturally, as a sign of this, is the expansion of the English language, or even American TV shows, films or videos across the globe (BBC, 2020).

3.2. US – China relations (1949-2009)

The relations between the US and China, economic, but above all political, are one of the most influential, but also less transparent, frameworks of world politics. Since 1949 their relation has had ups and downs, where there has been tension, rivalry but also intensified diplomacy and collaboration between each other (Sotelo, 2015).

The U.S. has had interest in China for a long time, especially because of economic reasons, which consequently developed an important relation between the two countries, many Chinese migrated to America, as for them, it was a land which had many opportunities. Actually, the US signed a treaty which promoted Chinese immigration and guaranteed protection regarding discrimination in 1868 (Cheng D. , 2012).

Nevertheless, in 1949, the People's Republic of China was established with Mao Zedong as the Chinese Communist Party as the leader and in 1950 the Korean War breaks out, which faced the two powers. Even though it seemed Sino-American relations were very good until this moment, the tension emerged when Americans and Communist Chinese forces fought against each other (Council on Foreign Relations, 2020).

Moreover, during Eisenhower's presidency the tensions grew due to the US navy blockade of Taiwan and the Tibetan uprising of 1959. The tensions continued along the years until Nixon arrived to power (Council on Foreign Relations, 2020).

In 1971, the Ping-Pong Diplomacy was established between the two countries. After twenty years of no diplomatic or economic ties, both countries realized that approaching to each other could be a win-win move. Consequently, Nixon and Henry Kissinger, his secretary of state, traveled to China in 1972, concluding that

they should change their strategy with respect to China, which until that moment, was based on its isolation in order to deposit all of its energies in the Soviet Union.

Exhibit 7. **Nixon visiting China**



Source: (BBC, 2018)

Nixon tried stabilize the relations with the PRC, as an strategic move in order to fight the Soviet Union, which was increasing its power (Cheng D. , 2012). The alliance that emerged between the two countries changed the balance of power during the Cold War and weakened the Soviet Union, which ended up dissolving in 1991 (El Cronista, 2012).

In 1979, with Jimmy Carter as the President of the United States, the full diplomatic recognition was granted to China and therefore, the US approached a One-China policy² and the Taiwan Relations Act was signed, which permitted the

² One China Policy: "It is the diplomatic acknowledgement of China's position that there is only one Chinese government. Under the policy, the US recognizes and has formal ties with China rather than the island of Taiwan, which China sees as a breakaway province to be reunified with the mainland one day" (BBC, 2017) .

US to trade with the Island of Taiwan. Similarly, the Reagan administration reaffirmed the US commitment to the One China Policy, and strived to normalize relations with China. He also visited China in two different occasions and permitted the Asians to buy American military equipment.

Nevertheless, in June 1989, the Tiananmen Square Massacre took place. The Chinese governments killed hundreds of protesters that were asking for democratic reforms in the Chinese political system. This event froze the relations between both countries, and as a result, the American government ceased to sell military equipment to Beijing.

Through the end of the Cold War, the American's supported an "Open Door" policy with regards to China, which meant that China could receive foreign investment and trade. Moreover, Bill Clinton launched the policy of Constructive Engagement, signed the US-China Relations Act of 2000, and facilitated China's entry into the World Trade Organization (WTO), all of them as a sign of acceptance of China as a trade partner (Council on Foreign Relations, 2020). After the 9/11, with Bush as the President of the United States the relations between both powers entered a period of stability, where both countries maintained communication and visited each other (Wanli, 2009).

However, the Cold War and the Tiananmen square crackdown reshaped the Chinese-American relations. They approached positions regarding the economic realm, while they were increasingly diverging in their foreign policies. There have been also different actions in history that have raised up the tensions and the lack of trust between the two powers, such as the NATO erroneously bombing a Chinese embassy in Belgrade which inevitably generated doubts about the US trying to contain China as a rising power, or China's efforts to steal American technology and their intentions to grow their military power (Cheng D. , 2012).

We need to take into account that China, after consolidating itself as the first exporting power, has extended its presence in Latin America, Africa and even in Europe, which have enable them to be less dependent on the United States and this has resulted in a perception of threat by the Americans (Sotelo, 2015).

The Chinese and the Americans have been trading with each other as the largest economies in the world, but do not trust one another. They have different and opposing views when it comes to security, national political rights or foreign policy. As Dean Cheng stated in 2012: *“For the United States, China today is neither an outright enemy, nor a trusted friend. The tensions between them are not the result of an enduring U.S. resentment of China, or a tradition of hostility between them. They exist because of the kind of government China has, and the actions it takes”* (Cheng D. , 2012).

3.3. Obama’s period (2009-2017)

When Barack Obama arrived to office, China had already positioned itself as the second world’s economy and actually there were initiatives for the creation of a G-2 organization (Group of two). During this period both countries realized how important was the relation and communication between each other (Li C. , 2016).

Barack Obama, US President and his Chinese counterpart Hu Jintao promised to increase cooperation between their nations, while acknowledging that differences still persisted. The Obama administration recognized human rights as one of the pillars needed to develop a good relation with China, and tried to portrait the US as a human rights promotor. On one of his visits to China, he spoke to students in Shanghai denouncing the lack of rights in the Chinese community:

“The truth is that because in the United States information is free, and I have a lot of critics in the United States who can say all kinds of things about me, I actually think that that makes our democracy stronger and it makes me a

better leader because it forces me to hear opinions that I don't want to hear"
(Hachigian & Chen, 2010).

Moreover, one of Obama's priority in his mandate was carry out an strategic move by shifting their interest and focus in Europe to Asia. Originally this policy was named "return to Asia-Pacific", and it was later reformulated as a "strategic pivot" and finally a "rebalancing". Despite the changes of names, the intention remains consistent: containing the rise of China. The strategy was first introduced by then Secretary of State Hillary Clinton at the ASEAN Regional Forum held in Hanoi in 2010 (Canrong, 2017).

During Obama's presidency, Hillary Clinton stated in an article for Foreign Policy journal: *"Harnessing Asia's growth and dynamism is central to American economic and strategic interests and a key priority for President Obama"* (Clinton, 2011). Even though Hillary attempts to affirm that the growth of China results in opportunities for the US of investment and trade, she tries to emphasize the US undisputable leadership when she asserts: *"Just as Asia is critical to America's future, an engaged America is vital to Asia's future. The region is eager for our leadership and our business — perhaps more so than at any time in modern history"* (Clinton, 2011).

The return to Asia policy was based on four main pillars: the first, the deployment 60% of its naval and air force in the Asia-Pacific region. The second, the creation of the Trans-pacific Partnership (TPP), a commercial framework which excluded China. The third, the use of what Clinton called "intelligent power" in diplomacy, based on taking advantage of China's conflicts and disputes with its neighboring countries to drive a wedge between them and lastly, to continue developing their relation and contact with China (Canrong, 2017).

Xi Jinping arrived to power in China , proposing a new type of great power relations with the US, based on cooperation, mutual respect and the avoidance

of conflict and confrontation. During Xi Jinping's mandate, at a global level, the United States and China were able to face global challenges together, such as economic growth and international economic cooperation, the prevention of Iran's nuclear proliferation, the fight against climate change and clean energy, and combating terrorism or Ebola. Both presidents, Obama and Xi Jinping have met in a great number of occasions, which brings to light how the communication between countries has intensified, even though both countries do not consider each other as friends.

From an economic standpoint, under Obama's mandate, the world was immersed in one of the deepest economic crisis. Both countries were focused on stimulating their own growth and the national demand of products, providing their countries with economic packages that helped bolstering the economy. However, both global powers also contributed to stabilize the global scenario including reforms in the G20 and providing funds. China also helped the United States by buying an important quantity of their Treasury bonds (Hachigian & Chen, 2010).

After Obama's two terms we have been able to see a balancing of the power of both global players. However, the "rebalancing with Asia-Pacific" strategy cannot be called a success. Not only did it fail to contain the rise of China, but also deepened China's distrust on the United States, which is contrary to US interests. The United States by deploying 60% of its naval and air force against China could only expect to put China on full alert and motivate them to accelerate its military modernization. The exclusion of China from the TPP has also encouraged them to move forward on its Regional Global Economic Association (RECP), the Asian Pacific Free Trade Area (FTAAP) and the creation of institutions such as the BRICS Development Bank and the Asian Infrastructure Investment Bank (Canrong, 2017).

Many scholars highlight the lack of trust between both countries, and how both of them interpret the counterpart's actions as a form of containment or a threat

for the global leadership. This has resulted in a great number of false perceptions and misunderstandings between the two. As Cheng Li asserts in an article for the Brookings Institution:

"The United States is a global power with unique norms, perspectives, and strategies, and China should not interpret every U.S. action as an effort at containment. By the same measure, it is misguided for the United States to consider every Chinese action as a challenge to its preeminent position. The two sides should avoid making assumptions and policies based on extreme views and misguided conspiracy theories" (Li C. , 2016).

3.4. Trump's arrival

The fact that Donald Trump won the presidential election is also a reflection of public discontent with the Obama administration. Facing a rising China, the United States needs to break with "Americentrism". The United States still has a great sense of superiority, and sees the world from a perspective centered on the United States, without understanding the most important fact of this world: China has already become the strongest industrialized nation in the history of mankind (Canrong, 2017).

As referred previously, in the 70s, Nixon got China to ally with the United States against the Soviet Union. Twenty years later, the USSR was dissolved and Russia became an average power on the world stage and not a superpower anymore. Now, Donald Trump shows a more relaxed approach towards Russia and hostility towards China, the only power currently competing at the height of the United States, we could be talking about a Nixonian strategy in reverse (Arumí, 2017). This hostility against China has even worsened after the global spread of coronavirus, a virus that arose in China and that Trump calls the "Chinese virus". The American President blames China for the pandemic while they study if it was created in a Chinese laboratory (Schell, 2020).

In its presidential campaign, Donald Trump took advantage of the tensions with China that started in Obama's period to develop a political speech based on the American imbalance of trade with China, the repercussion on American manufacturing jobs and the impact on the US dollar, and thus, promoting an "American first" policy (Li A. H., 2017).

After winning the presidential election, Trump, accepted a call from the Taiwanese President Tsai Ing-wen, generating formal complaints from the Chinese Foreign Ministry for Trump's "diplomatic negligence", not respecting the One China Policy established by Jimmy Carter. Nevertheless, after generating doubts, Trump affirmed he will honor the One China policy even though the US maintains unofficial ties with the island of Taiwan through which they provide defense aid (Council on Foreign Relations, 2020).

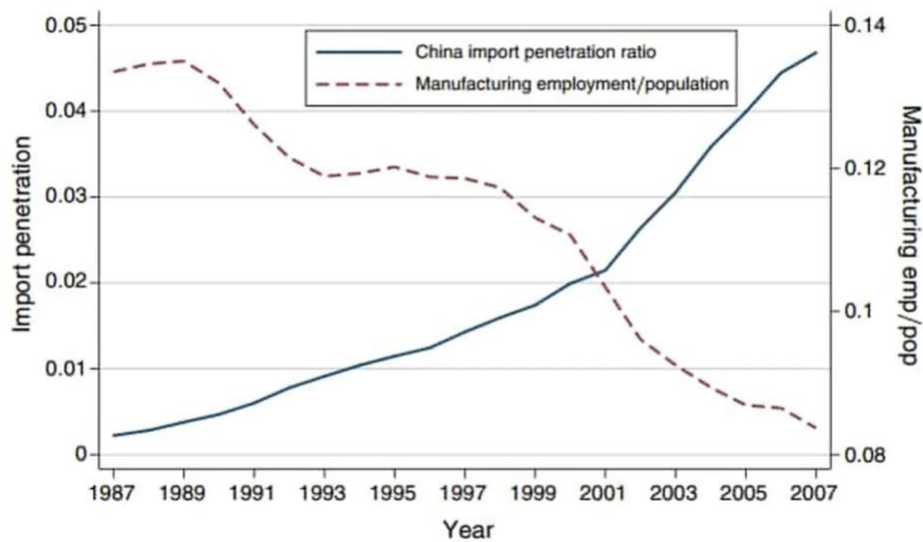
Trump has put a lot of emphasis since his arrival to the presidency of the United States in the imbalance of trade with China and the repercussions in the American economy (Singh, 2019). In 2018, Trump announces the first tariffs on Chinese imports, worth 50 billion US dollars and restricting Chinese investments in the country, alleging not only, that the Chinese were stealing the US technology and intellectual property, but also provoking a reduction of the number of jobs in specific industries in North America. This is the moment where the trade war begins (Council on Foreign Relations, 2020).

3.5. Trade war context

A trade war between two countries happens when both raise import tariffs, so that they are less attractive to their citizens and reduce their purchases from the affected countries. In the case of the US and China, both countries have raised tariffs on imports of products from the opposite country. Therefore, any Chinese product that is affected by higher tariffs will be more expensive in the US and vice versa.

The influx of products that have entered the US that have their origin in China, has increased in the past years and this has had two different contradictory results in America. On one hand, it has helped people to increase their purchasing power, enabling them to afford products that in other case they could have not be able to buy. However, it has also hurt others since it has had repercussions in the labor market and specially in manufacturing jobs as the [Exhibit 8](#) displays (Swanson, 2015b).

Exhibit 8. **US – China Trade Deficit**

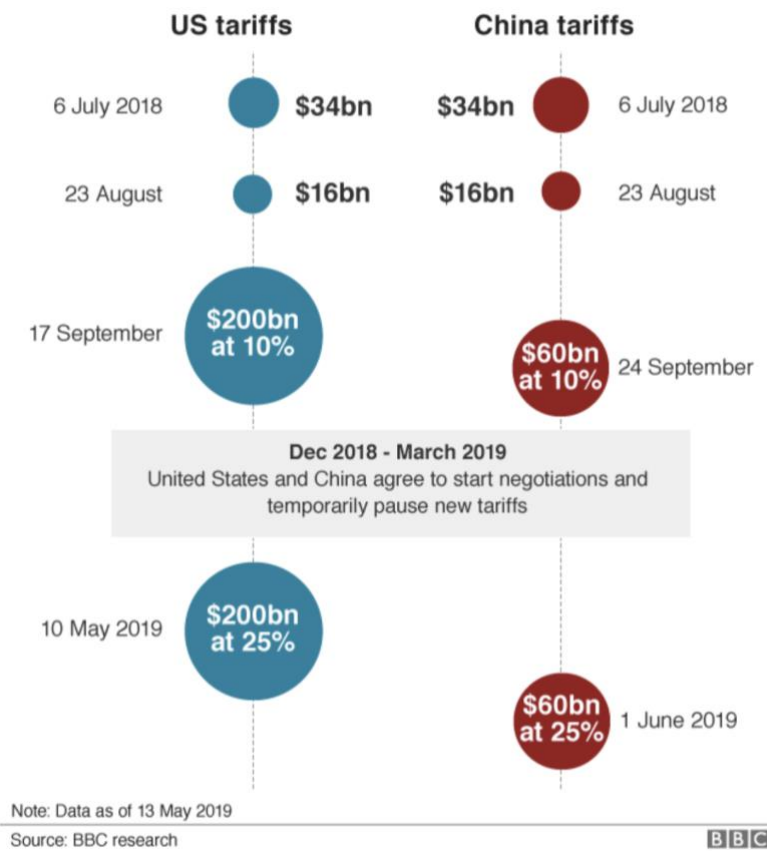


Source: (Swanson, 2015b)

Consequently, in March 2018, the first tariffs were put in place by the US. In early July, Trump enacted a 10% tariff on aluminum and a 25% tariff on steel, reducing Chinese imports by \$34 billion. Nevertheless, China retaliated introducing new tariffs on specific US products, which had an impact as well of \$34bn. This produced a escalation of the trade war and a progressive increasement of the tariffs, Trump announced more tariffs on April, June and July, while China responded to each of these attempts ([See Exhibit 9](#)).

President Trump also decided to ban the use of Chinese equipment in telecommunication companies, as a security measure. This measure was specially targeting Huawei, the Chinese technology giant, which was included by the US Commerce Department to the foreign entity blacklist (Council on Foreign Relations, 2020).

Exhibit 9. **Tariffs imposed by US and China between 2018 and 2019**



Source: (BBC, 2020)

As of now, the total tariffs applied to Chinese goods equals to 550 billion USD, while the total tariffs applied to the United States is 185 billion USD. According to the Balance: *“The U.S. trade deficit with China was \$315.1 billion in 2012, rose to \$367.3 billion by 2015 before dropping to \$346.8 billion the next year.¹ By 2018, it had increased to \$419.2 billion, before falling to \$345.6 billion in 2019”* (Amadeo, US Trade Deficit With China and Why It's So High, 2020).

Nevertheless, in December 2019 the United States and China decided to sign Phase 1 of the Trade Deal. On one hand, Washington decided to postpone a tariff hike expected in the month of December. On the other hand, Beijing agreed to increase its imports coming from the US and delaying additional tariffs on U.S. goods (Axios, 2019).

3.6. Tech war

Analysts believe that the rivalry between Washington and Beijing is now probably moving into the decisive technology sector, in which both try to establish their world leadership (Nicolaci da Costa, 2019).

President Trump and his top advisers have acknowledged as a national threat China's ambitions in the technological sector. Trump has tried to control the technologic devices that are sold abroad.

Javier de la Nava, a professor of International Economics at CEF-Udima, agrees that the background is that this war has arouse in order to see who leads the technological career. *"It is true that there is a trade imbalance that serves very well as justification and as confirmation of Trump's first American policy,"* he says. Likewise, Ramón Gascón states: *"In my opinion, what underlies this badly called war is a push to maintain a dominant position in technological development"* (Gracia, 2019).

Both, the US and China are trying to compete on the production of new technologies that can have a great impact in the way we live, we produce or we communicate with each other. They are competing for the influence in the rest of the world.

As mentioned earlier, in May 2019, the US Commerce Department, included the company Huawei on a list of firms which could not work or trade with US companies, this produced that companies such as Google decided to stop doing

business with Huawei. The US has tried as well to convince the rest of the world and specially Europe to do the same, and thus, it would be easier to contain China in its aim of becoming the world's technological leader (Segal, 2019).

Shortly after Donald Trump blacklisted Huawei to prevent US firms from making commercial transactions with the Chinese tech giant, Xi Jinping, the Chinese President, visited a factory in the southeast of the country which processes rare earth elements. Many received this gesture as the prelude to a retaliation against the American President, which could materialize in a restriction on the export of rare minerals to the United States, which represents an strategic source for the US (BBC, 2019).

These rare earth materials are a group of 17 elements which are used in the production of a great number of industrial sectors, such as oil refineries, electronics or the renewable energy sector. China's production of these rare minerals represent 70% of the world's production. The 80% of the US importations of rare minerals, come from China. Thus, rare minerals can become a valuable asset for China in the trade war between these two powers (BBC, 2019).

The United States is concerned about certain technologies that the Chinese are developing such as voice or face recognition, and specially their particular interest on high-technology surveillance. The US affirms that they are afraid if they are capable of exporting these technologies to foreign countries, and specially developing ones. Therefore, in October 2019, the US government decided to include in the banned entity list Chinese companies such as SenseTime, Yitu or iFlytek, which are Artificial Intelligence companies, leaders in China (Segal, 2019).

As a response, China is focusing in developing its own strategy of invigorating its innovation skills, developing core technologies in order to reduce its dependence

on the United States. Beijing government has ordered all government offices and public institutions to substitute foreign hardware and software for Chinese solutions over the next three years. The name of the directive 3-5-2 comes from the substitution process, the government seeks to substitute foreign hardware and software in 2020 by a 30% rate. Thereafter, the Chinese government will replace 50% of foreign technology by 2021 and the remaining 20% in 2022 (Segal, 2019).

Both countries are trying to find their own strategies in order to emerge from the war stronger than before. However, according to the Council on Foreign Relations in its 2019 review: *“The battle over technology will continue into 2020 and beyond, even if it could slow down the global pace of innovation. Xi Jinping will not abandon attempts to reduce dependence on foreign technology. On the U.S. side, there is bipartisan support for efforts to check and contain China across an expanding number of technologies”* (Segal, 2019).

4. ANALYSIS

4.1. US - China objectives in the tech war

Along the years, China has strived to limit the entrance of US tech companies in their country and has built a one way barrier in which their companies are able to produce items for American companies, expand and grow in their country and after go global, while foreign companies such as Facebook or Google where not allowed to be used by the Chinese population. As Li Yuan states: *Already, China's censorship and tight control of its citizens' digital lives have effectively isolated one-fifth of the world's internet-using population, giving rise to a generation that doesn't know what it means to Google something or to subscribe to a YouTube channel"* (Yuan, 2019). Currently, President Trump is trying to build this wall from the American part, limiting the use of Chinese tech products (Yuan, 2019).

Getting reliable and fast connectivity has been a primary objective for both countries that aim to be in the front of the digital economy. Both countries are immersed in the technological war because the leadership in technologies and systems, grants an undoubted competitive advantage when it comes to imposing economic, geopolitical, commercial or even cultural interests.

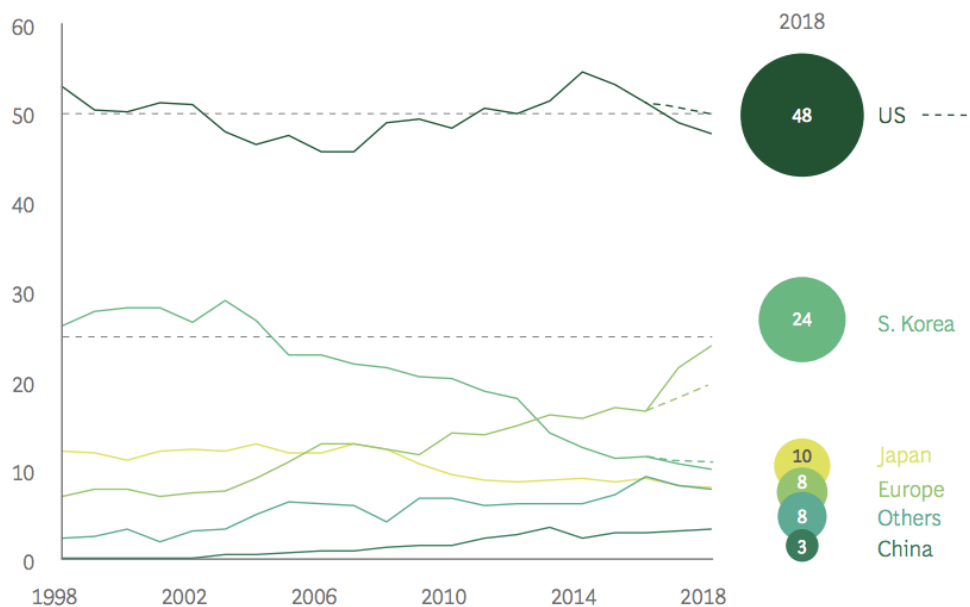
Both countries want to stand out when it comes to 5G. While 3G set mobile internet in our smartphones, 4G gave us mobile broadband. Both 3G and 4G have given rise to new business models that we are used to today, such as the taxi industry revolution, the live broadcast of events, programs or movies, creating applications such as Uber or Waze. Moving forward on the path of innovation, 5G will connect everything and everyone. The technologies within 5G have been designed to redefine the world. 5G could manage to develop fields such as the services, industrial, medical, or car industry, introducing self-driving cars, remote surgery, creating connected homes and intelligent cities and therefore, improving

public safety. 5G is the future of technology, and whoever leads this field will have enormous influence worldwide (Rosenberg, 2020).

Similarly, the technological war has worsened and become an important open conflict regarding microchips, which are critical elements to all tech systems, and have special relevance in the security and defense industry. Therefore, both aim to be self-sufficient and leaders in the production of these elements, seeking the dependence of other countries (Millás, 2019).

The US has been an unquestionable leader regarding semiconductors – with around a 50% of market share – through the main US giants as Intel Corporation, Nvidia, Micron Technology, Texas Industry, Analog Devices or Skyworks Solutions (See Exhibit 10).

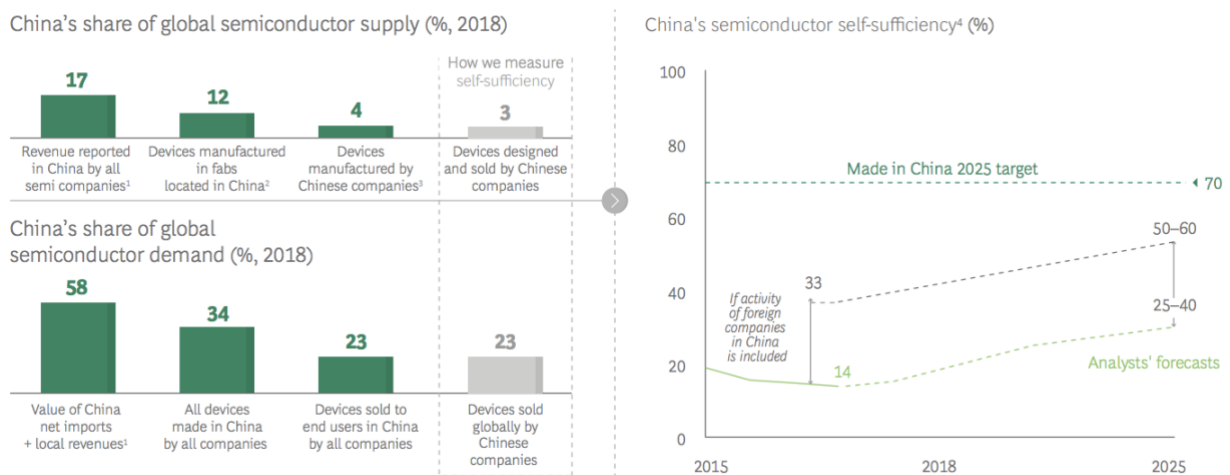
Exhibit 10. **Global semiconductor industry market share**
(% of total semiconductor sales)



Source: (Varas & Varadarajan, 2020)

China needs to increase its semiconductor supply rapidly in order to meet its domestic demand, they represent a 23 percent of the total global demand. Nevertheless, as the [Exhibit 11](#) shows, they are only capable of designing and manufacturing around 4% of the global sales in semiconductors. Therefore, China has set the goal to meet by 2025 the 70 percent of the Chinese demand to be less dependent on other countries (Varas & Varadarajan, 2020).

Exhibit 11. China’s share of global semiconductor supply and demand



Source: (Varas & Varadarajan, 2020)

China has plans of doubling the current manufacturing muscle in semiconductors in five years through the main Chinese corporations producing semiconductors which are HiSilicon, Bitmain, Baidu, Alibaba or Tencent. The Boston Consulting Group affirms that “China is spending \$400 million on a national quantum computing lab and has filed almost twice as many quantum patents as the US has in recent years” (Varas & Varadarajan, 2020, p. 11).

All in all, it is clear that through this technological war, both countries are trying to be leaders in the technologic sector in order to increment their influence worldwide. Nevertheless, the Chinese foreign minister has defended China, and tried to reassure the US by saying: “China has no intention to play the game of

thrones on the world stage. For now and for the foreseeable future, the United States is and will still be the strongest country in the world” (Cheng E. , 2019).

However, the Foreign Minister declaration is contradictory to what Xi asserted at the opening of the annual conference of the Chinese Academy of Sciences and Chinese Academy of Engineering, where he declared: *“Self-determination and innovation is the unavoidable path ... to climb to the world’s top as a leading player in technology. We [should] hold innovative development tightly in our own hands... The situation is pressing. The challenges are pressing. The mission upon us is pressing” (Herman, 2018).*

4.2. Google and Huawei

Huawei is an electronic Chinese company which represents the second largest cell phone manufacturer worldwide (Nicolaci da Costa, 2019). With a turnover in 2018 of more than 100 billion USD, the company delivered more than 200 millions of smartphones. They are front-runners in the communications infrastructure industry and are growing more than 20 percent annually.

The escalation of the trade war between the US and China has coincided with the rise in the market of Huawei, which according to different studies has already superseded the US company Apple as the second largest global manufacturer, only surpassed by the South Korean firm Samsung, in the lead .

Likewise, the company is well positioned in the new 5G technology, since they actually have a large part of the workforce dedicated to research and development. The company has managed to conduct the fastest 5G deployment throughout the globe (Taylor, 2019). The Chinese giant has spent 2 billions of dollars in the last 10 years in order to guarantee their leadership on global 5G technology. Huawei has already signed contracts with around 40 international telecommunication

companies and shipped over 70,000 5G base stations. According to Charlie Campbell: *“this might explain why the U.S is taking such a hard line on Huawei”* (Campbell, 2019).

The US is convinced that the Chinese Government is using Huawei as an espionage method, and has banned the federal agencies the use of their products and encouraged their strategic allies to do the same, which has already been applied by Australia and New Zealand. Trump argues that they should be banned from participating in the global expansion of 5G, due to the security threat this poses (Nicolaci da Costa, 2019).

Timothy Heath, senior international defense research analyst at the American corporation RAND, believes the links between Huawei and the Chinese administration prove the legitimacy of the real threat. He argues that *“Chinese authorities can use this information and access to facilitate espionage or cyber-attacks over Huawei communications technologies”* (O'Flaherty, 2019). Additionally, this can be considered a more serious threat with the arrival of 5G; the head of the UK's intelligence service MI6, Alex Younger believes that through this network it is harder to monitor security. As a matter of fact, due to this global concern, there are telecommunication companies such as AT&T or Verizon, that ceased working with Huawei.

Nevertheless, Huawei has responded to this asserting: *“We are a private company owned by employees and comply with applicable laws and regulations. If we are forced to maliciously violate the trust of our customers, we would rather shut the company down”* (O'Flaherty, 2019).

Google is an American company, founded by Larry Page and Sergey Brin in 1998. In 2015, after a restructuring process, Google became a subsidiary of the holding company Alphabet. This massive corporation is considered one of the four big American technological companies together with Microsoft, Apple and Amazon.

According to Statista, Google's revenues in 2018, totaled to: Google's revenue amounted to 160.74 billion US dollars (Statista, 2020).

Google has a large network and a great range of products and services that millions of people around the world use every day such as Google Maps, YouTube or Gmail. Google Search is also the most visited website worldwide. Google also manages Cloud and Google Play, which is the digital platform that sells millions of Apps in devices that have Android System. Google sells its millions of products to different targets of clients such as final consumers or households, companies and developers, they offer a different value proposal to each of them (Google, 2020).

4.3. War repercussions

As Graham Allison describes: *"When a rising power is threatening to displace a ruling power, standard crises that would otherwise be contained, like the assassination of an archduke in 1914, can initiate a cascade of reactions that, in turn, produce outcomes none of the parties would otherwise have chosen"* (Allison, 2015). Therefore, during the tech war, collateral events have occurred, that if the countries were not immersed in the war probably there would have not happen.

On one hand, in the middle of the Tech war, Huawei's CFO, Meng Wanzhou, was arrested in Canada by request of the United States. The US alleges that Huawei used Skycom, a business partner in Iran, to export US American products to Iran, a territory which is excluded from the North American export law. The Huawei's founder daughter, Meng, would have misinformed international banks, and committed fraud, liquidating hundreds of millions of dollars in telecom transactions with Iran, and therefore, violating the economic sanctions that Washington had on Iran at the time (Stecklow, 2020).

Once the Huawei directive was arrested, China arrested two Canadian citizens, the former diplomat Michael Kovrig and businessman Michael Spavor, who are accused of espionage and carrying out activities against China's national security (Fernández, 2019). The two Canadians, are still detained and in hands of the Chinese Communist Party's secret police. They have already been arrested for more than 400 days, in terrible conditions while Meng Wanzhou was released in December 2018, on a 10 million Canadian dollars bail with several conditions such as the obligation of living in Vancouver and 24 hour surveillance (Humphrey, 2019).

On the other hand, the Chinese Government, also decided to conduct a move that threatened the US. In July 2019, a new stock index was launched in China at the request of Xi Jinping, called Star Market. This index, which includes the most important Chinese technology companies, is created in the midst of war, in order to compete with the US Nasdaq-100 (Rivera, 2019).

In the first session of the Star Market, some companies rose more than 200% and 16 out of the 25 companies included in the stock, appreciated more than 100 percent. The record got it Anji Technology that appreciated up to 520 percent (Rivera, 2019). Consequently, Trump considered to delist Chinese companies trading in the North American stock market. Nevertheless, this measure has not been implemented yet (Alper & Lawder, 2019).

4.4. Repercussions in China's technological industry

The war threatens Huawei's and other Chinese tech companies' dreams of expanding globally, since the US is capable of influencing and putting pressure in a large number of countries with great acquisitive power and important global roles (Yuan, 2019).

In May 2019, Donald Trump signed an executive order that aimed to prevent US companies from using telecommunications equipment that could jeopardize US security and the Commerce Department included Huawei in the foreign entity blacklist. This has serious consequences in the Chinese giant, which can no longer use the Android operating system patented by Google (Fernández, 2019).

Huawei was able to use the Android system, without being able to access any of their actualizations, and thus, following this path the company would be outdated shortly. Nevertheless, the company confirmed that they had been working on developing their own operating system during 7 years (Fernández, 2019). This new operating system, named Harmony OS, was presented by the company the in August 2019, three months after Google's veto. At launch, Richard Yu, Huawei's CEO, referred to the software ecosystem HarmonyOS as *"completely different from Android and iOS. It is a microkernel-based, that delivers a smooth experience across all scenarios. It has trustworthy and secure architecture, and it supports seamless collaboration across devices"* (Huawei, 2019).

There are other Chinese tech companies that still have opportunity to grow in the US, such as Xiaomi. The Chinese company is focusing on international expansion, while its main competitor, Huawei, is facing difficulties. Other companies that have an opportunity to gain market share are Oppo and Vivo, both brands from a bigger corporation named BBK electronics.

Nevertheless, Reuters has confirmed that Xiaomi, Huawei, Oppo and Vivo could be joining forces and the latter two are supposedly in process of creating a platform named Global Developer Service Alliance (GDSA), that could challenge Google's Play store. It is important to take into account that Xiaomi, Oppo and Vivo still have access to Google's actualizations while Huawei does not, and the four companies altogether account for the 40% of the global market share (Kirton, 2020).

4.5. Repercussions in US technological industry

4.5.1. Economic Impact in US Tech Companies

Richard Walters affirms that the trade war is not doing any favor to the tech industry, as he stated: “The Trump administration’s trade war may yet produce results, but the tech industry has little to cheer so far from a campaign that was once said to be waged in their interests” (Waters, 2019). According to the Financial Times, for US chip companies, the ban on selling chips to Huawei has perpetrated a loss of sales. As an example, Broadcom, sold \$900m in chips to Huawei in 2018 (Waters, 2019).

Huawei’s ban is not on Google’s interest either, that loses part of its global sales. Huawei was a key partner for Android, since it has contributed to their expansion worldwide. Nevertheless, the company is obliged to commit with Donald Trump’s commercial policy (Fernández, 2019).

As a matter of fact, several American tech companies requested Trump to be excluded from the tariffs applied to China. For instance, Apple pressed the US government affirming that: “A US tariff would therefore tilt the playing field in favour of our global competitors” (Bradshaw, 2019). One of the main contributors to US economy, Apple, is concerned to be unable to maintain its growth plans, sales and the millions of jobs it holds in North America, if Trump remains on the path of applying tariffs to China in the technological domain (Bradshaw, 2019). According to Investopedia, there are \$150 billions of sales are at risk for the American companies tech due to the confrontation with China.

On the other hand, Microsoft, Dell, HP and Intel, wrote a joint letter to the US Government requesting to exclude tariffs to laptops, alleging that this would increase the laptop’s final price and they would lose money that could be used to

invest in research and development and thus, this could challenge their current leadership status in the market (Duffy, 2019).

Likewise, the Consumer Technology Association (CTA), warned the White House that its commercial policies towards China could severely harm the tech sector and therefore, consumers and households (Bradshaw, 2019). The Consumer Technology Association in a letter addressed to the Government proposed to *“leverage multilateral action, join strategic trade agreements that move China toward transparency, competition and open markets”* rather than keeping the tension and rivalry between both powers (Duffy, 2019).

To those companies whose income depends directly on the Chinese market and that could suffer retaliation from Beijing, are added the companies affected by the rise in tariffs, which will force prices to rise. The simple rise in tariffs makes Chinese companies with American suppliers more expensive and this will surely affect the final price of the product. And the same is the other way around: any American product with Chinese suppliers will be more expensive. In a world as intertwined and global as the one in which we live, an increase in tariffs between two countries that are so powerful affects everyone (Ruiz de Gauna, 2019).

4.5.2. How will US companies operate without China?

Xi Jinping is convinced that China has more power in the negotiation between both countries, since the American companies need more China than the Chinese need the Americans. Foreign Affairs considers that *“U.S. tariffs have hurt the Chinese economy much less than the Trump administration seems to believe”*. The first quarter of 2019, the Chinese imports to the US were reduced only by 4.8%. This slight decrease in the middle of a trade war, could be the result from a lack of substitutes for several Chinese products, mostly for a price reason (Nathan, 2019).

It is very difficult for US companies to drastically change their supply chains, in a short period of time if they have been relying on China for many years. It implies massive investments and higher costs for companies. For example, as mentioned earlier, organizations such as Apple will suffer the most, since they produce a large quantity of their smartphone pieces in China. It is difficult to find a substitute that equals China in time and price. This will produce the increase of Apple's marginal costs. If an iPhone was entirely produced and assembled in the US, its price could increase 100 dollars per item. The Taiwanese company Foxconn has offered to produce all iPhones outside China. This company is a historic partner for Apple, but its main production plants are located in China. However, they have affirmed to be able to meet Apple's demand producing outside the Asian country (Bradshaw, 2019).

Nevertheless, Trump could oblige US companies to stop working with and on the Chinese market, even though this could affect the infrastructures and economic gains of the American corporations. The [International Emergency Economic Powers Act](#), enables the government, by declaring a national emergency, to impose any measures the Administration considers necessary. Trump has threaten China many times with implementing the IEEPA. Nonetheless, this option nowadays remains unlikely since probably the most harmed would be themselves (Hillman, 2019).

4.6. Social effects

4.6.1. American society opinion

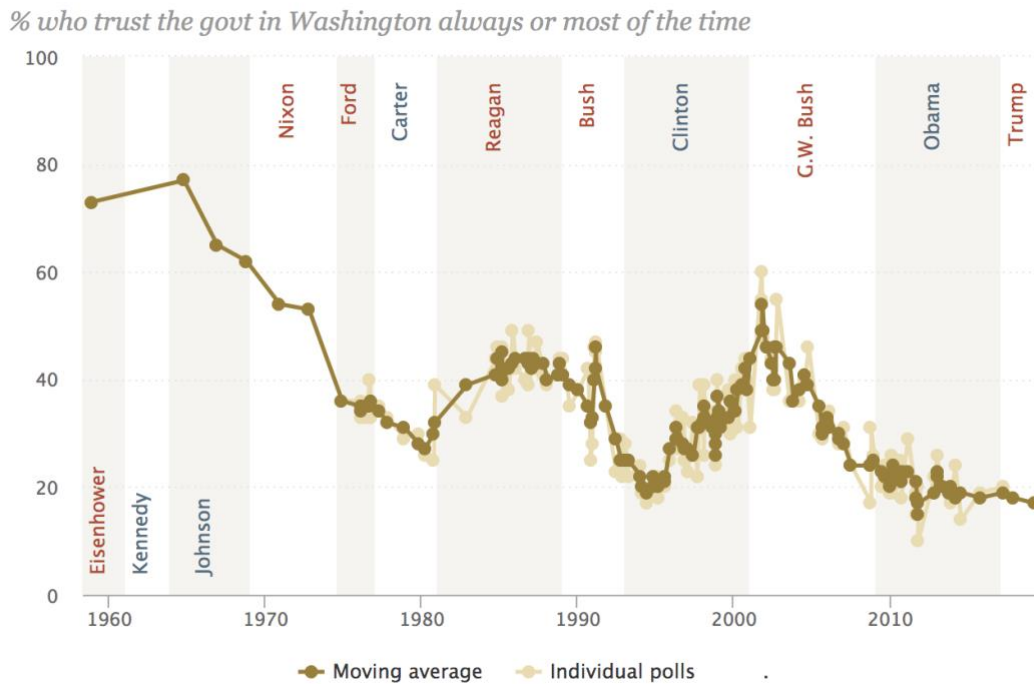
Graham Allison poses the question *"Americans have a tendency to lecture others about why they should be "more like us." In urging China to follow the lead of the United States, should we Americans be careful what we wish for?"* (Allison, *The Thucydides Trap: Are the U.S. and China Headed for War?*, 2015). As the US, has enjoyed many years of global leadership, economic prosperity and peace, for many American the fact that there is not a physical or more visual threat, the

menace of China surpassing the US in terms global power feels unrealistic or even theoretical. It is similar to the approach to coronavirus, that while happening in China does not give a feeling of real threat until it arrives to other countries (Wasser, 2020).

The US government knows that they need the American society support in order to compete in the technological domain and preserve the global leadership. As Merrill Wasser asserts: *“Whoever dominates the industry will not only enjoy decades of global economic influence, but will also shape the rules and ethical principles that govern how the technology is used”* (Wasser, 2020).

Being North America a democratic country, where the public opinion generally shapes the actions of the government and institutions, it is crucial that the society trusts the government. The entry of technologies, Artificial Intelligence or the fear of cyberattacks, data privacy or misinformation, makes the government’s task of gaining the trust of society more complicated (Wasser, 2020). According to the Pew Research Center only 17% of Americans say they trust the government always in its decisions, this is historically low, as the [Exhibit 12](#) portrays. A 36% of the surveyed attribute it to the government’s performance, a 14% mentioned Donald Trump as the main source of distrust, and many of them also cited corruption (Pew Research Center, 2019).

Exhibit 12. America's society trust in the government decisions evolution



Source: (Pew Research Center, 2019)

Nevertheless, it is important to highlight that China is able to control the tendency of the public opinion, while in the US there are privacy restrictions that do not limit the disparity of opinions. China is able of using face scans to profile the minorities in China, and the opinion groups, and therefore, it is easier for them to collect data and control the whole population (Wasser, 2020).

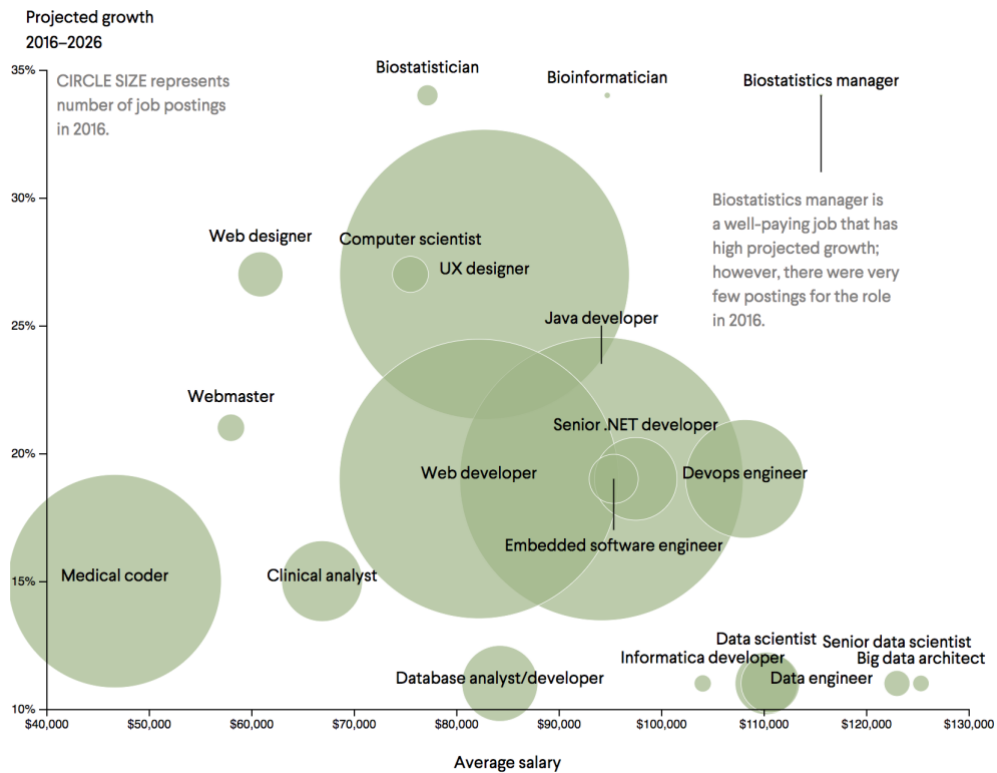
Trump on his side, uses communication to convey his opinion. In its discourses, the American President strives to convince the American society to visualize China as an enemy and a threat since *“winning over public opinion is a key ingredient to the success of any transformative technology, and taking it for granted is a stumbling block from which many technologies never recover”* (Wasser, 2020). In the end, the development of transformative technology will enable the US to maintain its current comparative advantage and visualizing China as an enemy will prevent them from growing economically, since the consumers and corporations will prevent from using Chinese tech products (Wasser, 2020).

4.6.2. The labor market in both countries

The US has benefited from China's lower prices in Chinese imports or the reduction of costs in the value chains of American corporations. Nevertheless, this has also produced a great reduction of the manufacturing jobs in the United States – at least two millions between 1999 and 2011 – which has been named by the Americans as the “Chinese shock” (Woetzel, et al., 2019).

Years ago, the United States realized that they needed specialized workforce with advanced levels of digital skills. Therefore, the US got ahead of the world, putting pressure in the education and enhancing proficient workforces to keep up with technological innovations. The [Exhibit 13](#) displays how the technological job positions in the US have extremely grown in the last years and how they are expected to grow even more in the following ones (Engler, Pritzker, Alden, & Laura Taylor-Kale, 2018).

Exhibit 13. Projected Growth for the Top Twenty U.S. Hybrid Jobs



Source: (Engler, Pritzker, Alden, & Laura Taylor-Kale, 2018)

Even though the technology sector can create high skilled jobs, focusing excessively in technology may reduce a great number of manufacturing jobs that could be substituted by a machine. This aspect also accelerated the outsourcing of the manual work, aiming to reduce costs and manufacturing time, which enhanced China’s current manufacturing position (Woetzel, et al., 2019).

Therefore, now the US needs to combat the Made in China 2025 policy, and promote local R&D intensive manufacturing jobs specially for sectors such as the semiconductors. President Trump openly expressed to the technological world the need to repatriate jobs from the sector to the US. (Woetzel, et al., 2019). However, Jim Miller, specialist in technologic manufacturing expresses his concern: *“I fear that the reality of accomplishing this goal quickly is going to be far more difficult than most people fully comprehend. The manufacturing factory*

of circa-2000 looks nothing like today's factory, the factory may come back, but the jobs that it brings will be much fewer in number and much more high-tech in nature" (Miller, 2019).

On the other hand, China's workforce dedicated to the semiconductor industry is also increasing, they are growing around 14% per year. China seeks to be self-sufficient in this domain and do not depend on the US. Additionally, China must also create millions of jobs for their growing population as well as accommodate them in urban centers (Masoud, 2015). According to International Policy Digest: *"the failure of the Communist government to provide them with jobs will translate into economic malaise and political turmoil in China"* (Masoud, 2015). Therefore, China is now concerned with the unemployment rate that the tech war can cause in China.

US corporations such as the giant Cisco announced the cut of China's manufacturing in their value chain in March 2019. And Sony shut down its smartphone factory located in Beijing in addition to Oracle that dismissed nine hundred Chinese research personnel from their office in China. And actually, the job situation in China could be worse than what official numbers show and China, in its effort to prevent a massive jobless situation, is also trying to flourish the service sector in its own country (Tang, 2019).

4.6.3. Cyber – security

The 5G is the new source that most concern both parties in terms of cybersecurity. This network can be a great opportunity for countries to innovate and generate wealth, creating intelligent cities. However, they will need to assess security risks before choosing a 5G vendor (BBC, 2019).

Emily Taylor, CEO of the cyber intelligence company Oxford Information Labs, has acknowledged that the countries' protectionist policies and specially the national

concern about cyber security is boosting the need of countries to develop 5G. Moreover, Trump's restrictive measures could be even counterproductive, since China will have the motivation of being self-sufficient in technological fields such as the chips one (Taylor, 2019). As she affirms: *"National security concerns provide cover for U.S. protectionist policies in relation to Chinese tech. Meanwhile, the 'Made in China 2025' strategy aims for China's technical innovation and quality to triumph in international markets"* (Taylor, 2019).

The manufacture of small cells³ will be of particular relevance regarding the deployment of 5G, since they increase network capacity (Small Cell Forum, 2020). The manufacturers of the small cells are mainly five: Samsung, Ericsson, Nokia, Huawei and ZTE, the last two Chinese companies. Taking this into account, the US Congress Intelligence Commission warned the President in 2012, that both companies could be a threat to the national security in the future (Millás, 2019).

All in all, there is a need for the international community to develop a joint governance system in the technology arena and formulate common norms regarding relevant technologies. However, currently this is challenging, because as Sun Haiyong asserts: *"Unfortunately, the U.S.- China tech war has weakened the mutual strategic trust between both countries and will hinder global science and technology governance, including on issues in nontraditional security realms"* (Haiyong, 2019, p. 208).

³ **Small Cell:** "a radio access point with low radio frequency (RF) power output, footprint and range. It is operator-controlled, and can be deployed indoors or outdoors, and in licensed, shared or unlicensed spectrum" (Small Cell Forum, 2020).

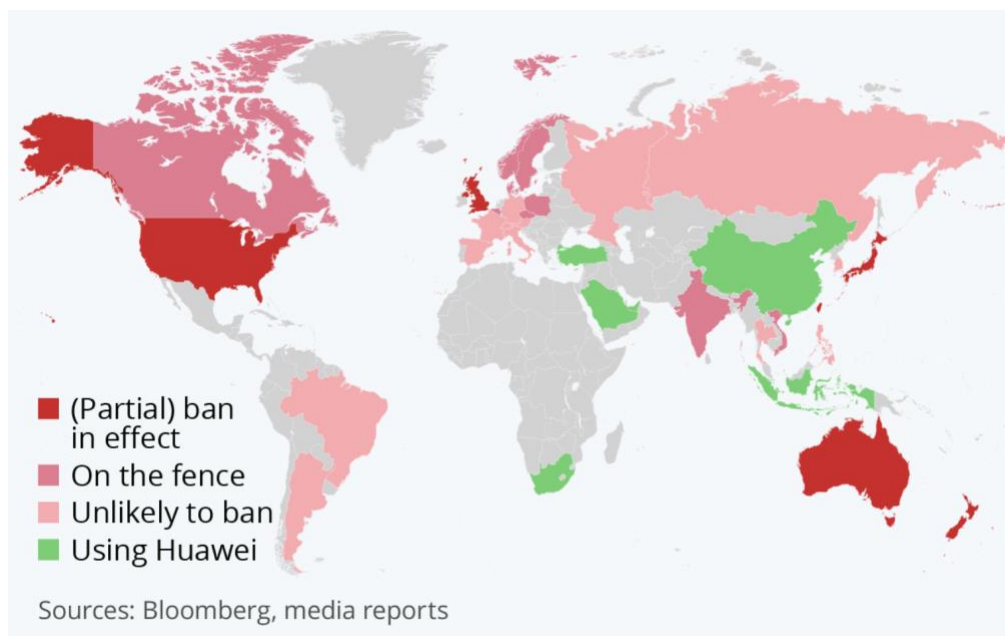
4.7. Geopolitical situation

4.7.1. Sides of the war and influences

As Bloomberg emphasizes “*Tech Cold War will force the world to choose. Team China or Team America?*” (Culpan, 2019). Regarding the technological domain this becomes a bigger issue since there can be two different exclusive technological ecosystems and this means that all decisions about business and investment in technology become a political decision (Culpan, 2019).

Following the US lead, countries such as Australia, New Zealand, Japan and Taiwan have banned Huawei products within their mobile networks while the US tries to put pressure on its Western allies to ban Chinese companies. However, countries such as Brazil, Argentina, Italy or Russia declared that will not ban Huawei’s technology in their respective countries ([See Exhibit 14](#)) (Buchholz, 2020).

Exhibit 14. **Global Bans on Huawei 5G Deployment**



Source: (Buchholz, 2020)

Also there have been some surprises in the choosing of sides by some countries. For instance, on one hand, Philippines which has been a historic US ally for many years but under Rodrigo Duterte's presidency many agreements have been signed with the Asian giant and as a matter of fact, the Foreign Affairs Secretary Teodoro Locsin declared in an interview that the Chinese strategic partnership is more attractive than the US one. On the contrary, Vietnam who may be expected to be on the Chinese side, four decades after the brutal Vietnam War the relation between the US and Vietnam has softened and both countries have built military ties and this may put pressure on Hanoi rejecting Chinese technological offers. Moreover, it is important to understand that Vietnam's main source of nationalism is the Chinese threat (Culpan, 2019).

Additionally, experts affirm that this war could bring positions between China and Russia with the US as a common adversary. Both countries have strengthened their technological ties in areas such as Artificial Intelligence, surveillance techniques or joint cyber-strategies and they are aware of the potential synergies of joining together (Radu, 2019).

Despite of the fact that countries around the world would have to choose sides, the great part of these decisions would not be rushed and probably would not be made clear in public speeches, countries will prefer to have a blurry position than an unmovable one. It is important to highlight that the US and China are two powerful countries and a great number of countries depend on them in different domains and therefore, fear their retaliation. Consequently, as Bloomberg explains these decisions will be made *"in the meeting rooms of bureaucratic institutions, over the table at cabinet meetings, and in foreign embassies where the carpets will be worn thin by a stampede of government and non-government lobbyists"* (Culpan, 2019).

4.7.2. Impact in Europe

The tech war hinders the economic cooperation between the two global biggest economies, which indirectly impacts in the world's growth and economic development.

The main issue in Europe is the deployment of 5G. There are different positions in Europe, since a great number of telecommunication companies have signed contracts with Huawei. For instance, Germany and France have kept the door open to Huawei similar to Boris Johnson's strategy, who made public statements saying they were not going to follow the US mandates, an unexpected declaration for the US.

Nevertheless, as Charlie Campbell asserts: *"the cost of saying no to Washington could be more than allies think, experts say. Countries who use Huawei may find they are no longer able to integrate American weapons systems and platforms, making it harder to carry out joint training and security cooperation with the U.S."* (Campbell, 2019).

Therefore, there are some European countries that have not pronounced yet, as Denmark, Sweden or Belgium, but the ban remains as an option. Actually, the Dutch telecom provider KPN, has excluded Huawei from the core of its 5G network upgrade (Buchholz, 2020).

As a matter of fact, there is a major concern on security issues and therefore, the EU members have included exhaustive security assessments and measures. For instance, the UK has limited Huawei's role to a maximum of 35% installment of 5Gs network, all of the work carried out away from sensitive national security sites such as the nuclear plants.

If the United States and China follow the principle of equality and mutual benefits and learn to adapt and accommodate to each other's core interests and major concerns, then the international political and economic order can be gradually stabilized. Only on this foundation will there be hope for the global economy to successfully forge a new path of equitable and sustainable development (Haiyong, 2019)

4.8. Consequences and future alternatives

4.8.1. Is a negotiation possible?

If an agreement between the US and China takes place, is unlikely to end with the rivalry between the two giants, many consider that their dispute goes far beyond trade, but it represents a struggle for power between two very different views of the world (Nicolaci da Costa, 2019).

However, Bloomberg expresses that there are technology areas where China and the US can agree on. For instance, collaborating in intellectual property, since China is growing in innovation they have as much incentive to protect it as the Americans to demand this IP. As they state: *"If U.S. pressure helps to bringing forward policies that also benefit China, then both sides win. And maybe with enough wins, you get a bridge"* (Bloomberg, 2019).

Both countries have demonstrated willingness to negotiate in specific moments such as in December 2019. And actually, the Trump administration receives pressure from the US technological giants. As an example, IBM wrote a letter to the Commerce Department saying: *"go back to the drawing board, the rules will lead to a broad disengagement of U.S. business from global markets and suppliers"* (Reuters, 2020).

The Phase One of the trade deal included agreements between the two powers in the intellectual property domain. China committed to reduce pressure on American companies to transfer technology to Chinese corporations in order to gain market access (Reuters, 2020). Additionally, China agreed on developing a stronger protection of its intellectual property and permitted the US to carry out investigation proceedings for theft of American trade secrets or piracy. Nevertheless, the agreement does not make reference to one of the main issues which is cybertheft (Politi, 2020).

After the Phase One Trade Deal signed in January 2020, the Coronavirus started spreading around the world, an event that has aggravated even more the relations between the two powers, and makes the agreement more difficult to happen. It even opens a new front of conflict on the vaccine for the virus, both seeking for the global leadership (Crowley, Wong, & Jakes, 2020).

It is clear that the relation between both countries has changed and would not go back to normal in the near future. It is important to highlight that the technological paradigm has been altered. Until now, it was based on US innovation and Chinese replication. Nevertheless, this has changed and probably, despite any commercial agreement both countries will still place barriers in technological areas. The damage is already done and it is almost impossible that we see for example, Huawei taking part in the deployment of 5G technology in the United States (Nicolaci da Costa, 2019).

However, for the world's benefit, China and the US should try to reach an agreement on the future world order, and promote cooperation between them in different realms such as science or technology. On its side, China needs to be more transparent and carry out an economic reform while the US should put emphasis in the opportunities that China offers and not the one's it challenges (Haiyong, 2019).

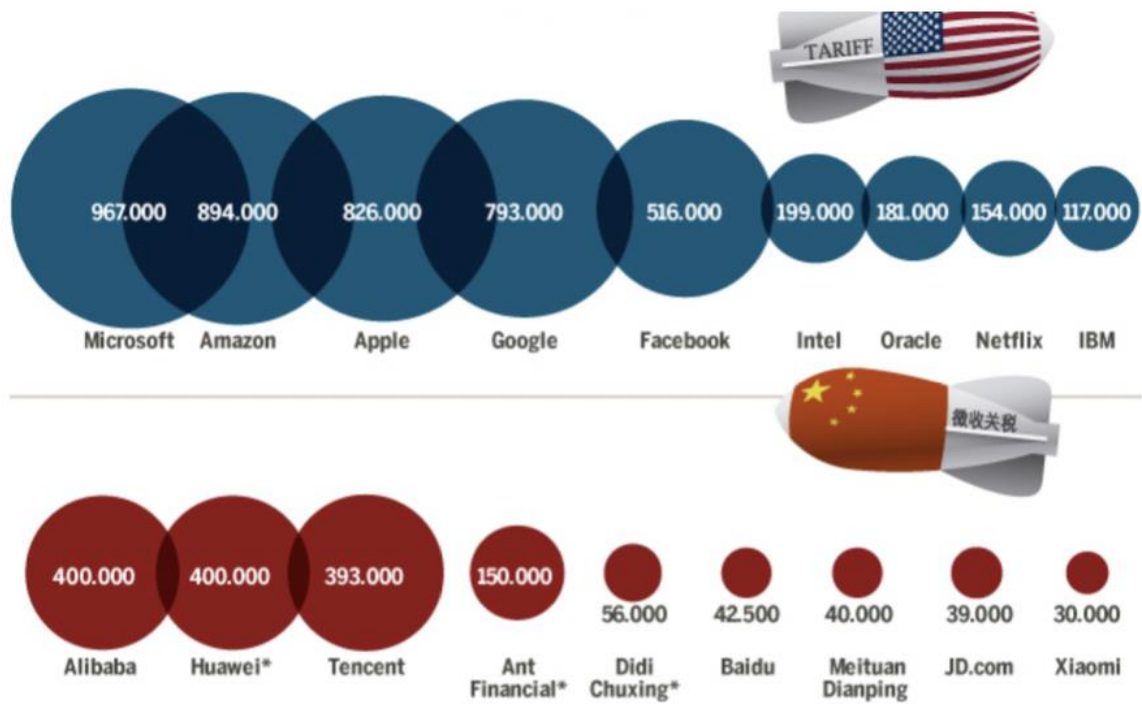
4.8.2. Is there a winner?

The technological battlefield in which China and the US can fight is not limited to a scenario with a United States technological leader, which is limited to outsourcing production and assembly of low-cost electronics to a dependent China. The truth is that China and its citizens are very technologically advanced, and on many levels they even go around the developed countries several times. In fact, the reality is that the war between both it is fairly balanced, and the damage can be major and mutually inflicted on both sides equally.

Yu Jie, member of the Chatham House and expert in China, affirms that the interdependence created between the global economies, means that none of the countries really benefit from a war based on tariffs or restrictions. Nevertheless, according to her, in the short term, China will be the one suffering the most, since its economy is still very dependent on exports. However, in the long run the American companies will have to create their own infrastructure since they now rely on China to carry out their production. Therefore, this will also have a special effect in the individual consumer, that will buy products with higher prices (BBC, 2019).

Bloomberg has carried out a study in which determines a winner in each of the areas of the tech war. In first place, the US is still the country with the most valuable tech companies in the market, even though China is pushing hard in this area with giants such as Huawei or Tencent ([See Exhibit 15](#)).

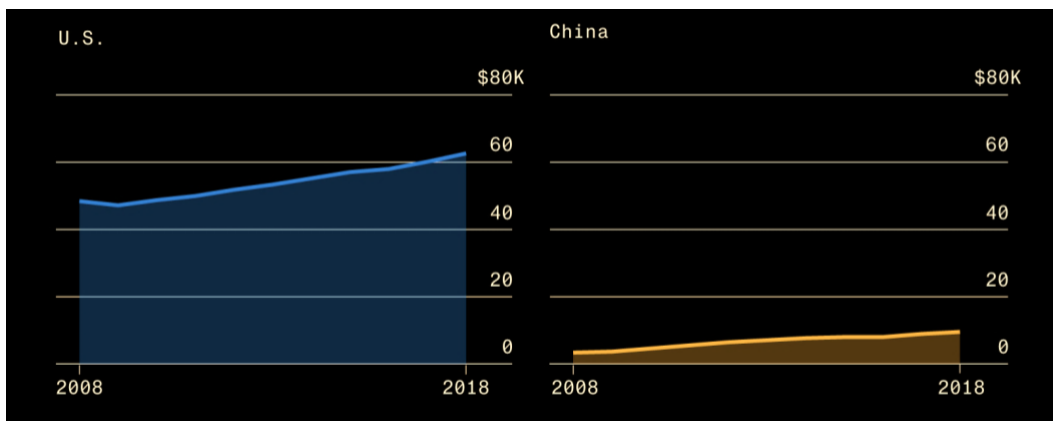
Exhibit 15. China And The US Biggest Tech Companies Valuations



Fuente: (Ruiz de Gauna, 2019)

China is the clear leader in number of Internet users, since it has four times as many mobile users as the United States, which can create opportunities for businesses. However, as [Exhibit 16](#) portrays, China's consumers generate less revenue than US consumers, which generate seven times the spending of a normal Chinese consumer (Wu, Hoenig, & Dormido, 2019).

Exhibit 16. Gross Domestic Per Capita



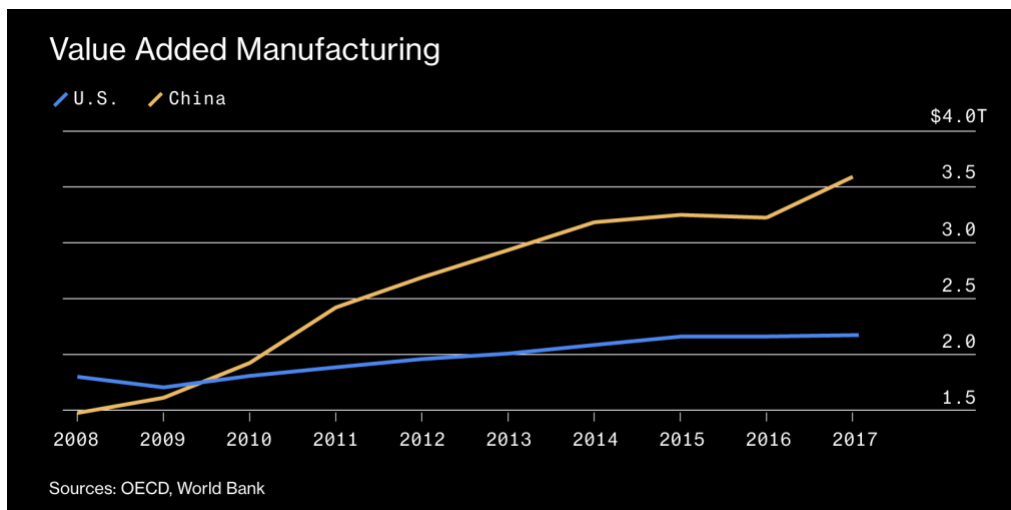
Source: (Wu, Hoenig, & Dormido, 2019)

According to Bloomberg, the United States would be at the forefront of the semiconductors sector, but China will be leader in the sector of 5G expansion, accounting now for a 37% of global market share (Wu, Hoenig, & Dormido, 2019).

Regarding, the technological labor market talent, the US is still the leader, since they have more Artificial Intelligence experts, there are about 28,000 experts in North America, while in China 18,000. Nevertheless, China is trying to close this gap and the number of graduates in the science and technological fields are increasing (Wu, Hoenig, & Dormido, 2019).

Nevertheless, China is still the clear leader in adding value in the manufacturing process. It is very difficult for the US to compete in this domain, since many of their tech companies, such as Apple, have outsourced their manufacturing and assembling processes to China (Wu, Hoenig, & Dormido, 2019).

Exhibit 17. Value Added Manufacturing



Source: (Wu, Hoenig, & Dormido, 2019)

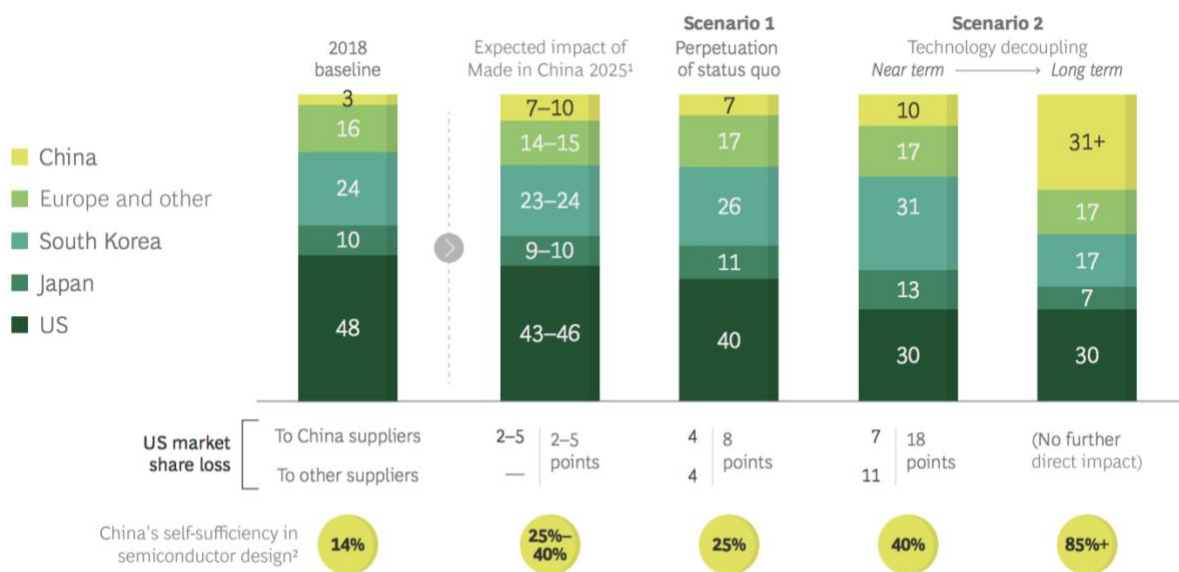
Regarding semiconductors, the Boston Consulting Group affirms that there could be two different scenarios: a status quo (Scenario 1) or a decoupling the US and China technology industries (Scenario 2). Under the former scenario, companies such as Huawei included in the Black Entity List would not be allowed to import semiconductors from US suppliers, while other Chinese Companies would. As the [Exhibit 18](#) displays, under this scenario the US could lose 8 percentage points of global share since China will replace American components using other countries in Europe or Asia as suppliers and will accelerate Chinese willingness of developing its own chips ([See Annex 1](#)).

Under the latter scenario, the US could lose 18 percentage points of global market share due to the tensions created with China and not only because of the Made in China 2025, but because experts expect Chinese semiconductor corporations to grow at a rate of 10 to 15% per year ([See Annex 1](#)). The Boston Consulting Group affirms that despite the ban, China could still be able to access US components obtaining them from other markets such as Europe or Asia, and thus, the US could be losing all potential revenues coming from China while their ban

remains useless ([See Annex 2](#)). Additionally, due to the lack of options China may be forced to build its own semiconductor ecosystem that could cover its domestic demand and position themselves as an international supplier, gaining global market share and thus, dethroning the United States as the top global provider in the long term (Varas & Varadarajan, 2020).

Exhibit 18. Semi-Conductor Industry Future Possible Scenarios

(% Global Market Share)



Source: (Varas & Varadarajan, 2020)

This analysis shows that imposing broad restrictions on exporting US components to Chinese companies would damage the American industry risking the US’s long-standing global leadership. As BCG affirms, “safeguarding national interests is critical, of course. But policy mechanisms require careful consideration if they are to avoid permanently harming the innovation model that has enabled the semiconductor industry’s success” (Varas & Varadarajan, 2020, p. 24).

5. CONCLUSIONS

5.1. Competition for global supremacy

The United States is the first economy on the planet. China is the second. If we look at the equation of possible trade wars between two countries on a large scale, obviously the greatest trade war that we could witness is precisely between the two largest economies in the world. And it has happened.

Graham Allison, former North American assistant secretary of defense for policy and plans, wrote the book *Destined for War: Can America and China Escape Thucydide's Trap?*, where he explains that the reason for the Sino-American war is what is known as the Thucydides's Trap, a fatal pattern of underlying structural tension that occurs when a rising power challenges a ruling one. This pattern has its roots in the way that the Greek historian recounted how Sparta's fear of the rise of Athens made war between the two cities inevitable (Allison, 2017)

The main hypothesis of this present paper is that both powers are immersed in a tech war, because both know that whoever leads the technological sector will become the global leader. Throughout our analysis we have been able to confirm our hypothesis.

On one hand, because both have realized that technological supremacy is the key for global leadership and due to this, they have increased their investment in R&D and are fighting to be leaders in new technologies such as 5G or semi-conductors.

And on the other hand, because they are immersed in a technologic war with different purposes. The US, used to being the leader, is trying to contain China's rise through bans and taking advantage of its international allies, while China is increasing its international presence, reducing its dependence on the US and

building an image of a technological giant with great possibilities and competitive prices.

For both economies achieving leadership is not only important because of their economies, but because of their national security. As Gunjan Singh states “*the trade war has mutated into a perception battle. Both sides are not keen to give in to the demands of the other for the fear of appearing weak.*” (Singh, 2019). In the end, is a perception battle where both economies have convinced themselves they needed to be front-runners in technology in the race for global power.

China's position has not emerged overnight, it is a carefully – thought strategy. Nevertheless, at the same time that China has taken time to become a global superpower, its ascendance to global leadership would not appear immediately either. The US has been the world leader for at least 70 years now, and China has not gained the world trust yet, its lack of transparency and its communist government concerns the world.

The problem is that the US believes its only alternative is China’s containment. Nevertheless, as Graham Allison affirmed: “*the rise of a 5,000-year-old civilization with 1.3 billion people is not a problem to be fixed. It is a condition—a chronic condition that will have to be managed over a generation*” (Allison, 2015). The US is focused on deciphering what China intends and react to it, and this would not reduce tensions in any case.

Even though it is probable that the tensions between both countries will be maintained in time. As the saying says: “*If you cannot beat them, join them*” and in this new stage, both powers should assess the current situation and seek complementary development. In the confrontation, the two have much to lose.

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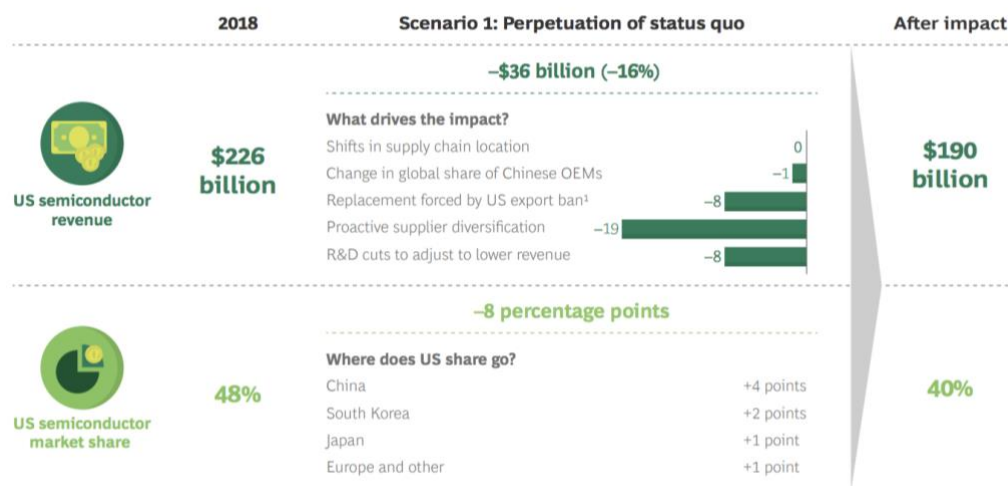
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7. ANNEXES

7.1. Annex 1. Semiconductor Industry Possible Scenarios Impact

In the Scenario 1, which consists in the perpetuation of status quo, there will still be bans in place for Chinese tech companies. In this scenario, the US could lose 8 percentage points of global share and 36 billions of revenues.

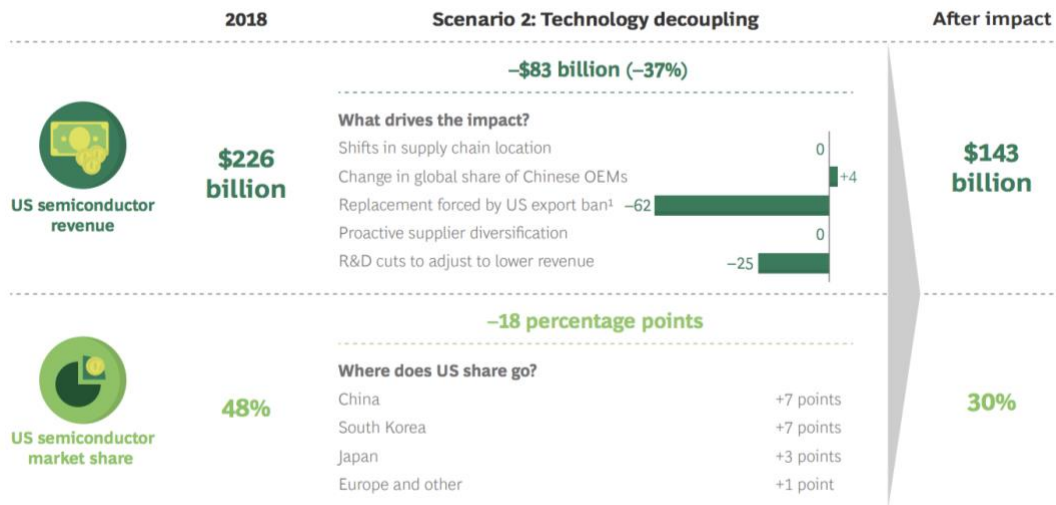
Exhibit 19. Scenario 1 Impact In US Revenues And Market Share



Source: (Varas & Varadarajan, 2020)

In the Scenario 2, which consists in imposing bans to all Chinese tech devices. In this scenario the Us could lose 18 percentage points of market share and 83 billions of revenues ([See Exhibit 20](#)).

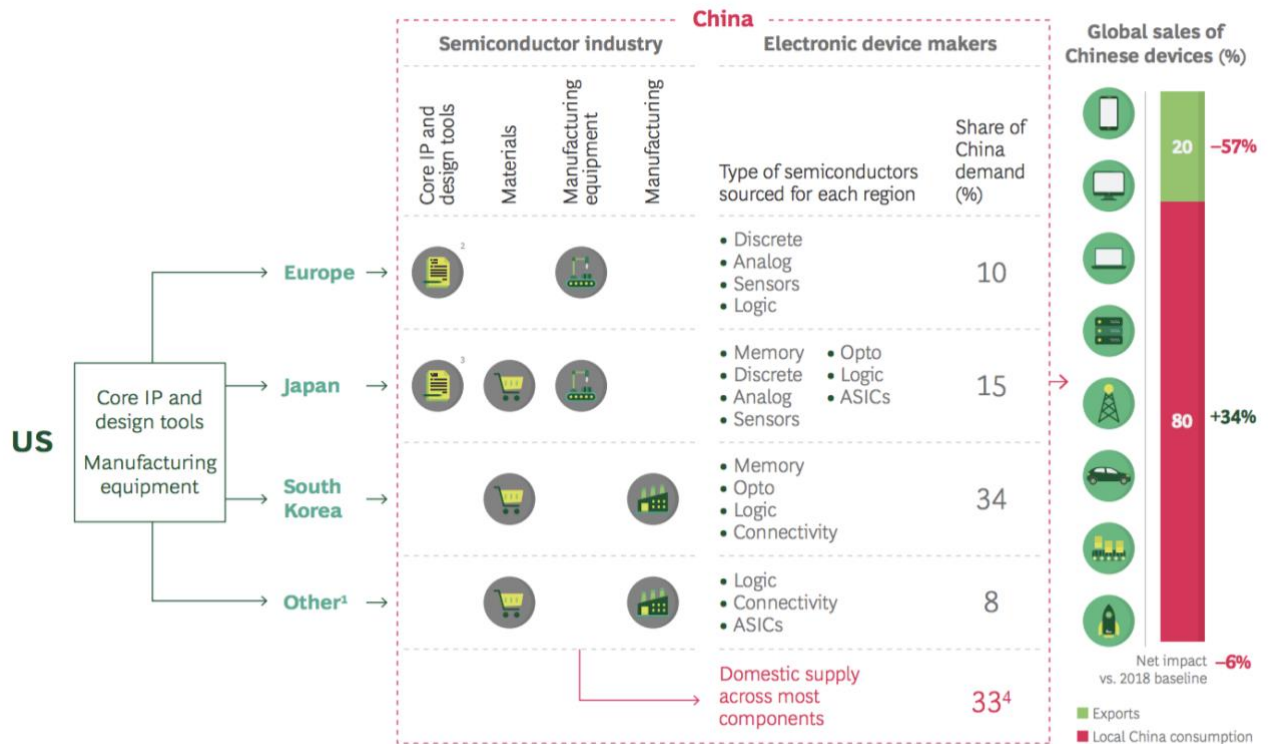
Exhibit 20. **Scenario 2 Impact in US Revenues And Market Share**



Source: (Varas & Varadarajan, 2020)

7.2. Annex 2. China's Supply Sources Possibilities

Exhibit 21. **China's Alternative Supply Chain of Semiconductors**



Source: (Varas & Varadarajan, 2020)