

# Global Industries' Hedge Strategy Under China-US Trade War

Chuan Sheng\*

Farmer School of Business, Miami Oxford University, Oxford, US

\*Corresponding author: shengc@miamioh.edu

**Abstract.** Human use trade to develop economy and technology til nowadays. Trade would benefit both parties but trade war is a movement that not worth for both parties. China-US trade war began since 2018, it has effect huge amount of global industries and global economy. Both countries' currency and those who has close business relationship countries' currency exchange rate were influenced. Both country kept put increasing tariffs on their products so that huge amount of global industries had to seek different hedge strategies to reduce foreign exchange risks or eliminate them to offset foreign currency exchange risk. This research paper would first introduce the definition of the trade and trade war, then analyze what was happening during China-US trade war, next use examples from 10-K to show how US tech giants use financial strategy to hedge their risk exposure and state possible situations might facing when hedging. Last conclude with four ways to reduce reduce and forecast the foreign currency exchange rate risks.

**keywords:** China-US trade war, global industry, foreign exchange risk, hedge strategy.

## 1. Introduction

This research paper would use China-US Trade War began in 2018 as an example, to analysis how global industry use financial strategy to hedge risk that exposure to foreign currency exchange risk.

The first part of this research paper would introduce the difference between trade and trade war. Trade would benefit both parties, but trade war would reduce total benefit that both parties can receive. Trade War usually come with revenge by adding tariff at first, then technology block would happen. If trade war takes long, both parties economy would be hurt. Government would use extra monetary policy and fiscal policy to maintain the price level, unemployed rate, inflation rate and etc. One thing has been made clear though, these extra policy strategy, social unhealthy and social inefficiency can be denied by avoiding making war by trade.

Second part of this paper would explain what happened between china and US during 2018. They keep putting tariff on each other repeatedly so that the counter-party could earn less and limited their economy gross. Technology and commodity block are the ways they used to let global citizens avoid to purchase so that some global industries suffer. The most common risk these global industries are facing is foreign exchange risk. Third part, this research paper would discuss the concepts of foreign exchange risk and how they impact global industry.

Then, this paper will analyze a specific company about the problems they were facing and the strategies they used to hedge risks. last, this research focus on theoretical ways to reduce foreign exchange risk.

## 2. Trade and Trade war

### 2.1. Definition of Trade

In simple terms, trade is basically an exchange, voluntary in nature between two parties in requirement of each other's resources [1]. For example, goods and services. The definition of trade can be introduced simply-the process of desire by two parties exchange their goods or materials they are good at produce and service. That's one of the most important way that countries develop economy and technology. But most of time, not everyone had something with same desire to trade. Until people found a way to set a creation that can be trade fairly for everything they could. Long time ago, people used to exchange by shell which is a desirable item for everyone. Nowadays, cash

is the thing acceptable for people. Benefit from trade is not only economic growth, but also exchange of culture and opportunities to leading to strives in development.

## 2.2. Difference between Trade and Trade War

The difference between trade and trade war can be easily explained by a mathematical equation. Let's say  $5+5=10$  represent trade. So we can see both parties could get equally advantage from each other. And 10 represent that the sum of profits from both parties. When this equation changes to  $2+8=10$ . You can see one part is trying to get more profits from counterparty. Total profit is not changing, but once a party earn less because of their counterparty manipulation, it will come with revenge. The mathematical equation would become  $4+4=8$  or  $2+2=4$ . We can see both parties profits reduce, total profits also reduce. This is a straight forward concept of China-US trade war.

## 3. Time line of China-US trade war

The China-US trade war was began in July 2018, it lead to tariffs on around US \$550 billion of Chinese goods and US \$185 billion of US goods under the administration of US president and Chinese president [2].

06/07/2018: The trade war began, US put 25 percent tariffs on around US \$ 34 billion of imports from China, it included cars, hard disks and aircraft materials. China imposed 25 percent tariff on 545 goods originating from the US worth US \$34 billion, it included agricultural products, automobiles and sea foods.

23/08/2018: 25 percent tariffs was put on US \$16 billion of Chinese good by Washington, it included iron products, electrical machinery, railway materials, some instruments. As response, China put 25 percent tariffs back on US \$16 billion US products. For example, orange juice, alcohol and motorcycles.

24/09/2018: US put another US \$200 billion tariffs on Chinese products. Then China put back tariffs on US products which was equal to US \$60 billion.

01/12/2018: Chinese president Xi Jinping and US president Donald Trump made an agreement that top trade war in next 90 days so that they can negotiate how to address both parties' concern on imports and exports.

10/05/2019: After both party fell to make an agreement, US increased tariff from 10% to 25% on Chinese products which worth US \$200billion. As response, China added US \$60 billion US goods from June 1.

15/05/2019: Chinese technology company Huawei had been blocked in America by US Department of Commerce. US companies were not allowed to sell supply chain to Huawei.

31/05/2019: After US Department of Commerce announced that Huawei had been blocked. The Ministry of Commerce announced that they would add these companies who broke the rule of market and use discriminatory strategy to hurt Chinese companies would be added in to blacklist.

01/06/2019: The Ministry of Fiance claimed that the reason they rose tariff around 10% to 25% is because of the response from China. It was called protectionism.

29/06/2019: The US president Donald Trump claimed that the outcome of trade war was better than expected. He said China had an agreement about not adding any further tariffs on goods.

05/08/2019: After Chinese yuan exchange rate fell below the 7 to the US dollar, the US quickly labeled China. It was the first time since 2008, Chinese yuan exchange rate reach 7 to the US dollar.

13/08/2019: The US president Donald Trump claimed that he was planning to remove or delay 10% tariff on US \$155 billion of Chinese products. For example, it included computers, smart phones and video games. These tariffs were planned to start on September.

23/08/2019: Tariffs around 5% to 10% on almost US \$75 billion of US goods was added by Chinese government. China also claimed that they would add back tariffs on American cars and vehicle materials started on December.

01/09/2019: An Oxford Economics research found that the tariffs US add back on Chinese products would reduce Chinese economic growth rate around 0.2 percent. It will reduce another 0.3 percent of economic growth rate. China expectation growth rate down to 5.7 percent, compare to 6.0 percent before.

11/09/2019: Chinese government decided cut 16 types of US products' tariffs, it included animal feeds, caner medicine, and agriculture products. The US president Donald Trump also responded to delay further tariffs on Chinese goods until October 15th to show the respect for 70th anniversary of the People's Republic of China.

11/10/2019: The US president Donald Trump claimed that he had successful negotiation with Chines President Xi about trade war phase one deal. Donald Trump decided to delay the implementation of more tariffs on China goods. He said the negotiation was to help both country to have a closer conclusion about the trade war.

15/01/2020: The US president Donald Trump made an agreement with Chinese Vice Premier Liu He about phase one trade war deal. It included market access and property protection.

14/02/2020: China began to reduce tariffs on US \$75 billion of US products which imposed on 2019. These tariffs included vehicle, agriculture productions, pork, chicken, beef, beans, oil, whiskey and seafood.

14/05/2020: China allowed to further import American agriculture products so that it move a big step along the phase one trade deal China and US made on January 2020.

01/09/2020: The US president Donald Trump eliminate trade war tariffs on masks, bluetooth technical materials and instruments from China.

14/09/2020: The US president Donald Trump posed restrictions on the Chinese cotton productions from Xinjiang Uygur autonomous region. The reason is about concern worker in that place would be force to work too much because of the widespread used of Xinjiang cotton.

15/09/2020: Chinese government decided to eliminated tariffs on 16 different US products for one year. It included caner drugs, seafood and oil. That movement show China take a another big step on further trade with America.

02/12/2020: The US new elected president Joe Biden claimed that the US will not make any new movement on trade war with China immediately.

## **4. Foreign Exchange Risk impact on global industry**

### **4.1. Definition of Foreign Exchange Risk**

Foreign exchange risk is a kind of risk would impact business financial performance or position because of the exchange rate changes between two countries [3].

There are three major types of foreign exchange risks. They often occurs when the company having business or have financial position in foreign country. Then volatility of both parties' currency cause company to lose money or gross margin. These risks especially exist in company which being exporters and importers around the world.

First is transaction risk. It faced by a company when making financial transactions. It means the unexpected changes may happen before transaction settlement. Essentially, the time delay between transaction and settlement is the source of transaction risk. For example, a US company want transfer Chinese Yuan to its US account, if the exchange rate was 1 USD for 6.5 Chinese Yuan at the time of transaction. And the rate changes before settlement, it becomes 1 USD for 7 Chinese Yuan. That's a unexpected lost because of the foreign exchange risk

Second is economic risk. It is the risk appeared when market was affected by unavoidable macroeconomic volatility. For example, political issue or geopolitical instability. Russian Ukraine war is a typically task. The Russian ruble extremely drop down in one week. The trading market not even closed. Company who has huge position in Russian would be suffer [4].

Third one is translation risk, it means company has huge financial position of its assets, liabilities or equities in foreign currency. The risks would be higher when company holder greater position in foreign country.

There are many ways that currency risk can impact global industry. For example. A vehicle company buying vehicle fleets from Japan, steel from India, oil or gas from Russia. So its supply chains are facing currency exchange risk from different countries. A close evaluation it supply chain contracts with business partners in foreign lands can minimize currency risk.

Actually, in recent history, some major global manufacturers have reported heavy currency risk-related losses, for example, General Motors reported that fourth-quarter net income declined by \$500 million due to foreign currency losses.

Russian Ukraine war can be a typical example that really affect currency exchange rate. As the image shows below, it's clear to found that 1 ruble can by 0.0119119 USD on Feb 28 2022, then it suddenly goes down after Feb 28. It is exactly the date Russian began to attack Ukraine. While the global foreign exchange market is not formally closed to ruble trading. The Russian ruble has lost more than 64% to the dollar year (see Fig.1).



Fig. 1 RUB to USD [5]

#### 4.2. The problem Tesla was facing

For example, the Japanese yen went strong in 2016 so that Tesla was facing greater cost. Because most of its battery cells were came from Japan by Panasonic. This increasing risk also had been marked in Tesla's 10-K financial records as the picture shows below (see Fig.2).

*Increases in costs, disruption of supply or shortage of materials, in particular for lithium-ion cells, could harm our business.*

We may experience increases in the cost or a sustained interruption in the supply or shortage of materials. Any such increase, supply interruption or shortage could materially and negatively impact our business, prospects, financial condition and operating results. We use various materials in our business including aluminum, steel, lithium, cobalt, nickel and copper, as well as lithium-ion cells from suppliers. The prices for these materials fluctuate, and their available supply may be unstable, depending on market conditions and global demand for these materials, including as a result of increased production of electric vehicles and energy storage products by our competitors, and could adversely affect our business and operating results. For instance, we are exposed to multiple risks relating to lithium-ion cells. These risks include:

- the inability or unwillingness of current battery manufacturers to build or operate battery cell manufacturing plants to supply the numbers of lithium-ion cells we require;
- disruption in the supply of cells due to quality issues or recalls by battery cell manufacturers or any issues that may arise with respect to cells manufactured at our own facilities;
- an increase in the cost, or decrease in the available supply, of materials used in the cells; and
- fluctuations in the value of the Japanese yen against the U.S. dollar as our battery cell purchases for Model S and Model X are currently denominated in Japanese yen.

Fig. 2 Tesla 10-K [6]

When US dollar goes weak, Tesla can earn more profits as a exporter. Weaker US dollar means customer can purchase more with their currency than before. With the same reason. Tesla revenue would be hurt by any strength USD dollar. That's also a explanation why Chinese government always hold their currency exchange rate very low to US dollar. Because as one of the biggest exporter country, low currency exchange rate can help them earn more (see Fig.3).

*We are exposed to fluctuations in currency exchange rates, which could negatively affect our financial results.*

Our revenues and costs denominated in foreign currencies are not completely matched. As we have increased vehicle deliveries in markets outside of the U.S., we have much higher revenues than costs denominated in other currencies such as the euro, Chinese yuan, Norwegian krone, pound sterling and Canadian dollar. Any strengthening of the U.S. dollar would tend to reduce our revenues as measured in U.S. dollars, as we have historically experienced. In addition, a portion of our costs and expenses have been, and we anticipate will continue to be, denominated in foreign currencies, including the Japanese yen. If we do not have fully offsetting revenues in these currencies and if the value of the U.S. dollar depreciates significantly against these currencies, our costs as measured

30

in U.S. dollars as a percent of our revenues will correspondingly increase and our margins will suffer. Moreover, while we undertake limited hedging activities intended to offset the impact of currency translation exposure, it is impossible to predict or eliminate such impact. As a result, our operating results could be adversely affected.

**Fig. 3 Tesla 10-K [7]**

### 4.3. How US Tech Giants use Strategy to Hedge Currency Risk

Consider Apple as a classical example, they usually use foreign currency forward and options to hedge the volatility from currency exchange rate change. They realized they owns a larger percentage of assets in foreign bases. So how to hedge or offset these huge amount of risk is an important task for them and they did well so far.

The weaken foreign currency compare to US dollar have negative influence to Apple. In some circumstance, Apple have to not raise international price to offset the risk from strengthen US dollar. It would hurt the gross margins of the company ears on foreign company. As the picture shows below, Apple also claimed their concern about currency exchange rate risk in their 10-K in 2021 (see Fig.4).

*The Company's financial performance is subject to risks associated with changes in the value of the U.S. dollar relative to local currencies.*

The Company's primary exposure to movements in foreign currency exchange rates relates to non-U.S. dollar-denominated sales, cost of sales and operating expenses worldwide. Gross margins on the Company's products in foreign countries and on products that include components obtained from foreign suppliers could be materially adversely affected by foreign currency exchange rate fluctuations.

Apple Inc. | 2021 Form 10-K | 15

The weakening of foreign currencies relative to the U.S. dollar adversely affects the U.S. dollar value of the Company's foreign currency-denominated sales and earnings, and generally leads the Company to raise international pricing, potentially reducing demand for the Company's products. In some circumstances, for competitive or other reasons, the Company may decide not to raise international pricing to offset the U.S. dollar's strengthening, which would adversely affect the U.S. dollar value of the gross margins the Company earns on foreign currency-denominated sales.

Conversely, a strengthening of foreign currencies relative to the U.S. dollar, while generally beneficial to the Company's foreign currency-denominated sales and earnings, could cause the Company to reduce international pricing and incur losses on its foreign currency derivative instruments, thereby limiting the benefit. Additionally, strengthening of foreign currencies may increase the Company's cost of product components denominated in those currencies, thus adversely affecting gross margins.

The Company uses derivative instruments, such as foreign currency forward and option contracts, to hedge certain exposures to fluctuations in foreign currency exchange rates. The use of such hedging activities may not be effective to offset any, or more than a portion, of the adverse financial effects of unfavorable movements in foreign exchange rates over the limited time the hedges are in place.

**Fig. 4 Apple 10-K [8]**

According to Apple 10-K in 2021, we can clearly see that Apple use financial instruments to offset its risk exposure to foreign exchange risk and interest rate risk. It also claimed the probability that Apple choose forward contracts, option contracts as cash flow hedges, typically for up to 12 months. Besides, Apple also says they could use cross-currency swaps to offset risks on its denominated term debt or marketable securities from fluctuations in foreign currency. Apple also enter into derivative instruments to hedge gross margins from foreign currency exchange rates. Comparing to 2020, Apple spend \$19065 more US dollar on Foreign exchange contracts (see Fig.5).

Foreign Exchange Risk

To protect gross margins from fluctuations in foreign currency exchange rates, the Company may enter into forward contracts, option contracts or other instruments, and may designate these instruments as cash flow hedges. The Company generally hedges portions of its forecasted foreign currency exposure associated with revenue and inventory purchases, typically for up to 12 months.

To protect the Company's foreign currency-denominated term debt or marketable securities from fluctuations in foreign currency exchange rates, the Company may enter into forward contracts, cross-currency swaps or other instruments. The Company designates these instruments as either cash flow or fair value hedges. As of September 25, 2021, the Company's hedge term debt- and marketable securities-related foreign currency transactions are expected to be recognized within 21 years.

The Company may also enter into derivative instruments that are not designated as accounting hedges to protect gross margins from certain fluctuations in foreign currency exchange rates, as well as to offset a portion of the foreign currency exchange gains and losses generated by the remeasurement of certain assets and liabilities denominated in non-functional currencies.

Interest Rate Risk

To protect the Company's term debt or marketable securities from fluctuations in interest rates, the Company may enter into interest rate swaps, options or other instruments. The Company designates these instruments as either cash flow or fair value hedges.

The notional amounts of the Company's outstanding derivative instruments as of September 25, 2021 and September 26, 2020 were as follows (in millions):

	2021	2020
Derivative instruments designated as accounting hedges:		
Foreign exchange contracts	\$ 76,475	\$ 57,410
Interest rate contracts	\$ 16,875	\$ 20,700
Derivative instruments not designated as accounting hedges:		
Foreign exchange contracts	\$ 126,918	\$ 88,636

The gross fair values of the Company's derivative assets and liabilities were not material as of September 25, 2021 and September 26, 2020.

The gains and losses recognized in OCI and amounts reclassified from AOCI to net income for the Company's derivative instruments designated as cash flow hedges were not material in 2021, 2020 and 2019.

Apple Inc. | 2021 Form 10-K | 39

The carrying amounts of the Company's hedged items in fair value hedges as of September 25, 2021 and September 26, 2020 were as follows (in millions):

	2021	2020
Hedged assets/(liabilities):		
Current and non-current marketable securities	\$ 15,954	\$ 16,270
Current and non-current term debt	\$ (17,857)	\$ (21,033)

The gains and losses on the Company's derivative instruments designated as fair value hedges and the related hedged item adjustments were not material in 2021, 2020 and 2019.

Accounts Receivable

Fig. 5 Apple 10-K [9]

## 5. Ways to Reduce Foreign Exchange Risk

The first way to reduce foreign exchange risk would be examine the supply chain: for example, a vehicle company can purchase parts from different countries [10]. It can purchase fleets and battery from Japan, oil from Russia. Exchange cash with different currency and examine the risk of each type of currency. A closely evaluation of supply chain could help company to reduce currency risks.

Second way is to trade in local currencies: When manufactures create contracts with oversea partners. They would like to lock the transaction in local currency. The reason is that overseas business would charges additional fees by converting to currency like US dollar.

Third solution would be work with oversea currency hedge company. After invest in foreign exchange currency company, it can reduce currency risk by using specific financial instruments just like what Apple did. It can lock in a forward contract that better hedge currency risk in that country.

Be sensitive about currency alert would also be a good way. Usually, most of currency volatility can be predicted by news or company announcement. Once get the alert, company can immediately decide which financial instrument to hedge risk. It enable company to better prevent and manage foreign exchange risk before it hurt company's gross margin.

## 6. Conclusion

Trade began in human history is basically an exchange, voluntary in nature between two parties in requirement of each other's resources. Human use trade to develop economy and technology til nowadays. But trade war is a movement that not worth for both parties. It hurt both parties' profit and it is not easy to stop in short time. Relationship around these two countries also has been weaken. The trade war between China and US still continue. They seems both struggling to deal with the relationship.(10)It was imposing tariff on each other at the beginning, then it changes to technology block. It was wasting labor force and both countries government budget. Global industry have to seek different ways to hedge the foreign currency exchange risk that trade war bring to them. For example, just like Apple, found their way to hedge risks by using cross-currency swaps, option contracts and

forwards contracts to hedge these risks. It definitely affect the cash flow transaction of company. Many company without specific knowledge or professional risk management department are hard to offset foreign currency exchange risks. For these company, examine the supply chain, trade in local currencies, work with oversea hedge company and be sensitive about currency risk alert would be better ways to reduce risks.

## References

- [1] What Is Trade? Definition of Trade, Trade Meaning. The Economic Times, <https://economictimes.indiatimes.com/definition/trade>.
- [2] Andrew Mullen. Timeline of the US-China Trade War since July 2018. South China Morning Post, 29 Aug 2021, <https://www.scmp.com/economy/china-economy/article/3146489/us-china-trade-war-timeline-key-dates-and-events-july-2018>.
- [3] Andrew Loo. Foreign Exchange Risk. Corporate Finance Institute, 30 Nov. 2022, March 6, 2023. <https://corporatefinanceinstitute.com/resources/foreign-exchange/foreign-exchange-risk/>.
- [4] 1 Rub to USD - Convert Russian Rubles to US Dollars. 1 RUB to USD - Russian Rubles to US Dollars Exchange Rate, <https://www.xe.com/currencyconverter/convert/?Amount=1&From=RUB&To=USD>.
- [5] Tsla-10k\_20161231.HTM. [https://www.sec.gov/Archives/edgar/data/1318605/000156459017003118/tsla-10k\\_20161231.htm#Item\\_1A](https://www.sec.gov/Archives/edgar/data/1318605/000156459017003118/tsla-10k_20161231.htm#Item_1A).
- [6] Tsla-10k\_20171231.HTM [www.sec.gov/Archives/edgar/data/1318605/000156459018002956/tsla-10k\\_20171231.htm#Item\\_1A](http://www.sec.gov/Archives/edgar/data/1318605/000156459018002956/tsla-10k_20171231.htm#Item_1A).
- [7] AAPL-20210925 [www.sec.gov/Archives/edgar/data/320193/000032019321000105/aapl-20210925.htm#icffec2d5c553492089e1784044e3cc53\\_16](http://www.sec.gov/Archives/edgar/data/320193/000032019321000105/aapl-20210925.htm#icffec2d5c553492089e1784044e3cc53_16).
- [8] Anmol Karwal Published: October 5th 2021, and Anmol Karwal. US Tech Giants Slashed Fx Hedges before Em Currencies Plunged - EuroFinance: The Global Treasury Community. EuroFinance, 6 Oct. 2021. <https://www.eurofinance.com/news/us-tech-giants-slashed-fx-hedges-before-em-currencies-plunged/>.
- [9] Finbarr Bermingham. China's trade with US failed to meet phase one deal targets last year. South China Morning Post, 22 Jan 2021. <https://www.scmp.com/economy/china-economy/article/3118822/chinas-trade-us-failed-meet-phase-one-deal-targets-last-year>
- [10] Robert Daly, Rui Zhong. On the Horizon 2023: China. Wilson Center, 6 January 2023. [www.wilsoncenter.org/article/horizon-2023-china?gclid=EAIaIQobChMIoN3fq7-G\\_gIVlJpmAh3RNQomEAAYAiAAEgKMGvD\\_BwE](http://www.wilsoncenter.org/article/horizon-2023-china?gclid=EAIaIQobChMIoN3fq7-G_gIVlJpmAh3RNQomEAAYAiAAEgKMGvD_BwE).