

The Impacts of the Trade War on High-tech Industries

Hui Chen *

Dwight global online high School, New York, the United States

*Corresponding author: dg23hchen@dwight.global

Abstract. In this paper, we focus on the impacts that the trade war between China and the United States brought to the global economics especially for some high-tech industries from countries all around the world and use a specific case study on CATL to explain how hard for a Chinese High-tech corporation to build their factory in the United States. The trade war between these two countries have made lots of significant issues to the global world. We considered this trade war from several perspectives. In this passage, we focused on eight impacts that the trade war will bring to the global economy and most of them are related to high-tech industry. Impacts that included in reducing high-tech global supply chain, decreasing technological innovation, moving technological center from China to Vietnam etc. The trade war, in some way, become a tool to stimulate the technological innovation from bilateral countries.

Keywords: The trade war; High-tech; Impacts; Global impact; International corporation.

1. Introduction

All Increasing economic power of China during the recent decades alongside with declining share of the United States in the global production and international trade in the beginning of the 21st century has led to a change in the geopolitical landscape of the world and emergence of the most two powerful countries among the world [1]. As China become more and more powerful, the conflict between China and the United States is becoming more and more complexing. With the great development and huge economic growth that China brought to the world. The world is divided into 2 group, China and the United States.

China has 15.1% share of the global GDP share, second place behind the United States, which have 23.3% [1]. As the rapid development of China since 1980s, it became a threat to the United States for many years until now. With the President of Trump, the relationship between these two countries is becoming colder and colder. They both gave sanctions to each other, to make sure to “punish” their rivalry. The conflict between China and the United States are called “The Trade War”, which is a non-smoke war and compete who have stronger power and who get a better economic growth.

The US's aim of full supremacy over the world economy is at odds with the widening trade imbalance with China, the rising competitiveness of high-tech firms located in the PRC, and a rise in Chinese investments and exports. For example, China has a good development on the and become a leader of ten high-tech area (robotic, artificial intelligence, communication, etc.) The America convinced that the China had the first success in this area are use the technologies from the United States, and they asked to have strict access on these industries from China.

The reason why China and the United States are two rivalries instead of partner is complicated, one of the reasons is because China has become a threat to the United States. However, the reasons are varied. From other's research, they pointed out that the reasons why China and America, is to limit the development of China economy, to prevent China to become most powerful countries and stop them from stealing high-tech innovation. For people who from China, they also have the same thought from the Americans.

In this paper, we are going to conclude the impacts that the trade war will bring to the global high-tech industries by using different case study and statements on the impacts. We based on the global high-tech industries experience after the trade war started, to conclude the different impacts on how international corporations need to worry and have concerns about. In some paragraphs, we used some international corporation cases and focus on after the trade war, how hard for a Chinese company to

build their factory in the United States, and what kind of problems that they will probably face if they have built their factories. Next, we will use some data from previous experience of some big international companies and concluded that their factory started to move out of China to Vietnam and what outcomes it will bring to the Chinese economy. What's more, after analyzing the outcomes and the potential impacts that the trade war will bring to the world, we have some suggestions about, in this serious circumstance, what overseas corporation can do to minimize the damage to their company when the trade war even become further. The whole paper is based on some research and their technical methods to conclude the varied impacts that the trade war will bring to the high-tech industries in the global world, besides, we used some previous experience from some international corporation to combine different companies' method of minimizing their damage from the trade war and suggested different aspects that overseas companies can use to achieve the same goal.

The aim of this paper was to make people better understand the trade war and how it affects our life. Knowing the trade war and its impacts in a simple way can help people get more involved in the global events and be prepared better. Focusing on how the trade war bring to the global market can help people understand what the trade war is and how it is related to us. What's more, the most important purpose of this paper is to analyze the impacts that the trade war brings to high-tech industries such as technical innovation, phone, new power energy etc. For those high-tech industries, because of the trade war, they suffered from the consequence of the trade war. With knowing what kind of impacts affect them can help them form their own strategies in order to minimize the impacts and damage that the trade war bring to us. Forming a better strategy to avoid more serious problems and tell more experience of this events for our next generation.

2. Impacts of the Trade War from China and the United States Perspectives

The impacts of the trade war on High-tech industries brought for both China and the United States are huge. In order to minimize the impact of countries conflict bring to high-tech industries. It is significant to focus on what are the impacts for bilateral country's high-tech industries and understand what impact that will cause the most extreme damage for them. And come up with idea about how to avoid the consequence of this event and move further forward.

2.1 Reducing High-tech Global Supply Chain

As we all know the high-tech from different countries depend on the global supply chain of High-tech raw material. The impact of the trade war on High-tech industries can be considered as bring decrement on the global high-tech supply chain. The world two most powerful high-tech countries, China and the United States both take sanctions on bilateral industries extremely restrict the supply chain all around the world.

In order to force US "rms to transfer technology to Chinese organizations, according to the USA, China engages in "forced technology transfer" by employing administrative procedures and ownership constraints [2]. In the trade war, President Trumps took lots of measures from political, economic, diplomatic side to put pressure on China. It increasingly impedes the economic relationship between China and the United States. The Trump administration has resorted to taking unilateral steps under Section 301 as a result of these accusations. Despite China's denial of these accusations, the USA has increased tariffs on more than half of Chinese imports since July 2018 [2]. Besides, actions from President Trump also served global supply chain in high-tech Industries, China's high-tech industries depend on other raw material from overseas countries. Because the US has developed trade regulations to restrict the sale of particular items, China's high-tech exports to the US have maintained an increasing surplus in recent years. The creation of pertinent policies will not only result in a current account imbalance, which will cause trade friction for high-tech goods, but it will also make the high-tech industry subject to external influences and cause significant swings [3]. Sanctions from the United States extremely constructed the export of high-tech industries from China, restrict Chinese company's innovations, and surpassed the innovative development of Chinese enterprise. [4]

Undoubtedly, it will bring damage to the mutual beneficial cooperation of China and the United States in science, technology and high-tech industries, further weaken the economic cooperation between bilateral countries.

However, it is necessary to pointed out that if the United States keep putting pressure on China, they will also get damage. Since China can also tack the similar actions on exporting their products. What's more, in fact, lots of American High-tech products are produced in China. The United States is depending on the low-cost-labor of Chinese industries to enhance their competitive advantages. If China need to take actions or sanctions on the United States, there is no doubt that the United States will also lose their interest. The competitiveness of related enterprises in the United States will get eroded, further weaken their competitive advantage in producing high-tech [4].

The trade war between China and the United States brings lots of damage on the global high-tech supply chain. The multiple impacts of the global high-tech supply chain not only affected these two countries, but also affected the other countries all around the world. Without the supply, high-tech industries suffered from unprecedented damage

2.2 Decreasing Technological Innovation

As the thriving of globalization, it is important for member countries in WTO to reduce their tariff barriers. It brought benefits for member countries with technology innovation, countries can share their technology with each other.

However, with the prosperity of Chinese high-tech industries such as AI, telecommunication, etc. The United States need to have restriction on prevent China become the most powerful country. In a simple word, the United States tends to force China to give up their technological advancement by trade sanctions, investment control, export control and abandon their policies on High-tech industries [4]. Trump government aimed to force China to abandon its industrial policy represented by imposing sanctions on Chinese high-tech industries [4]. The most obvious example is the Huawei sanctions event. What's more, Trump said that the United States is the main R&D center all around the world, Chinese policy and practice will jeopardize the high-tech in the United States and bring negative economic impact [4]. It brings damages to the Chinese high-tech industries. Similarly, Chinese government would also give the same treatment to the U.S. industries. Both high-tech industries in bilateral countries suffered from restriction, technological innovation in both countries has been largely curtailed. The technological advancement is stopped by these two main powerful countries. Because of their restriction, scientist in both countries do not have chance to communicate with each other or it is hard for them to learn from bilateral. Secondly, because both two countries are competing for the number 1 country. They are competitor, no one of them will give up their interest and contribute to the human society. They are not willing to share their technological innovation to other countries. It brings negative impacts among the worlds.

Without the rapid development of the technological innovation, it will slow down the high-tech from all around the world. The scientific aspects will get slow down and cannot contribute to the society for all country and humans.

2.3 Moving Technological Center from China to Vietnam

The impact that the trade war bring to all countries around the world is enormous. The relationship between China and the United States is getting worse and worse. The trade war caused negative impacts for most of countries. However, one of the few beneficiaries of Trump's trade war has been Vietnam [5]. The economic growth in Vietnam is successful, because of the trade war and Covid-19, most of countries suffered from recession. But except Vietnam. The reason why Vietnam underwent an economic boom recently, driven in part by the realization that Vietnamese economy is more significant than the government thought it was. Because of the cold relationship between China and the United States, Vietnam is becoming more attractive for most of American industries especially High-tech industries [5]. This resulted in the more overseas investment in the Vietnam, high-tech industries chose to thrive in Vietnam instead of China.

International companies that want to avoid the high tariff that America imposed on Chinese imports are increasingly turning to Vietnam. Although the price difference between Vietnam and China is small, since the high tariff, corporations chose to produce their products in Vietnam. The Chinese manufacture of Apple's airpods, Goertek, had announced that they would move to Vietnam, are planning investing \$260 million in the venture. Google also announced that the production of its Pixel smartphones will be out of China and move to Vietnam. Other industries also have the same operations, choose to manufacture in China but export to Vietnam then move to America, it increasingly reduce paying high tariff in the United States [5].

Moving international manufacture from China to Vietnam reduce the overseas investments for China. The resulted of this is bring negative economic growth for Chinese GDP. However, it is a good idea for multinational corporations, since if they insist building their factory in China, they need to spend more on their import of raw material and increase their original product's cost in a large scale. Although the trade war brings numerous negative impacts on countries all around the world, Vietnam is a beneficiary in this case.

2.4 Lower Market Shares

With the banning of Huawei doing business in the United States, the trade war didn't have a winner, companies, countries and all industries suffered from the impact of the trade war. No matter how big or relevant the company is in tech-industries, the trade war offers no mercy, and no one is spread [6]. For many high-tech companies, because of the trade war, they lose their profit and lower market shares. Since China have high tariff on import American products, which will higher the cost of producing. Besides, because the trade war, a war without smoke, the media and the public are also part of the actors. With the exaggerations from media about this event, lots of Chinese public won't purchase products from American brands, which will make the multinational corporation to lose their Chinese market.

For tech-companies reliant in China for their production and supply chain, market shares will dramatically decrease. This resulted in many American company which have manufactory in China, lost their market share and interest because of the trade war. The most obvious example of this result is Apple which had their factory in China, and their supply chain also depends on China. In 2019, which was in the trade war. Apple has shed about \$75 billion of market value since the high tariff that American imposed in China [6]. Apple relies on China for its manufacturing plants and other raw material. There is no doubt that China is a very big market accounting for most of Apple's sales. Besides, companies such as Tesla, QUALCOMM are also directly affected because most of their raw material and material made of their products are come from China. Higher tariff means higher cost of producing. And it will be passed on their consumers [6]. These high-tech companies rely on the low cost in China.

The trade war that lowers the high-tech companies market share. Many overseas companies in China in the high-tech industries are suffer from the consequence of the trade war. Many companies lost lots of their profit, because of the high tariff, they have to increase their cost. Increasing the cost will also make the price of the products to go up. Then finally result in less sales. The trade war caused many multinational corporations lost their market shares and increase their cost of producing their products. What's more, because there is huge population in China, if overseas companies from the United States quit China, they will lose nearly 1/7 population of market globally.

2.5 Difficult for overseas investment in high-tech industry

With the rapid development of economic growth and military for China. The relationship between China and the United States is getting worse and worse. So, for many international companies, if they want to build their factory in bilateral countries. It is difficult for them to do it, and it will bring many political concerns, for instance, Chinese company want to build factory in the United States. It included many concerns, such as intellectual property, technological advancement and spy. The most

obvious example is the Huawei sanctions. However, CATL is also a significant example recently, CATL which stands for Contemporary Amperex Technology Co. Ltd.

CATL is a successful Energy Vehicle (EV) battery companies which specialize in producing lithium-ion battery, and included energy storage, systems and electric vehicles together with battery management systems. In the late of 2021, Apple asked CATL to build their factory in the United States and build their collaborative development team [6]. But in that time, CATL rejected their idea. However, in this year, 5th May. The president of CATL said they wanted to expand their market to the North American. And they will spend over 38.1 billion yuan on building their factory in North America, the first two choices of place that they considered building factory is in Kentucky and South Carolina [6]. There are lots of guessing on the Internet from the public about why CATL wanted to build their factory in North American. The most obvious interest for CATL is that the EV brands in the United States Such as TESLA, Ford etc. can have a better and closer relationship with CATL, providing CATL with higher returns [7]. However, because of the intense trade war between the United States and China. If CATL want to build their factory in North America, it will raise a political concern between these two countries. Because of the cold relationship between China and the United States, CATL also need to consider about few questions. The first question is that previous experience from LG energy solution, the US government asked this company to sign up an accord called “Battery safety use”. This accord is about providing their key experimental data about their Battery [7]. In some ways, it can be considered as the technology leaks. The second problem that CATL faced is that there is a lack of the battery industry chain in the United States. The cost of building factory in the North America is so high. These two questions are if CATL wanted to build their factory in the United States, they will face. In such an intense situation, it is difficult for CATL to build their factory inside the United States, they are more willing to build their factory in Mexico [7].

From the experience of LG energy solution, it is considerable for CATL to build their factory inside the United States. The problems that CATL will face after they start their business in the United States is more complex and numerous to solve. Considering starting business in the United States should take times. And we are more willing to see if CATL can come up with some better idea on solving these issues. The trade war that causes CATL, Chinese government and American government more careful on choosing overseas investment. The trade war can't stop the economic growth all around the world but slow down the growth in extent.

2.6 Intellectual Property

As we all know, the intellectual property is such a big problem in our society. In this case, analyses the intellectual property in high-tech industries in both China and the United States is important. There is no doubt that the high-tech industries need to pay more attention on how to protect their own intellectual property.

The intellectual property means when companies invented their own inventions, they are the creator of this invention, which makes other people cannot copy their idea and products. However, the trade war between China and the United States, is more likely to be called as a tech-war. Since in today's life, the high-tech can bring more and more effect in the war without smoking. Countries are competing whose inventions are more advanced etc.... So, because the cold relationship between these two countries. Intellectual property for international corporation is super important. If corporation cannot deal with the intellectual property problems from the government of these two countries. It will bring some serious problems for companies, also it will bring panic to the rest of the world, especially those companies with ability to have their own inventions. This is a big problem that must be solved, because the tech-war, as we know, we lack new technological advancement, if people have to “steal” other idea or invention. Undeniably, the scientist development will be move back for years. Focusing on how to protect scientist's idea and invention can help them to protect their success stealing from others. In some way, if this problem is solved, there will be more people are willing to invent new staff and bring contribution to the scientific development. China still need

further contributions to the study and preservation of autonomous intellectual property rights since these are the two factors that most strongly influence whether a nation can become a trade power [3].

The intellectual property has been a large problem in scientific field for a while, making this problem clear in the global high-tech industries by some powerful global organization is significant for high-tech industries. We are more willing to see international high-tech companies to bring the human society more contribution instead of stealing from others.

2.7 Raising Up the Unemployment Rate in China

There are lots of international corporation in China mainland, because the low cost of labor, and China have the largest market population among the worlds. However, if the trade war between China and the United States become more and more serious. The impacts that the trade war bring not only to the high-tech industries but also every industry [8].

For many international corporations such as Apple, Tesla etc. They both have their factory in China. As the cold relationship between China and the United States, especially during presidency of Trump. He gave pressure to American companies which have their factories in China, ask them to move out from China and back to the United States [8]. In this case, President Trump aimed to reduce the employment rate that international corporation offered in China. The employment rate during that period is plunging and the Chinese economy were suffering from the recession [8]. However, for many international corporations, they move their factory back to the United States, there is no doubt that it will increase their cost of production in a large scale since the high cost of labor.

For China, reduction on employment rate will bring many negative impacts on the economy, the government cannot get enough revenue, and the GDP of China will also decrease in some way.

2.8 International Relations and Global Politics

It is the most important issues and the greatest problems that the trade war between these two countries will bring to the world. Countries all around the world are linked together, countries and countries depend on each other for their thriving and development. If the international relations break, then it will bring significant and numerous impacts on the global economy.

As we all know, the relationship between China and the America is not good all the time. Even after the World War two, the Cold War, which bring the Soviet Union and the America, the most two superpowers in the world were also competing their scientific innovation. The Soviet Union and China are allies, because they have similar political government and theories. What's more, the Soviet Union's party affect the Chinese party. This makes the cold relationship between China and the United States, since they have already had a cold relationship since the Cold war period. So, in present, the trade war caused the relationship between China and the United States worse and worse. They both have mind of vigilance on each other. It is not good for the global economy. What's more, since these two countries are the superpowers among the world, bilateral countries must have allies. For China, such as, Russia etc. For the United States, Canada. This will result in countries all around the world suffer from the impact of China and the United States. It is difficult for other countries to build a good relationship between themselves and other countries.

From this perspective, if the trade war between China and the United States keeps like now, it will bring lots of negative impacts on not only the global economy but also the global relations

3. Possible Solution

As we discussed so many impacts that the trade war will bring to the high-tech industries, it is important for international corporations to tack actions on reducing damage that bring to them. For the reducing global high-tech supply chain, because of the relationship between China and the United States, this question is really hard for international corporation to solve since China provides the benefits of the low-cost labor force compared to the labor force in the United States. We suggested that the international corporation to seek other countries which also have a lower cost of labor force

and build their factory there. It will be some alternative method of building factory in China. Just like we mentioned in this paper, moving their technical center from China to somewhere else.

Secondly, based on the problem, rising the unemployment rate in China. It is dangerous for Chinese government, because there is no doubt that overseas investment provided Chinese with a large amount of job opportunities. As the decreasing of overseas investment and international corporation moving out of China market due to the pressure that the United States put on them, Chinese government are responsible for encouraging local investment and provide more job opportunities to fill out the blank or with a decrement in employment rate in China, Chinese economic will suffer from a huge damage that the trade war brought.

Last but not least, as we considering the solution for international corporation to deal with problems that the trade war brings to them. The most important method is that the Chinese government and the United States government can end this war without smoke. Since the impacts that this events brought to the world is numerous, especially for the High-tech industries.

4. Summary

The largest trade conflict in economic history may disrupt the structure of international commerce and slow down the financial markets. The nations may be split into two groups that together support the US or China while also building massive economic alliances and regional currency zones. Asia's influence on the processes of globalization and the creation of global supply networks is anticipated to grow. The US wants to undermine its primary rival and keep control of the world's economy, politics, and national security [9].

Currently, China is trying their best to protect their high-tech industries and avoid the sanctions or actions from the United States to jeopardies the Chinese industries, they will do everything possible for their high-tech industries to ensure their development and protect their rights [9].

The impacts of the trade war between these two countries will bring to the global economy is sustainable, if the trade war kept going. The most affectable industries would be the high-tech industry. Because these two countries are competing for who is the most powerful country among the worlds. They will definitely compete their advanced technology. The impacts that this event bring, cause problems all around the world. The most obvious problem that it brings is slow down the technological innovation in high-tech industries, prevent overseas corporation build their factory internationally. So, with so many concerns and problems that the trade war bring to us, the international justice need try their best to solve the conflict between these two countries and avoid more damage they bring to the rest of the world. The United States not only see China as an economic competitor but also a political rivalry, they just tried what they can do to slow down the development and improvement of Chinese economy and political power.

Eventually, so, with so many concerns and problems that the trade war bring to us, the international justice need try their best to solve the conflict between these two countries and avoid more damage they bring to the rest of the world. We are willing to see more actions that both countries take to avoid this conflict and see what WTO can do to solve conflicts between these two countries. China has a vast population, which was a burden in the past but is thankfully lively now, as well as a sizable market (invaded by world powers before now envious by others today). It should be so clear that the United States and China should work together for the benefit of both countries rather than engage in defensive technological sanctions against one another. Instead of taking a defensive posture or, worse still, employing dishonest tactics to stifle competition, the United States would be better served boosting its "American Can Do" attitude to stay competitive in the global marketplace [10]. We are looking forward to seeing more and more research on how international corporation based on some case studies about what international corporation's strategies and what they did during this event. Hopefully, if this kind of event happens again, people and companies have previous experience to better deal with these problems. However, we are more looking forward to the peaceful relationship

between China and the United States. Bring a stable economic growth to all global market and more and more technological innovation to the world, make people live a better life.

References

- [1] GDP by Country. Worldometer, <http://www.worldometers.info/gdp/gdp-by-country>.
- [2] Qin Julia. Forced technology transfer and the US–China trade war: Implications for international economic law. *Journal of International Economic Law*, 2019, 22(4): 743-762.
- [3] Zhang Runqi. The Impact of Intellectual Property Protection on High-tech Products Export. *International Conference on Educational Science*, 2020.
- [4] Sun Haiyong. US-China tech war: Impact and prospects. *China Quarterly of International Strategic Studies*, 2019, 5(2): 197-212.
- [5] James Rebecca. How Trade Wars Impact the Tech Industry? *Beencrypted*, 2022.
- [6] Curator. US-China Trade War: Impact on Tech Companies, 2019.
- [7] Hanley, BySteve. Catl Quest for North American Factory Raises a Host of Political Concerns. *CleanTechnica*, 2022.
- [8] Sahelirc. Why China Could Get Hurt More from a Trade War in the Tech Sector. *CNBC*, 2018.
- [9] Kapustina, Larisa, et al. "US-China trade war: Causes and outcomes." *SHS Web of Conferences. EDP Sciences*, 2020, 73.
- [10] Williams Robert, Huawei Deserves Justice. Is huawei a pawn in the trade war? The politics of the global tech race. *Foreign Affairs*, 2019, 30.