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HUATAI FUTURES

Empirical Research on Cross-border Arbitrage of Rubber Futures (Part I)

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Abstract

Natural rubber, as a key agricultural product and industrial raw material, plays an indispensable role in many fields such as global transportation, industrial products and consumer goods. Since the Shanghai International Energy Exchange launched the No. 20 rubber futures contract in 2019, the market size and the participation of overseas traders have significantly increased.

This paper selects the natural rubber futures (RSS3) of Japan's Tokyo Commodity Exchange (JPX) and No.20 rubber futures (NR) of Shanghai International Energy Exchange (INE) as the research pair. Based on the actual trading data of the cross-border market, through a large number of statistical empirical studies, this paper deeply analyzes and verifies the long-term stable equilibrium relationship between the prices of the two markets, and excavates arbitrage opportunities which would generate when the price difference deviates from the reasonable range.

The report is divided into two parts. The first part outlines the current situation of the rubber market at home and abroad, and then elaborates the key steps and methods of data processing. In the empirical research part, the report gradually tested the linear correlation, cross correlation, excess correlation and its asymmetry between JPX rubber and INE rubber, providing a solid theoretical support for the feasibility of arbitrage trading. The second part will further explore the cointegration relationship between the two rubber futures, verify the effectiveness of the long-term equilibrium model, and design a robust statistical arbitrage trading strategy accordingly.

Through this paper, investors can better understand the cross-border arbitrage potential of rubber futures market.

Catalogue

Charts

Background Introduction

■ Overview of rubber market

Natural rubber is not only an important agricultural product alongside grain, cotton and oil, but also one of the world's four major industrial raw materials as famous as petroleum, steel and coal. It is an indispensable strategic resource in national defense and industrial construction, with a wide range of applications in various fields such as transportation, industrial products, and consumer goods.

International Market: As a significant commodity, Ribbed Smoked Sheet (RSS) No.3 futures are traded mainly in four exchanges globally, including the Tokyo Commodity Exchange (TOCOM) in Japan, the Singapore Exchange (SGX), the Thailand Futures Exchange (TFEX), and the National Multi-Commodity Exchange of India (NMCE). The Singapore Exchange (SGX) and the Tokyo Commodity Exchange (TOCOM) also trade TSR20 future contracts. Currently, SGX serves as the main global pricing reference for TSR20 rubber, while TOCOM trades more on Ribbed Smoked Sheet (RSS) rather than TSR20.

Domestic Market: The Shanghai Futures Exchange (SHFE) listed natural rubber (RU) in 1993. Since then, the Shanghai International Energy Exchange (INE) officially launched the No.20 rubber futures (NR) in August 2019, adopting a trading mode of "net price trading, bonded delivery, international platform, and RMB pricing". NR serves as a domestic specific commodity, fully open for foreign traders to participate.

After comprehensive consideration of trading authority, market activity and potential arbitrage space, we chose RSS3 futures from Tokyo Commodity Exchange (affiliated to JPX Group, hereafter referred to as JPX) and NR futures from Shanghai International Energy Exchange Center (hereafter referred to as INE) as pairs to explore cross-border statistical arbitrage opportunities. Detailed contract information is listed in the appendix.

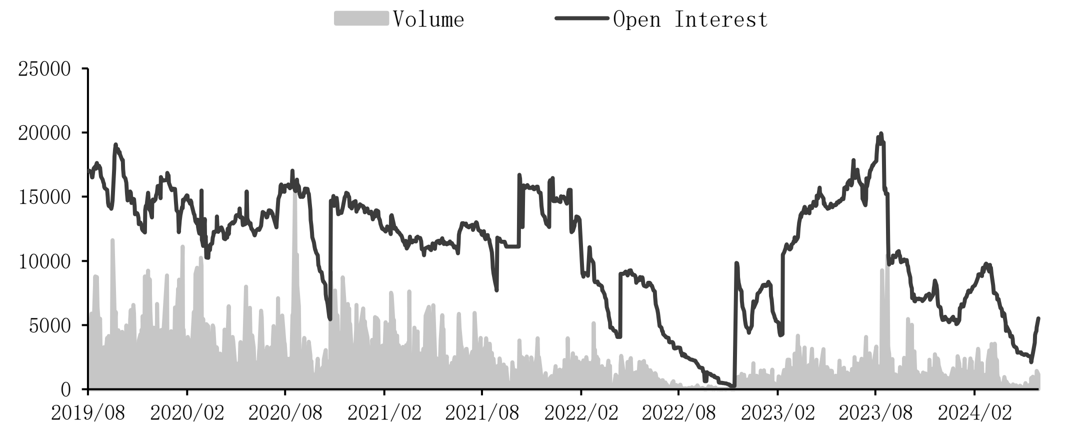
Table 1: JPX & INE Historical Trading Statistics| Unit: None

	Accumulated Volume (10000 hands)	Accumulated Amount (trillion yen/ yuan)	Highest Single Day Volume (10000 hands)	Highest Single Day Amount (100 million yen/yuan)	Highest Single Day Open Interest (10000 hands)
JPX.RSS3	912.74	9.30	2.45 (2016-11-30)	399.75 (2017-01-31)	3.63 (2018-07-31)
INE.NR	5732.93	6.17	37.28 (2023-09-08)	424.42 (2024-03-18)	16.44 (2023-10-25)

Source: Wind, Huatai Futures Research

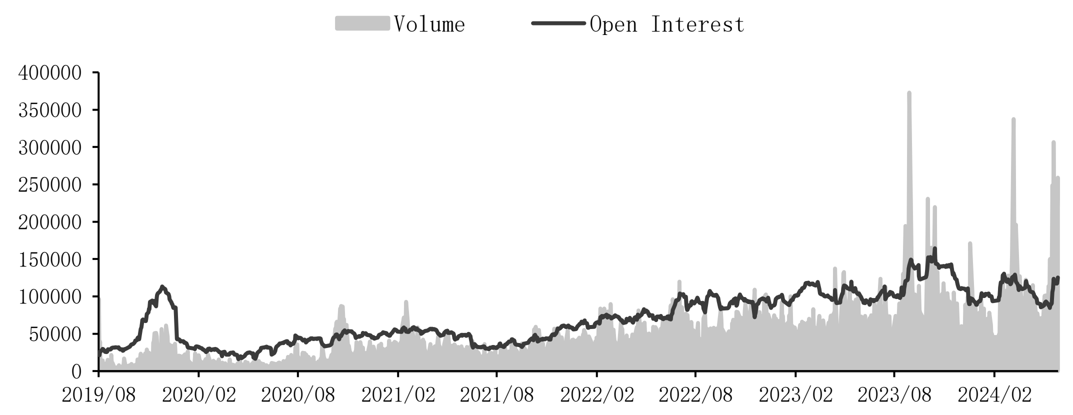
Note: Data are calculated until 2024-06-07

Figure 1: Historical JPX RSS3 Trading Situation | Unit: hand



Source: Wind, Huatai Futures Research

Figure 2: Historical INE NR Trading Situation | Unit: hand



Source: Wind, Huatai Futures Research

Data Processing

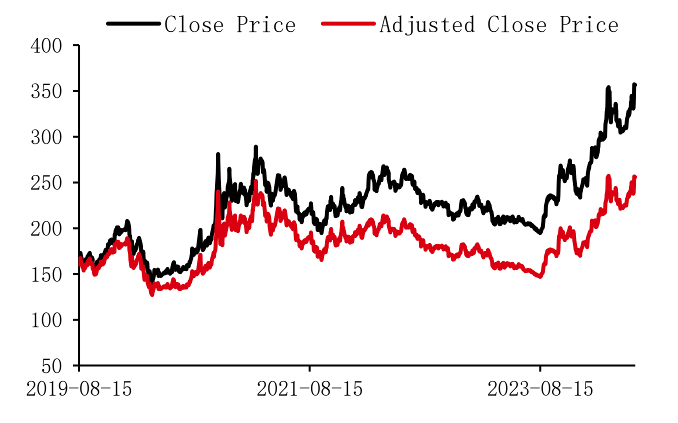
The underlying object of RSS3 contract listed on JPX is natural rubber, while the underlying object of NR contract listed on INE is No. 20 rubber. Although the underlying asset of JPX and INE are not completely the same, we believe that due to the universal value of rubber itself, there should be some correlation and trading opportunities between the two, which will be carefully discussed later through statistical methods. But before discussing the correlation between them, we first want to highlight the details of data processing in the following aspects.

Underlying Contract Selection

We choose "**Dominate Contracts**" as the representative. Since the last trading day and liquidity distribution of JPX and INE rubber contracts are not completely consistent, it is difficult to use JPX and INE contracts with the same maturity time for analysis. In order to mimic transactions situation in real life, we constructed the price series of dominate contracts of JPX and INE respectively. Although the dominate contracts are not guaranteed to have the same expiration day, we believe that the dominate contracts with the best liquidity and the most active trading atmosphere can fully reflect various types of information related to global rubber. Therefore, it is feasible to carry out statistical calculation and construction strategy based on the dominate contracts of both.

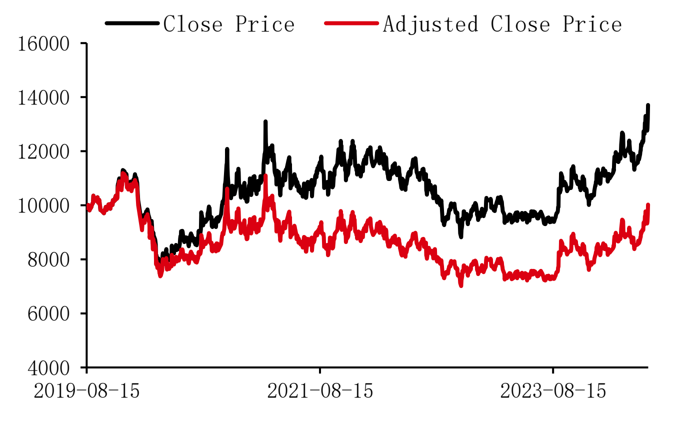
Besides, in order to solve the price-jump problem caused by the switching of dominate contracts, we use the same compounded method to deal with the price series of JPX and INE dominate contracts.

Figure 3: JPX Compounded Price | Unit: yen/kg



Source: Wind, Huatai Futures Research

Figure 4: INE Compounded Price | Unit: yuan/ton



Source: Wind, Huatai Futures Research

Unified Trading Time

We choose the futures contract price at **14:15 Beijing time**. Because the transaction time periods of JPX and INE rubber contracts are not completely consistent. The transaction time of JPX is 09:00-15:15,16:30~19:00 (Tokyo time), and the transaction time of INE is 09:00-10:15, 10:30-11:30 and 13:30-15:00, 21:00-23:00 (Beijing time). Considering the one-hour time difference between the two, and JPX trading volume is mainly distributed at afternoon every day, we use the closing price of JPX Rubber at 15:15 (Tokyo Time) and the latest price of INE Rubber at 14:15 (Beijing Time) for subsequent analysis to ensure that the data used are consistent in reality.

Unified Trading Date

We use the **intersection** of the trading days from two exchanges. Due to the mismatch between Japanese and Chinese holidays, and that the rubber price may fluctuate sharply during the long holiday, we used the intersection period of the two to avoid the situation that one exchange open to trading while the other one close the market.

Unified Currency

We use **CNYJPY.FX** processes the original price. JPX's contracts are priced in yen, and INE's are priced in RMB. There is a difference in exchange rate between the two. In the long run, both prices will inevitably be affected by exchange rate changes, therefore we use CNYJPY.FX has unified the price.

After a series of data processing, we obtained the adjusted-closing price series of JPX and INE **from August 2019 to June 2024** (trading days intersection since NR listed), and the return series can be expressed as the logarithmic difference between two consecutive days:

$$r_t = \ln P_t - \ln P_{t-1}$$

The mean values of JPX and INE yield series are very close to 0, which is very small compared to the standard deviation. Both skewness and excess kurtosis show that the return distribution is different from normal distribution. The Jarque Bera statistic rejects the original hypothesis at the significance level of 1%, which also confirms that the return series of the two do not conform to the normal distribution.

Table 2: Descriptive Statistic of Return Series | Unit: None

	r_t^{INE}	r_t^{JPX}
Mean value (%)	0.001	0.043
Maximum value (%)	7.649	7.886
Minimum value (%)	-8.603	-10.478
Standard deviation (%)	1.659	1.755
Skewness	-0.271	-0.313
Excess Kurtosis	2.99	3.96
Jarque-Bera statistic	421.87^{***} (0.00)	733^{***} (0.00)

Source: Wind, Huatai Futures Research

Note: the numbers in brackets represent P values, and *, * *, * * * represent 10%, 5%, and 1% significance levels respectively.

Empirical Research

The principle of statistical arbitrage is to excavate the price difference pattern between two commodities. If the current price difference deviates greatly from the historical average, arbitrage opportunities arise. The logic is not complicated, but making profit from statistical arbitrage requires the following prerequisites:

(1) The price series are highly correlated and can remain synchronized even in the period of market turbulence.

(2) They rise and fall in same step, and the relationship remains stable for a long time.

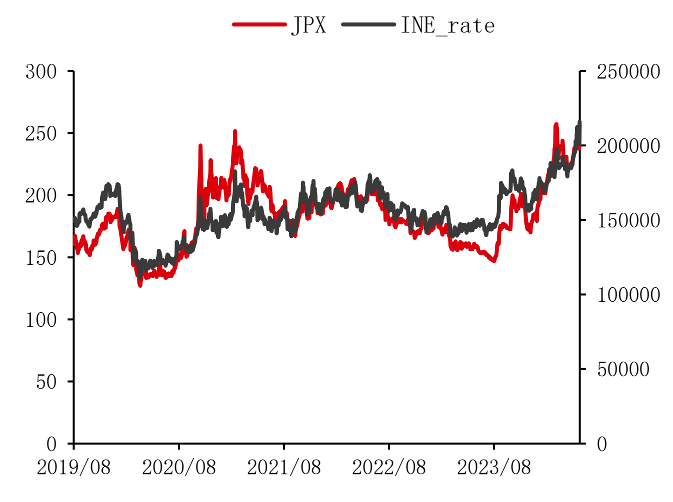
(3) They connect to each other in a long-term cointegration relationship, and the price difference will "mean-reversion" eventually.

In the next part, we will analyze the relationship between JPX rubber and INE rubber by statistical test one by one.

■ Linear Correlation

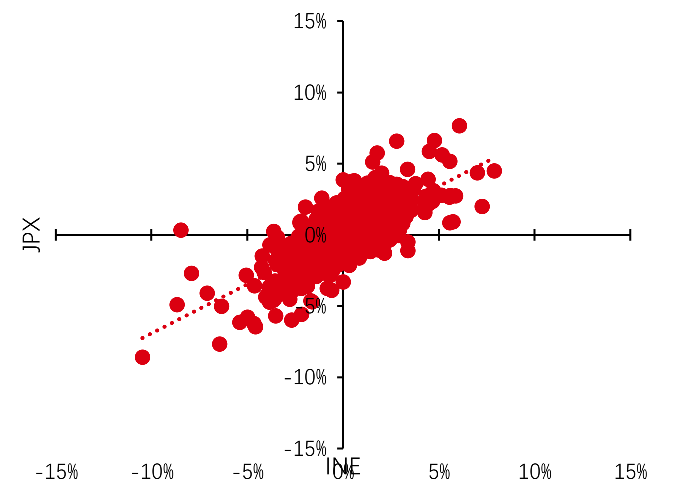
It can be seen intuitively from Figure 5 and Figure 6 that the overall trend of the closing prices of JPX rubber and INE rubber after the right recovery treatment is consistent, with a high correlation. It is estimated that the correlation coefficient of daily rate of return of the two main contracts after exchange rate conversion has reached 0.715 since the listing of the variety.

Figure 5: JPX& INE Price | Unit: yen/kg & yuan/ton



Source: Wind, Huatai Futures Research

Figure 6: JPX & INE Return | Unit: %



Source: Wind, Huatai Futures Research

Through Pearson correlation coefficient, we preliminarily judged that there was a highly positive linear relationship between the return series of JPX rubber and INE rubber, which laid the foundation for the possibility of cross market arbitrage. Next, we will conduct more in-depth statistical tests and significance tests to assess whether there is a long-term cointegration relationship between them, and measure the stability of the arbitrage relationship.

Cross Correlation

Qualitative judgment: we refer to the statistics $Q_{cc}(m)$ proposed by Podobnik (2009) to detect the significance of cross correlation between the two time series under different time lags, and to help identify whether the cross-correlation in consistent in long run.

The statistics $Q_{cc}(m)$ takes the magnitude of the return change into account. It calculates the weighted sum of squares of the time series, and finally judged whether the cross correlation is significant by comparing with the critical value of the chi square distribution. The choice of different time lags can help eliminate the impact of short-term volatility and contingency. If the results are significant on multiple time lags, it indicates that there is a significant cross correlation between the price fluctuations of the two in the long term.

The specific calculation formula is as follows:

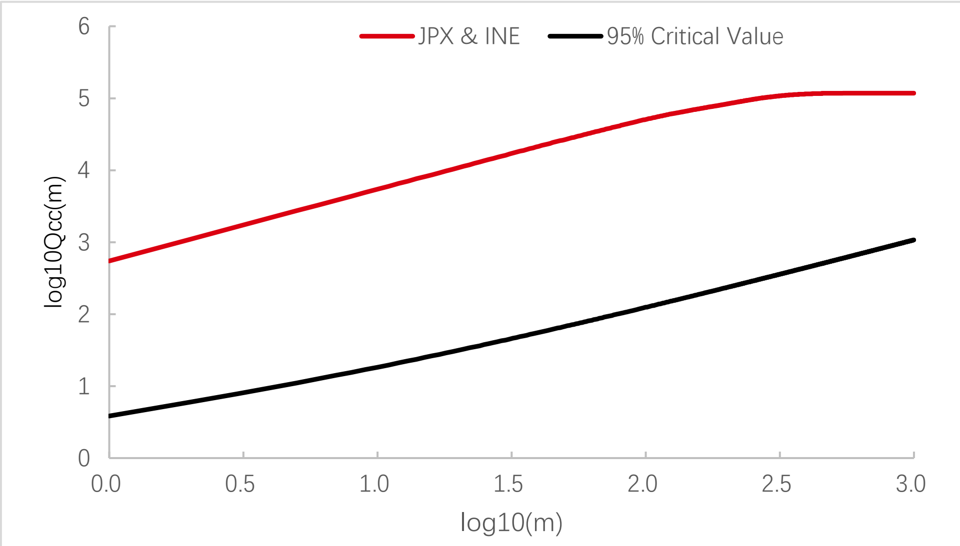
$$Q_{cc}(m) = N^2 \sum_{i=1}^{m} \frac{X_i^2}{N-i}$$

$$X_i = \frac{\sum_{k=i+1}^{N} x_k y_{k-i}}{\sqrt{\sum_{k=1}^{N} x_k^2 \sum_{k=1}^{N} y_k^2}}$$

Note: x_k represents the daily return series of INE rubber, y_k represents the daily return series of JPX rubber.

Results on Figure 7 show that under different setting of lag period m, the statistical values are far higher than the critical values of chi square distribution under 95% confidence interval, which proves the existence of long-term significant cross correlation between JPX rubber and INE rubber.

Figure 7: JPX & INE Cross Correlation | Unit: None



Source: Wind, Huatai Futures Research

Quantitative judgment: we refer to the de-trending cross correlation analysis method (DCCA) proposed by Podobnik and Stanley (2008) to further consider the nonlinear correlation and long-term dependence, and quantitatively judge the significance of the cross correlation between them on different time scale.

The specific analysis steps are as follows:

Step 1: Build the time series of cumulative mean deviation.

$$X(t) = \sum_{k=1}^{t}(x_k - \bar{x})$$

$$Y(t) = \sum_{k=1}^{t}(y_k - \bar{y})$$

Note: $\bar{x}$ represents the mean return of INE rubber, $\bar{y}$ represents the mean return of JPX rubber.

Step 2: Divide the cumulative mean deviation series into N_s non-overlapping samples of equal length s. Since N may not always be an exact multiple of s, there could be a remainder at the end of the series. In order to avoid ignoring this part of data, repeat the same process from the end of each sequence, and collect data in reverse order to obtain $2 * N_s$ non-overlapping segments.

Step 3: For each segment, fit a local polynomial trend using the Loess model for both $\tilde{X}$ and $\tilde{Y}$, and then calculate the covariance after detrending.

For the first half N_s segments ($\lambda = 1, 2, \ldots, N_s$):

$$F^2(s,\lambda) = \frac{1}{s}\sum_{j=1}^{s}\left[X_{(\lambda-1)s+j} - \tilde{X}_{(\lambda-1)s+j}\right]\left[Y_{(\lambda-1)s+j} - \tilde{Y}_{(\lambda-1)s+j}\right]$$

For the second half N_s segments ($\lambda = N_s + 1, N_s + 2, \ldots, 2N_s$):

$$F^2(s,\lambda) = \frac{1}{s}\sum_{j=1}^{s}\left[X_{N-(\lambda-N_s)s+j} - \tilde{X}_{N-(\lambda-N_s)s+j}\right]\left[Y_{N-(\lambda-N_s)s+j} - \tilde{Y}_{N-(\lambda-N_s)s+j}\right]$$

Step 4: The fluctuation function can be obtained by taking the square root of the mean of all segments.

$$F(s) = \sqrt{\frac{1}{2N_s}\sum_{\lambda=1}^{2N_s} F^2(s,\lambda)}$$

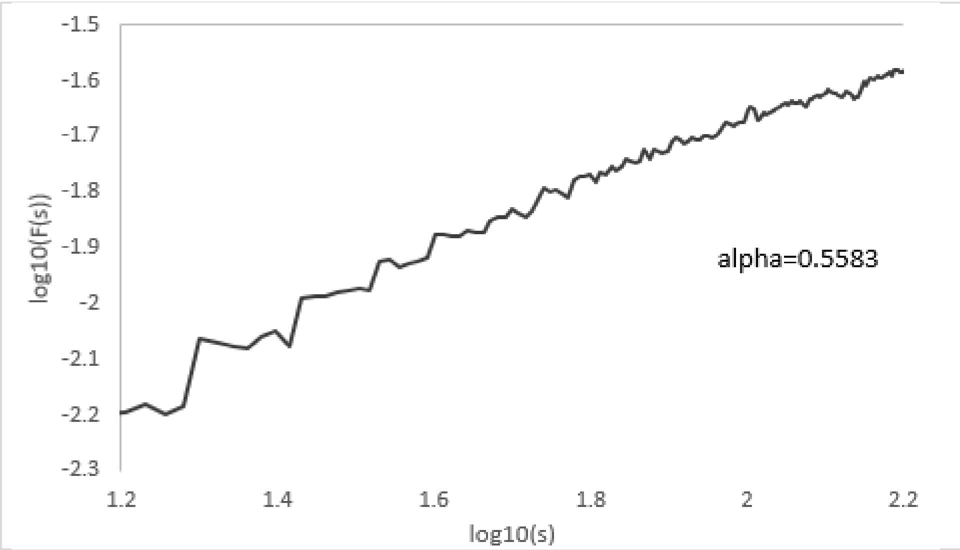
Step 5: Judge the significance of cross correlation by analyze the logarithm relationship between $F(s)$ and s.

$$F(s) \sim s^{\alpha}$$

$$logF(s) = \alpha \log(s) + \log C$$

Finally, the slope α, obtained from the fitted OLS model, is called the Hurst Exponent, which can be used to measure the long-term memory effect of time series. As can be seen from Figure 8, the slope α between $logF(s)$ and $\log(s)$ is 0.5583, which is slightly higher than 0.5. This indicates that the cross-correlation between JPX rubber and INE rubber exhibits weak persistence, further confirming the long-term dependency relationship between their price fluctuations, rather than being just a short-term phenomenon.

Figure 8: JPX & INE DCCA Analysis | Unit: None



Source: Wind, Huatai Futures Research

So far, we have verified that there is a significant cross correlation between JPX rubber and INE rubber from both **qualitative** and **quantitative** perspectives, and the relationship between the two has long-term stability. It indicates that the two markets are integrated to some extent, that is, they are affected by similar macroeconomic factors, industry trends or global events. Price changes in one market can provide effective information for price changes in the other market.

Exceedance Correlation

Next, we refer to the statistical method proposed by Ruan (2016) to measure the exceedance correlation. We calculate the correlation degree of JPX rubber and INE rubber under different market conditions of rising or falling to verify whether they will co-move when market fluctuates. Then, we refer to the method proposed by Hong (2007) which was originally used to test the asymmetry of stock returns. We apply it onto futures market to test whether the co-movement between JPX rubber and INE rubber is symmetrical.

Exceedance correlation refers to the correlation when two time series simultaneously exceed or fall below a specific threshold level, which helps us understand whether there are differences in the dynamic behavior of the market in different directions (i.e., up or down), and helps us identify the synchronization of price fluctuations of two futures contracts under extreme market conditions. If JPX rubber and INE rubber still maintain a highly positive correlation when the market fluctuates extremely, co-movement in price is proved and the arbitrage strategy will be effective.

The specific steps are as follows:

Step 1: Standardize the return series of the two futures contracts and record them as R_{1t} and R_{2t}, with total length at T.

Step 2: Calculate the conditional mean and conditional variance when the return series simultaneously exceeds the threshold c.

$$\hat{\mu}_1^+(c) = \frac{1}{T_c^+}\sum_{t=1}^{T} R_{1t} * I(R_{1t} > c, R_{2t} > c)$$

$$\hat{\mu}_2^+(c) = \frac{1}{T_c^+}\sum_{t=1}^{T} R_{2t} * I(R_{1t} > c, R_{2t} > c)$$

$$\hat{\sigma}_1^+(c)^2 = \frac{1}{T_c^+ - 1}\sum_{t=1}^{T} [R_{1t} - \hat{\mu}_1^+(c)]^2 * I(R_{1t} > c, R_{2t} > c)$$

$$\hat{\sigma}_2^+(c)^2 = \frac{1}{T_c^+ - 1}\sum_{t=1}^{T} [R_{2t} - \hat{\mu}_2^+(c)]^2 * I(R_{1t} > c, R_{2t} > c)$$

Note: $I(R_{1t} > c, R_{2t} > c) = 1$ when R_{1t} and R_{2t} are greater than c simultaneously, otherwise, $I(R_{1t} > c, R_{2t} > c) = 0$; T_c^+ represents the number of days when both R_{1t} and R_{2t} exceed the threshold c.

Step 3: Calculate the excess correlation $\hat{\rho}^+(c)$ based on the conditional mean and conditional standard deviation.

$$\hat{X}_{1t}^+(c) = \frac{R_{1t} - \hat{\mu}_1^+(c)}{\hat{\sigma}_1^+(c)}, \qquad \hat{X}_{2t}^+(c) = \frac{R_{2t} - \hat{\mu}_2^+(c)}{\hat{\sigma}_2^+(c)}$$

$$\hat{\rho}^+(c) = \frac{1}{T_c^+ - 1}\sum_{t=1}^{T} \hat{X}_{1t}^+(c)\hat{X}_{2t}^+(c) * I(R_{1t} > c, R_{2t} > c)$$

$\hat{\rho}^-(c)$ can be obtained similarly.

$$\hat{X}_{1t}^-(c) = \frac{R_{1t} - \hat{\mu}_1^-(c)}{\hat{\sigma}_1^-(c)}, \qquad \hat{X}_{2t}^-(c) = \frac{R_{2t} - \hat{\mu}_2^-(c)}{\hat{\sigma}_2^-(c)}$$

$$\hat{\rho}^-(c) = \frac{1}{T_c^- - 1}\sum_{t=1}^{T} \hat{X}_{1t}^-(c)\hat{X}_{2t}^-(c) * I(R_{1t} < -c, R_{2t} < -c)$$

According to the distribution pattern of the return series of JPX rubber and INE rubber, we set the threshold c among [0, 0.3, 0.6, 0.9, 1.2, 1.5, 1.8, 2.0] to calculate the excess correlation between the two. As can be seen from Table 3, for any given threshold c, $\hat{\rho}^-(c)$ is slightly higher than $\hat{\rho}^+(c)$. That is to say, JPX rubber and INE rubber co-moved more often when the markets declined than when the markets grew.

Table 3: Exceedance Correlation | Unit: None

Threshold c	Exceedance Correlation $\hat{\rho}(c)$	Sample Size
-2.0	0.4975	16
-1.8	0.5721	21
-1.5	0.5405	36
-1.2	0.5540	61
-0.9	0.5745	89
-0.6	0.6312	147
-0.3	0.6381	247
-0	0.6612	385
+0	0.5485	417
0.3	0.4827	247
0.6	0.4802	148
0.9	0.3350	74
1.2	0.3382	38
1.5	0.1327	28
1.8	-0.1374	12
2.0	-0.3465	9

Source: Wind, Huatai Futures Research

In addition, we use the rolling sample test method to dynamically observe the local exceedance correlation. Many papers have verified the importance of using the rolling sample test method to calculate the time-varying results when analyzing the dynamic futures market (such as Wang and Liu (2010), Liu and Wang (2011)).

Here we select a rolling window of 250 trading days (about one year), with the threshold c at 0, dynamically calculate the exceedance correlation of $\hat{\rho}^{+}(c)$ and $\hat{\rho}^{-}(c)$.

From Figure 9, we can find that the excess correlation fluctuates around 0.6, and most of the time, $\hat{\rho}^{-}(c)$ is slightly higher than $\hat{\rho}^{+}(c)$.

Figure 9: Rolling Window Exceedance Correlation | Unit: None

Source: Wind, Huatai Futures Research

In order to verify this situation more strictly from statistical perspective, we introduce the statistics J_p proposed by Hong (2007) to test the asymmetry of exceedance correlation.

$$J_p = T(\hat{\rho}^{+} - \hat{\rho}^{-})'\hat{\Omega}^{-1}(\hat{\rho}^{+} - \hat{\rho}^{-})$$

The $\hat{\Omega}$ is the weight matrix for different lag periods, and Hong has proved that the J_p distribution conforms to a chi-squared distribution with m degrees of freedom (where m equals the number of different threshold values c).

The null hypothesis and alternative hypothesis of asymmetry test are as follows:

$$H_0: \hat{\rho}^{+}(0) = \hat{\rho}^{-}(c), \qquad for\ all\ c \geq 0$$

$$H_1: \hat{\rho}^{+}(0) \neq \hat{\rho}^{-}(c), \qquad for\ some\ c \geq 0$$

If the null hypothesis is rejected, it means that there is asymmetry in exceedance correlation. If the null hypothesis cannot be rejected, it means that the asymmetry of exceedance correlation cannot be proved under given confidence level.

One of the advantages of Hong's method is that it does not rely on specific model assumptions, but directly based on the distribution characteristics of data; Another advantage is that it is not limited to the assumption that the time series meets the normal distribution, so it is more applicable.

Table 4: Asymmetry Test of Exceedance Correlation | Unit: None

Statistical Values	Critical Values
$\chi^2_{0.80}$	11.0301
$\chi^2_{0.90}$	13.3616
$\chi^2_{0.95}$	15.5073
$\chi^2_{0.99}$	20.0902
$\boldsymbol{J_p}$	**6.4217**
p-value	**0.6001**

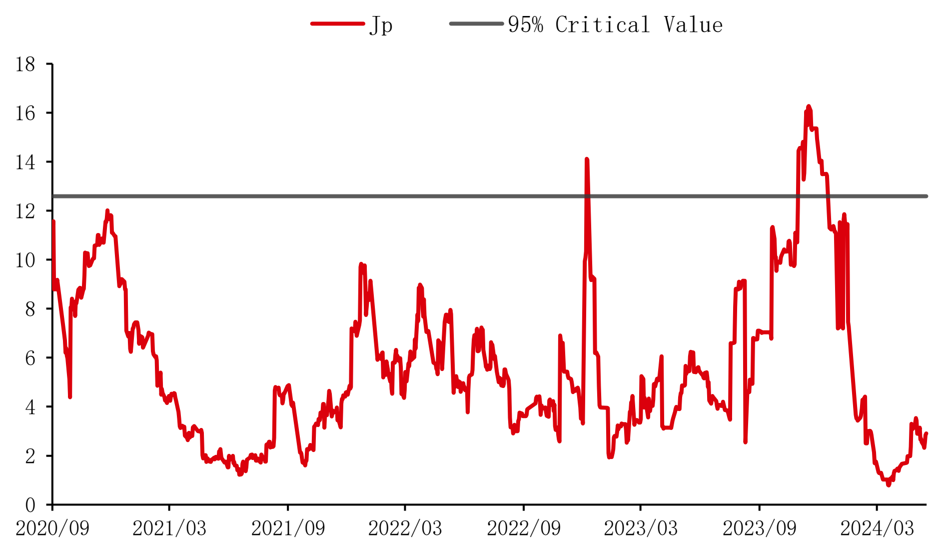
Source: Wind, Huatai Futures Research

Note: according to the value range of threshold c, the degree of freedom (m=8) for according chi square distribution χ^2

The p-value of J_p is 0.6, which cannot reject the null hypothesis, that is, it cannot prove that the exceedance correlation is asymmetric.

Similarly, we use the rolling sample test method to dynamically monitor the asymmetry of exceedance correlation. The window length is also set at 250 trading days, the confidence level is set at 5%, and the threshold c is set to range from [0, 0.2, 0.4, 0.6, 0.8, 1]. Because a too high threshold c often encounters insufficient sample size, the value of c is slightly reduced.

Figure 10: Rolling Window Asymmetry of Exceedance Correlation | Unit: None



Source: Wind, Huatai Futures Research

As you can see, J_p only exceed the critical value of $\chi^2_{0.95}$ in very few time periods. (For example, in January 2023 and at the end of 2023, the behavior of their co-movement evaporated, during when they tended to decline together rather than grew together. Special attention should be paid to risk management during these asymmetry period.)

Beyond that, the null hypothesis cannot be rejected during most of other time. Although the negative exceedance correlation between JPX rubber and INE rubber is slightly higher than the positive one. But statistically speaking, there is no significant difference between them, indicating the two markets reacted basically the same to no matter favorable or negative factors.

Conclusion

As the first part of the empirical research on rubber cross-border arbitrage, this chapter starts from the market overview, introduces the data processing steps in detail, and refers to foreign literature, conducts a lot of empirical research on the price relationship between JPX rubber and INE rubber from a statistical perspective, and draws the following conclusions, which provides a solid theoretical support for the research on arbitrage strategies:

(1) There is a highly positive correlation, and the arbitrage relationship is feasible.

(2) There is a significant and continuous cross correlation and needs to be long lasted.

(3) A high exceedance correlation indicates that the two still move together during the market turbulence. The symmetry of exceedance correlation indicates that the two market response similarly to positive and negative factors.

The second part of this paper will further explore the co-integration relationship between JPX rubber and INE rubber, verify the effectiveness of the long-term equilibrium model, and design a robust statistical arbitrage trading strategy accordingly.

Appendix

Table 5: JPX RSS Rubber Future Contract | Unit: None

Contract Information	Specification
Types of Trade	Physically Delivered Futures Transaction
Standard	Ribbed Smoked Sheet (RSS) No.3
Opening Date	December 12, 1952
Trading Hours	< Day Session> Opening Auction: 9:00. Intraday trading (continuous bidding): 19:00~15:10 Closing Auction: 15:15. < Night Session > Opening Auction:16:30. Intraday trading (continuous bidding): 16:30~18:55 Closing Auction: 19:00. If there is no contract at the opening bid, it will directly enter the continuous bid. If there is no contract at the closing bid, it will be closed directly by continuous bidding.
Contract Months	Nearest 12 contract months
Delivery Date	At noon on the last working day of all contract months except December (the delivery date in December is 28th). In case of holidays, the delivery date will be advanced.
Last Trading Day	The fourth trading day before the Delivery Day
Delivery Unit	5000kg
Quotation Unit	yen/kg
Price Limits	Price limit: the price range obtained by multiplying the benchmark price (settlement price of the previous day) by 10%.

	Ceiling price will be updated temporarily according to market conditions. ※ Immediate contract price increase or decrease: 5 yen higher or lower based on the middle price of the best price or the latest contract price. The immediate contract in call auction will rise and fall by 15 yen at the opening, and 10 yen at the closing in call auction. ※.
Market circuit breakers	In principle, trading will not be suspended or the price limit will be expanded.
Settlement Price	Final Execution Price of Individual Auction ※Regardless of the above, SP may be revised as the figure deemed appropriate by Japan Securities Clearing Corporation (JSCC) .

Source: JPX, Huatai Futures Research

Table 6: INE NR Rubber Future Contract | Unit: None

Contract information	Specification
Standard	No.20 Rubber
Contract Size	10 tons/hand
Quotation Unit	Yuan/ton
Minimum Price Increment	5 yuan (RMB)/ton
Price Limits	Not exceeding 5% of the settlement price of the previous trading day.
Contract Months	January, February, March, April, May, June, July, August, September, October, November and December.
Trading Hours	9:00-11:30 a.m. and 1:30-3:00 p.m. And other trading hours stipulated by Shanghai International Energy Trading Center.
Last Trading Day	15th day of the delivery month (postponed in case of national statutory holidays) Shanghai International Energy Trading Center has the right to adjust the last trading day according to national statutory holidays and rest days.
Delivery Date	Five consecutive trading days after the last trading day.
Place of Delivery	Delivery warehouse appointed by INE
Initial Trading Margin	Minimum trading margin: 7% of the contract value.
Types of Trade	physical delivery
Transaction Code	NR
Listed Exchange	INE

Source: INE, Huatai Futures Research

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