



# 温州肯恩大学

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## **Impact of Sino-US trade dispute on futures markets**

In Partial Fulfillment of the Requirements

for the Bachelor of Science in Finance

by

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## **Abstract**

This research explored the correlation between Sino-US dispute and futures markets, which mainly through dominant industries. From 2017 until now, China and the US had constantly given birth to trade friction; both of them take action on tariffs imposing in order to transfer deficit. Correspondingly, future markets were influenced by many changed factors like product price. In addition, futures are so more popular and diverse that they are significant for investor and healthy market. Based on data from professional finance institutions and previous studies, this study demonstrated that future markets seized development opportunities from Sino-US trade war.

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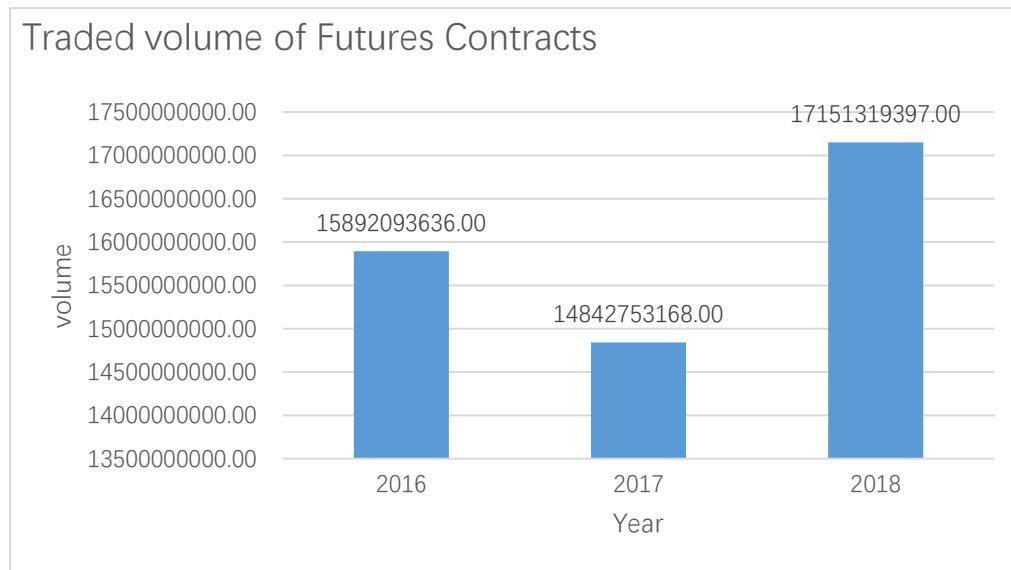
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## **1. Introduction:**

According to current facts, I assume that even Sino-US trade dispute brings shock, but it still motivates futures market. Around half of the whole world's economic activities occur in China and the United States. Since the United States is the NO.1 economic entity (at 21,482.41 billions of \$) and China is the second (at 14,172.20 billions of \$) in "World GDP (Nominal) Ranking 2019", their relationship plays a significant role in balancing global finance. Besides, as an emerging investment, futures has optimistic development expectation, which should be focused on.

Data shows, from 2016 to 2017, traded volume of futures experienced a decline by 6.6%, but in the next year, futures volumes reached an all-time high.



As the result of Investment psychology and market laws, trade war brings market turmoil, which lowers investor's expectation. Investors will not take this risk until they have clear mind of it. Therefore, there is a trough in 2017, the year Sino-US trade war started. In 2018, after observations and predictions, also with constant price changing in different industries, investors find out that futures markets have more opportunities even risk is higher, so futures markets win back investors.

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Sometimes trade war is not just a tragedy. Regardless of short downturn, its optimistic development cannot be ignored. Therefore, analyses of Sino-US trade dispute is necessary for protecting world futures development.

## **2. Literature Review**

### **2.1 Current Situation**

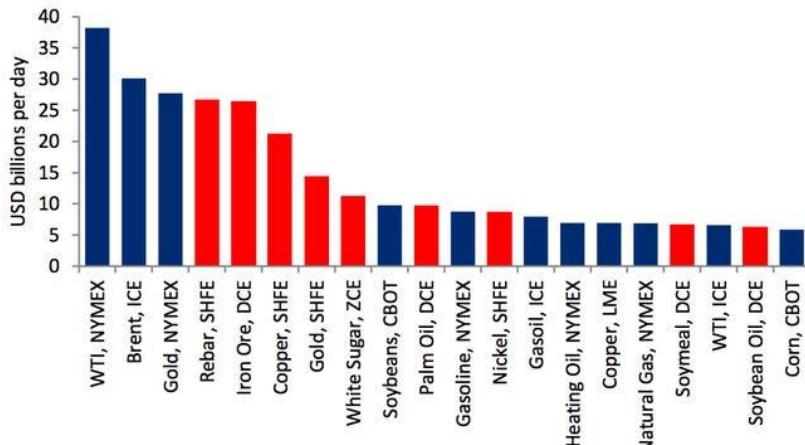
As early as 1984, Michael N. Jenkins has said, “equities and financial markets are borderless.” (Maidenberg, 1984) This fact is much more obvious in today’s markets. Even in domestic financial markets, foreign financial instruments maybe the most popular products. Nowadays, as one of the most popular financial products, futures contracts are widely traded all over the world, especially in China and the United State, the top two economic countries.

The basic ideas about futures contracts are short and long contracts. Dr. Hull clearly demonstrate those two kinds of contracts, an investor who purchases assets would like to choose long futures hedges, and investor who sell assets would like short futures to reduce risk. (Hull, 1988) Therefore, no matter the price goes up or down that there are always people who can earn benefits from futures contracts

Below is the trade overview of China from Citi:

## Chinese commodity contracts have become widely traded

Top 20 global commodity contracts by daily trading volumes, 1Q16



(Citi, 2016)

China has occupied a large proportion in global import and export trade, so it makes significant impact on other countries.

Even though Chinese futures markets are newborn, it has abundant development room. (Morse, 2016) Once Chinese demand changes, global futures price will change in response.

There are many internal and external factors affect futures price. According to International Monetary Fund's research, tariffs are one of the direct influence factors, (International Monetary Fund, 2018) For instance; tariffs may change the price of raw materials and labor cost, which directly change futures price. Since trade wars between US and China started until now, both two countries try to win by adding import tariffs to each other. The four major phases in Sino-US trade dispute, which are divided by measures that president Trump of the United State has taken toward China are: (Bown, Melina. 2019)

### I. Solar panel and washing machine import phase

In order to shift the trade loss, US imposes safeguard Tariffs on sorghum, as a result, China investigates and imposes back. On the one hand, US cannot sell their sorghum to China, lots of sorghum does not have exchange markets, so price decreased in surplus. On the other hand, China refuses US Sorghum, which leads to sorghum shortage, and price increased.

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## II. Steel and aluminum phase

After hit by US steel and aluminum, China rises tariffs on agricultural commodity, such as pork and fruits. From now on, people recognize that trade war is not short term. Data from Yahoo Finance shows the correspondent result. Most metal price sharply decreased, as an example, Silver price in this time period drop to the lowest level in recent five years. Therefore, speculators increased compare with formal investors. (Barchart)

## III. Technology and intellectual property phase.

## IV. Autos phase.

In those two phases, China and the US transfer their attention to technological products like auto industry and mobile phone industry. Since oil is close related to auto industry, oil futures market is added to one of main battlefields.

Although conflicts play the main role, concessions still exist.

### **2.2 Major Field:**

If divided by types, trade war focuses on: (REUTERS, 2019)

#### 1. Energy

China is the largest crude customer of the United States before trade war, but lowers large amount of imports due to tariffs. In turn, the United States has to lower large amount of gas imports for high tariffs.

#### 2. Agricultural products

Soybean and pork trade is unidirectional. Therefore, China imposes highest tariffs on agricultural import, which makes domestic pork price has a rapid growth.

#### 3. Metal and rare earth

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Another unidirectional trade between China and the United States, but China becomes seller. With the same purpose, US government increases tariffs to reduce trade deficits. However, Barings's CEO Tom Finke has optimistic attitudes towards China. (Bloomberg Market, 2019) He says China has a booming investment market. Chinese investment market has not only more investors, but also improved system.

### **3. Methodology:**

#### **3.1 Research Design:**

This research uses four years futures contracts data from FIA statistics from 2016 to 2019, the main two sections are price and trading volume. My regression is derived from models present in

Quantitative research is the best choice to measure this hypothesis. By collecting both primary and secondary data, the following results are more creditable. Besides, correlational style in this research enables researcher obey futures markets rules instead of controlling test targets, which is more objective and reliable.

#### **3.2 Data**

According to the data that retrieved from Yahoo Finance and Bloomberg, this test will find out if Sino-US trade war brings opportunity to futures markets, and especially in commodity and energy markets. Data covers information about futures contracts markets from 2016 to 2019. All Commodity Price Index averages, includes both Fuel and Non-Fuel Price Indices are:

2016:

1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M	Average
85.394	87.387	93.653	96.662	100.537	103.146	102.820	103.252	103.325	106.727	105.534	111.562	100.000

2017:

1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M	Average
115.975	116.514	110.998	111.100	108.883	105.674	108.448	111.279	114.542	116.081	120.826	122.545	113.572

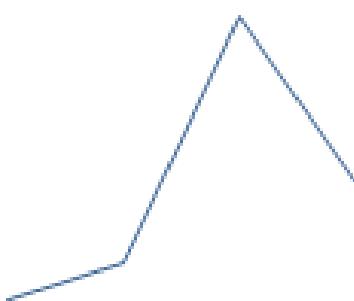
2018:

1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M	Average
129.828	127.001	126.577	128.537	133.346	132.222	130.473	128.260	132.696	133.710	122.162	116.151	128.414

2019:

1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M	Average
117.317	119.342	120.265	123.840	120.806	115.821	118.270	112.796					118.290

The overall trend is:



Since this research focus on three different areas, data testing is divided into three sections as well.

First section is price calculation in Energy area:

2016:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
77.528	78.139	87.463	92.260	101.393	106.415	101.995	103.766	105.175	114.806	108.005	123.054	100.000

2017:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
128.327	126.004	116.321	119.417	114.937	108.244	112.039	118.288	126.227	130.799	141.562	144.914	123.923

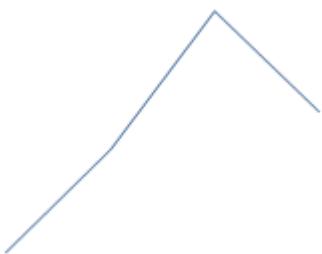
2018:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
156.132	126.004	147.972	152.743	163.580	163.929	165.273	163.922	174.088	173.771	149.336	133.349	155.842

2019:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
133.302	136.049	138.256	143.768	139.411	123.532	126.890	118.180					132.424

The overall trend:



Second section is price calculation in agriculture area:

2016:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
92.840	93.691	96.916	99.518	100.984	102.870	103.698	101.933	101.823	101.476	101.954	102.297	100.000

2017:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
106.852	107.583	104.049	103.351	104.941	103.744	105.494	101.493	100.536	100.966	101.397	101.377	103.482

2018:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
105.085	105.911	107.006	106.654	108.394	104.630	101.846	98.265	99.008	100.625	96.759	98.743	102.744

2019:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
100.379	99.350	98.923	101.830	98.845	100.554	100.207	97.218					99.663

The overall trend:



Third section is price calculation in metal area:

2016:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
86.330	92.312	97.996	99.113	98.326	98.436	104.150	105.303	103.421	101.338	107.214	106.061	100.000

2017:

1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M	Average
108.702	114.135	113.141	109.434	105.833	105.672	108.234	115.072	115.919	113.607	114.586	115.873	111.684

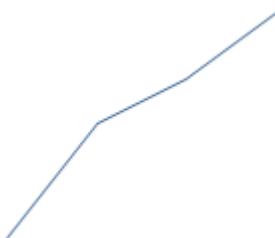
2018:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
122.012	122.267	119.313	120.307	119.351	119.041	113.012	110.587	110.278	112.693	112.125	111.888	116.073

2019:

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Average
114.711	120.811	121.106	121.924	121.162	125.339	130.726	126.911					122.836

The overall trend:



### 3.3 Regression Model:

Below is the testing model, which is used to verify the correlation: Tariffs rise, so will futures contracts.

F2	:	X	Y	D	E	F	G	H	I	J	K
1				X平均值	Y平均值	r					
2	1M			#DIV/0!		#DIV/0!					
3	2M										
4	3M										
5	4M										
6	5M										
7	6M										
8	7M										
9	8M										
10	9M										
11	10M										
12	11M										
13	12M										
14											

$$r = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum(X - \bar{X})^2} \sqrt{\sum(Y - \bar{Y})^2}}$$

Where:

R = the correlation coefficient

X-bar = the average of variable X: futures contracts volume

Y-bar = the average of variable Y: futures contracts price

Based on the yearly prices and quantity, r is calculated as:

For energy futures contracts:

2016

C	D	E
X-bar	Y-bar	r
171456970.2	100	1

2017:

C	D	E
X-bar	Y-bar	r
167117600.5	123.923	1

2018:

C	D	E
X-bar	Y-bar	r
172997623.4	155.842	1

2019:

Second section is correlation test in agriculture area:

2016:

C	D	E
X-bar	Y-bar	r
154118592.4	100	1

2017:

C	D	E
X-bar	Y-bar	r
102147440.1	103.482	1

2018:

X-bar	Y-bar	r
115569873.3	102.744	1

2019:

Third section is correlation test in metal area:

2016:

C	D	E
X-bar	Y-bar	r
180602803.3	100	1

2017:

C	D	E
X-bar	Y-bar	r
166409835.6	111.684	1

2018:

C	D	E
X-bar	Y-bar	r
149101493	116.073	1

2019:

Here we can see, all the test result is approximately 1, and since  $r = 1/-1$  the hypothesis is right.

However, the volume of 2019 is not counted, so the final result may have some mistakes.

We can make conclusion that all of energy, agriculture and metal futures have rising price from 2016. Generally speaking, after 2018, investment gradually back to smooth.

### Potential outcomes:

“Outstanding contracts in China’s stock index futures, another risk-hedging tool, hit this year’s high” (Shen, Galbraith, 2019) Data in this paper also shows the same rule. Sino-trade war on the one hand leads to negative tariff competitions, which cause price fluctuation and increase

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investment risks. Under this circumstance, the risk-off sentiment push investors to lower their losses. Therefore, when market collapse, leveraged and inverse exchange-traded funds are chosen by more investor, which simulates futures markets.

### **Significance:**

During Sino –US trade war, both China government and US make sanctions to each other by imposing tariff on agriculture products or downgrade credit rating. Such competitive phenomenon requires investors closely follow various signals, and avoid risk exposure. This research finds out that how price of energy, agriculture product and metal correlated to investment products. Knowing the discipline is helpful for investors and hedge fund managers to adopt strategies and earn profits from high volatility.

### **Limitations:**

The test time period is not long enough, so research may have uncertainty. Because 2019 is not end yet, yearly trading volume is missing. In addition, every event has its own character, so the results may not be able to applied in all trade war results.

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## References

- Bown, Chad P. & Kolb, Melina. (2019). Trump's Trade War Timeline: An Up-to-Date Guide. *PETERSON INSTITUTE FOR INTERNATIONAL ECONOMICS.*
- International Monetary Fund. (2018). World Economic Outlook: Growth Slowdown, Precarious Recovery. Washington, DC, April. *International Monetary Fund*. Chapter 1 & Chapter 4.
- Yen Nee Lee. (2019). These 4charts show how US-China trade has changed during the tariff dispute. *CNBC*. Retrieved from: <https://www.cnbc.com/2019/09/18/what-us-china-trade-war-means-for-imports-exports-and-soybeans.html>.
- Yap, Chuin-Wei. & Dapena, Kara. (2018) Tariff Dispute Threatens China's Thirst for U.S. Oil. *THE WALL STREET JOURNAL*.
- Bown, Chad P. (2018). More than Soybeans: Trump's Section 301 Tariffs and China's Response. Trade & Investment Policy Watch (April 4). *Washington: Peterson Institute for International Economics*.
- Aizhu, chen. & Xu, Muyu. & Patton, Dominique. & Daly, Tom. & Singh, Shivani. (2019). Factbox: China's tariffs on U.S. commodities and energy. *REUTERS*.
- Bailey, Elizabeth. (1981). New oil futures market booms. *The New York Times*.  
Section D, Page 1
- Maidenberg, H. J. (1984). A linkage of futures markets. *The New York Times*.  
Section D, Page 18
- Bloomberg Market. (2019). There is good opportunity in Long-Term growth value of Aisa, Says Barings's CEO.
- Vercoe, Peter. (2019) Blackstone's James Tempers His Optimism on U,S,-China Trade Deal. *Bloomberg*. 55 *Law & Contemp. Probs.* 119 (1992)  
Commodity Exchanges and the Privatization of the Agricultural Sector in the Commonwealth of Independent States - Needed Steps in Creating a Market Economy,

---

Belozertsev, Alexander, Markham, Jerry W.

[ 38 pages, 119 to 156 ]

Hull, John C. (1988) OPTION, FUTURE, AND OTHER DERIVATIVES. Person Education Limited.

Oyedele, Akin. (2016) China is tightening its grip on the world's commodities markets. *Business insider*.

Shen, Samuel. Galbraith, Andrew. (2019) Chinese bears see trade war worsening, flee to safe havens, derivatives. *REUTERS*.