

# Analysis of Gold Plate Investment based on Sino-US Trade Tension

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**Abstract.** Based on the public data of gold block in China's securities market from January 26, 2018 to August 7, 2019, with the management objectives of winning rate, annual return rate and net profit rate, the above data were tested by the Trend RSI Expert System. The results show that the maximum of winning rate, annual return rate and net profit rate are 100%, 27.31% and 9.10% respectively, and the minimum are 54.55%, 2.56% and 2.56% respectively. Compared with the 30.71% decline of China's Shanghai Stock Exchange Index, it is the right choice to use RSI Expert System to make decision on investment of gold block.

**Keywords:** Anti-trend Expert System; Gold plate; Sino-US Trade Tension; Empirical Analysis.

## 1. Introduction

With trade tensions between China and US, weak dollar and weak performance of stock market, investors turn to bonds and gold ETF, and Gold has been one of the best-performing asset classes since 2018. Not surprisingly, because investors first think of gold whenever the market encounters "black swan" event, significant increase in geopolitical risk or sharp rise in haven demand.

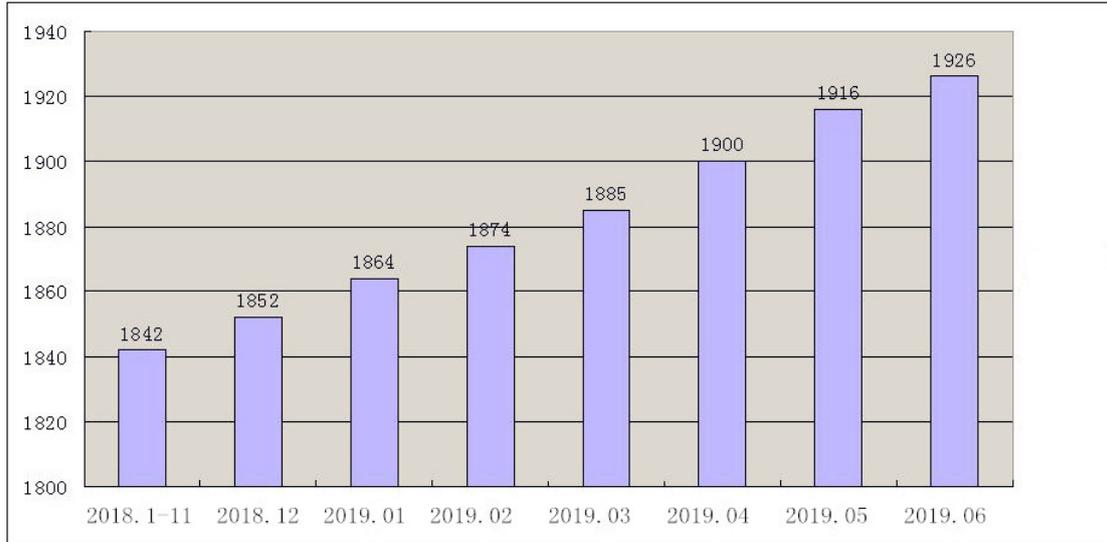
The escalation and fermentation of Sino-US trade frictions in 2018 put the performance of gold in the spotlight. In the early stage of trade frictions, the escalating crisis supported gold prices to perform well. Meanwhile, a large proportion of ETF inflows were due to gold price fluctuations in late March.

According to the March global gold ETF data updated by the World Gold Association, gold ETF increased by 47.3 tons in the first quarter of 2018. The total gold ETF positions increased by 22.5 tons in March to 2,415 tons (\$102.8 billion). Among them, the United States and China led the inflow of global gold ETF in the first quarter. The gold ETF inflows in North America accounted for 85% of net global ETF inflows. It was mainly driven by ISHARES GOLD TRUST and SPDR GOLD SHARE. ETF in Asia grew by 13.4% in the first quarter of 2018, which was mainly driven by China's Bosch Gold. "The inflows of ETF in the United States and China reflected broader market uncertainties, which were partly related to geopolitical risks such as global trade tensions in March," said JUAN CARLOS ARTIGAS, the head of investment research at the World Gold Association.

Juan "INFLOWS IN THE US AND CHINA REFLECT BROADER MARKET UNCERTAINTY RELATED IN PART TO GEOPOLITICAL RISKS SUCH AS GLOBAL TRADE TENSIONS IN MARCH."—JUAN CARLOS ARTIGAS

Haiping Huang et al. (2017) [1], tested RSI Expert System and W%R Expert System. Compared with the one-time purchase of stocks with all funds, the success rate and annual return rate of step-by-step purchase of stocks with 30% proportion could only increase by 9.29% and 6.31% respectively. However, the annual rate of return and net profit margin decreased to 41.85% and 50.93% respectively. For RSI Expert System and W% R Expert System, the method of fund management is meaningless.

Table 1. Gold Reserve of the Central Bank of China (Unit: tons)



(Data from the Central Bank of China)

Yao Huang et al. (2017) [2] empirically analyzed the vocational education block of the securities market using W&R Expert System, and obtained that the annual return and net profit rate were 61.62% and 61.63% of the Shanghai Stock Exchange Index respectively. For the venture investors, the return rate of investment scheme was 59.72%, and it was desirable that the annual return rate was 6.6 times the annual interest rate of bank deposits.

Fang Yu (2017) [3] used RSI Expert System to conduct test, based on the vocational education block of the securities market, with the annual net profit rate, yields and rate of return as the management target. The results show that the annual return and net profit rate of RSI annual rate of return are 44.4% and 44.3% respectively. The annual rate of return is 4.76 times the annual interest rate of bank deposits, which provides a safe investment scheme for investors.

Yun Li et al. (2018) [4] empirically analyzed the practicability of RSI and MA Expert System in the banking block based on the banking block of the securities market. The results show that the success rate of RSI Expert System is 1.47 times that of MA Expert System. The annual return rate and net profit rate of RSI Expert System are 2.13 times that of MA Expert System. The annual transaction volume of RSI Expert System is 0.87 times that of MA Expert System. Therefore, RSI expert system is obviously superior to MA Expert System.

Hui Ma et al. (2018) [5] analyzed the practicability of RSI and MA Expert Systems in the software block of the securities market with the management objectives of winning rate, annual return rate and net profit rate. The results show that RSI Expert System is superior to MA Expert System. Considering the low annual return rate and net profit rate of RSI Expert System, compared with the banking block, the selection of industry block is more important than that of Expert System.

## 2. Model and Experiment

### 2.1 Two Commonly Used Counter-trend Indicators

Williams %R (Williams Overbought/Oversold, WMS%R) W%R mathematical formula:

$$\%R = \frac{high_{Ndays} - close_{today}}{high_{Ndays} - low_{Ndays}} \times (-100\%) \tag{1}$$

$$\begin{aligned} & (close_{today} - low_{Ndays}) - (close_{today} - high_{Ndays}) \\ & = high_{Ndays} - low_{Ndays} \end{aligned} \tag{2}$$

$$W\%R = \frac{C_n - H_n}{H_n - L_n} \times 100\% \quad (3)$$

Where,  $n$  is the transaction cycle set by the trader;  $C_n$  is the closing price in  $n$  days;  $L_n$  is the lowest price in  $n$  days;  $H_n$  is the highest price in  $n$  days.

Relative Strength Index RSI mathematical formula:

$$RSI = \frac{100 \times RS}{1 + RS} \quad (4)$$

$$RS = \frac{\text{Average rising points in } i \text{ days}}{\text{Average dropping points in } i \text{ days}} \quad (i = 1, 2, \dots, n) \quad (5)$$

RSI Expert System Experiment:

Expert System RSI is formulated according to the rules given by Welles Wilder, and the transaction rules are: Buy when  $0 < RSI(14) < 20$  or  $50 < RSI(14) < 80$ , sell when  $80 < RSI(14) < 100$ , and wait and see when  $20 < RSI(14) < 50$ .

Source Code of RSI Expert System

```
N1 1 100 14
LL 0 40 20
LH 60 100 80
LC := REF(CLOSE,1);
RSI:SMA(MAX(CLOSE-LC,0),N1,1)/SMA(ABS(CLOSE-LC),N1,1)*100,colorwhite;
ENTERLONG:CROSS(RSI,LL);
EXITLONG:CROSS(LH,RSI)
```

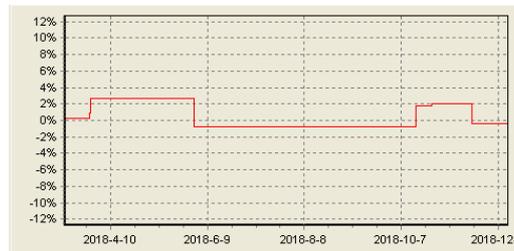


Figure 1. RSI Yield Curve of Scheme 1 from January 25, 2018 to January 2, 2019

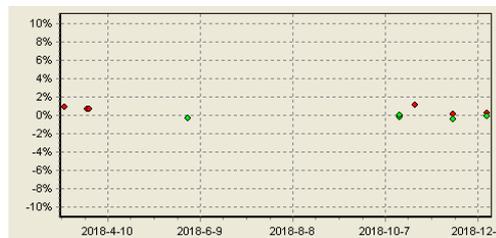


Figure 2. Transaction Signal Diagram of Scheme 1 from January 25, 2018 to January 2, 2019

Table 2. Test Results of RSI Expert System

<b>System Test Settings</b>			
Test method: Technical indicator - WP			
Test time: January 25, 2018 - January 2, 2019	Excluding mandatory liquidation		
Testing stocks: 24 in total	Initial investments: ¥ 10,000.00		
Buying conditions:			
One of the following groups are satisfied:			
1. The following conditions are all satisfied			
1.1 Technical indicators: WP (14) index line RSI1 crossing 30[Date line]			
When conditions are satisfied: Buy with all funds at the mid-price: closing price			
When continuous signals occur: No longer buy			
Selling condition: No selling conditions			
Conditions of close position: (Closing at closing price)			
Index stock selection: Technical Indicators: WP (14) index line RSI1 breaking 70 [Date line]			
<b>System Test Report</b>			
Number of tested stocks:	24		
Net profit:	¥ 6,152.39	Net profit rate:	2.56%
Total Profit:	¥ 9,150.03	Total loss:	¥ -2,598.63
Number of transactions:	11	Winning probability:	54.55%
Annual average number of transactions:	11.00	Number of profit/loss transactions:	6/5
Total transaction volume:	¥ 231,065.08	Transaction fees:	¥ 199.97
Maximum single profit:	2,652.31	Maximum single loss:	¥ -1,090.62
Average earnings:	¥ 831.82	Average loss:	¥ -236.24
Average Profit:	¥ 559.31	Average earnings/Average loss:	¥ -352.11
Maximum number of consecutive earnings:	3	Maximum number of consecutive losses:	3
Average number of trading cycles:	98.45		
Average profitable trading cycle:	81.67	Average cycle of loss trading:	118.60
Profit coefficient:	0.56		
Maximum floating profit:	¥ 237,363.64	Maximum floating loss:	¥ 0.00
Maximum floating profit and loss margin: ¥ 237,363.64			
Total investment: ¥ 240,000.00			
----- Statistics of Buying Signals-----			
(Count all buying signal points, regardless of the problem of signal deletion caused by funds and strategies in transaction testing)			
Success rate:	46.15%	Number of signals:	30
Annual average number of signals:	30.00		

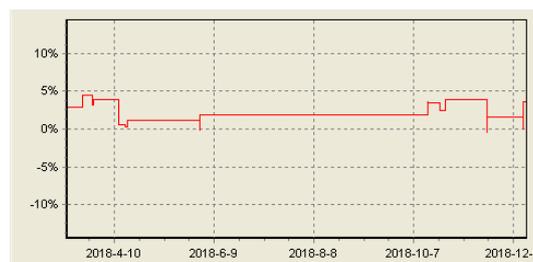


Figure 3. RSI Yield Curve of Scheme 2 from January 25, 2018 to January 2, 2019

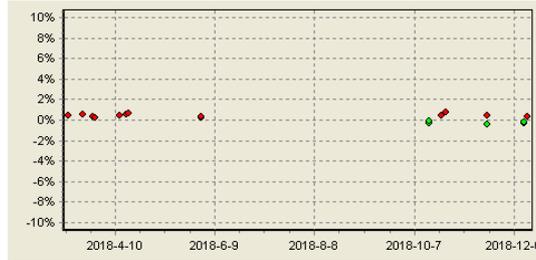


Figure 4. Transaction Signal Diagram of Scheme 2 from January 25, 2018 to January 2, 2019

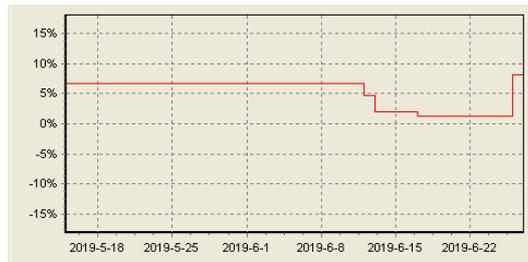


Figure 5. RSI Yield Curve of Scheme 1 from April 18, 2019 to August 7, 2019

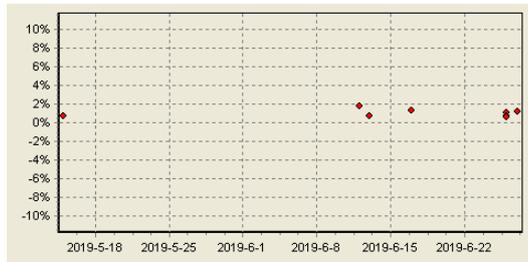


Figure 6. Transaction Signal Diagram of Scheme 1 from April 18, 2019 to August 7, 2019

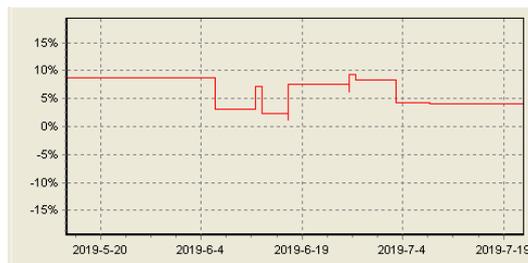


Figure 7. RSI Yield Curve of Scheme 2 from April 18, 2019 to August 7, 2019

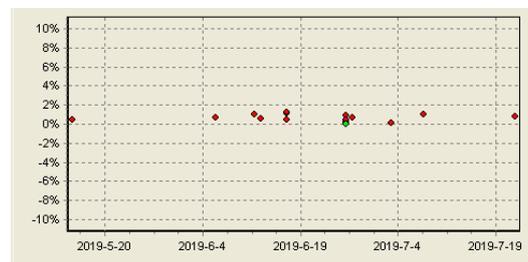


Figure 8. Transaction Signal Diagram of Scheme 2 from April 18, 2019 to August 7, 2019

All experimental results (Figure 1-8 has given all of the experimental results of the income and trading signals)

**Table 3. RSI Expert System Data Table**

Time	Setting scheme	Winning probability	Annual rate of return	Net profit rate	Annual number of transactions
2018.01— 2019.01	Scheme one: Buy up more than 30 and sell down below 70	54.55	2.56	2.56	11
2018.01— 2019.01	Scheme two: Buy up more than 50 and sell down below 70	72.22	4.26	4.26	18
2019.04— 2019.08	Scheme one: Buy up more than 30 and sell down below 70	100	23.92	7.97	24
2019.04— 2019.08	Scheme two: Buy up more than 50 and sell down below 70	93.33	27.31	9.10	45

### 3. Conclusion

In the first period, Shanghai Securities Composite Index of China was 3558.13 points on January 26, 2018, and Shanghai Securities Composite Index of China was 2465.29 points on January 2, 2019, up to - 30.71%; In the second period, Shanghai Securities Composite Index of China was 3250.20 points on April 18, 2019 and Shanghai Securities Composite Index of China was 2768.68 points on August 7, 2019, up to - 14.82%. No matter what time period or which scheme, for the gold block, RSI Expert System records positive returns. Among them, the maximum of winning rate, annual return rate and net profit rate are 100%, 27.31% and 9.10% respectively, and the minimum are 54.55%, 2.56% and 2.56% respectively. Table 3 shows that in terms of annual return rate and net profit rate, the earnings in the second period is significantly higher than that in the first period, and the earnings in scheme 2 is significantly higher than that in scheme 1. Compared with the 30.71% and 14.82% declines of Shanghai Stock Exchange Index of China, it is the right decision to use RSI Expert System to decide the investment of gold block.

### Acknowledgements

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