

Development & Outlook for China's Nonferrous Metals Futures Market



上海期货交易所
SHANGHAI FUTURES EXCHANGE

Shenzhen
September, 2018



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Development of China's nonferrous metals futures market

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Outlook for China's nonferrous metals futures market





1

Development of China's nonferrous metals futures market



Shanghai Futures Exchange: listed products

Nonferrous metals



Precious metals



Ferrous metals



Energy & chemical

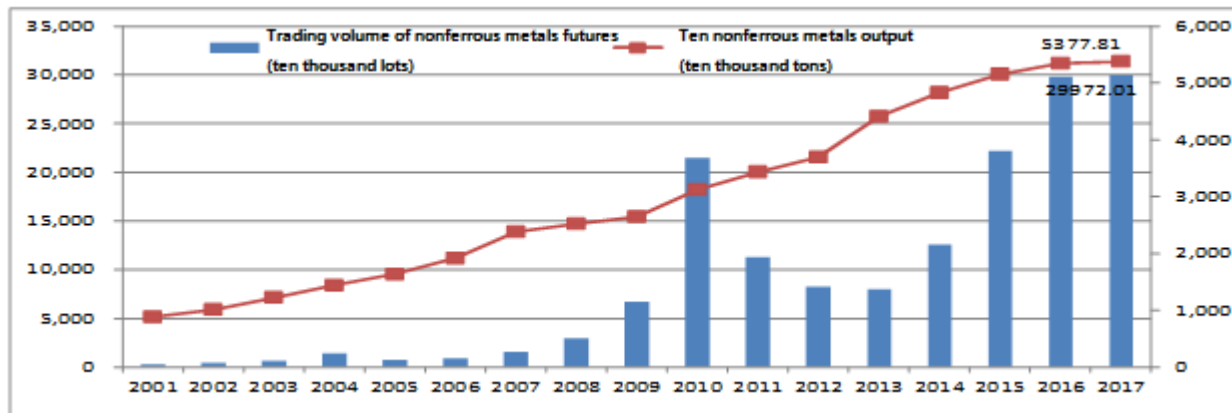


➤ There are currently 15 futures products in 4 categories available for trading

- Nonferrous metals category (6): Cu, Al, Pb, Zn, Ni, Sn
- Precious metals category (2): Au, Ag
- Ferrous metals category (3): Rb, Wr, Hc
- Energy & chemical category (4): Ru, Bu, Fu, Sc

Concerted development of nonferrous metals industry and futures market

Trading volume of nonferrous metals futures & ten nonferrous metals output (2001-2017)

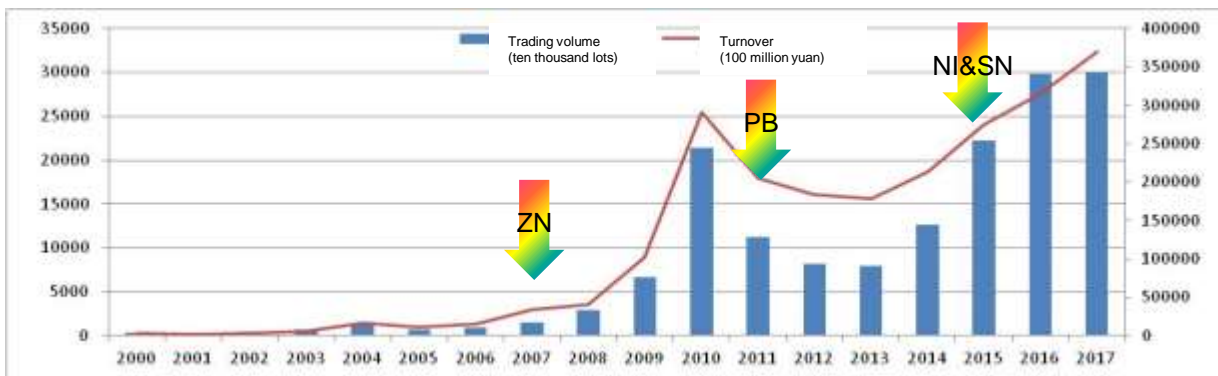


Data source: SHFE, NBS

- China is recognized as the globally-largest producer and consumer of nonferrous metals
 - The output of ten nonferrous metals including copper and aluminum reached 53.7781 million tons in 2017.
 - The percentage represented by each of the 6 nonferrous metals output (namely, copper, aluminum, lead, zinc, nickel and tin) is 36.57%, 50.73%, 44.11%, 46.3%, 29% and 48.21%, respectively.
- Nonferrous metals futures product is China's most mature futures product.

Steady development of nonferrous metals futures market

Listing and transactions of nonferrous metals futures products (2000-2017)



Data source: SHFE

- Futures product category has been improved
 - Zn futures (2007), Pb futures (2011), Ni & Sn (2015) had been listed for trading
- Rapid growth and steady development of the market
 - The continuous trading of nonferrous metals futures was achieved in 2013.
 - As for the 6 nonferrous metals futures products, 299 million lots were traded in 2017 with the turnover reaching 36.98 trillion yuan.

World ranking of nonferrous metals futures

World ranking of metal futures products in 2017

| Rank | Contract | Jan-Dec 2017 Vol | Jan-Dec 2016 Vol | Vol % Change |
|------|--|------------------|------------------|--------------|
| 1 | Steel Rebar Futures, Shanghai Futures Exchange | 702,019,499 | 934,148,409 | -24.8% |
| 2 | Iron Ore Futures, Dalian Commodity Exchange | 328,743,737 | 342,265,309 | -4.0% |
| 3 | Hot Rolled Coil Futures, Shanghai Futures Exchange | 103,131,555 | 43,281,751 | 138.3% |
| 4 | Zinc Futures, Shanghai Futures Exchange | 91,449,266 | 73,065,922 | 25.2% |
| 5 | Nickel Futures, Shanghai Futures Exchange | 74,154,526 | 100,249,941 | -26.0% |
| 6 | Gold (GC) Futures, Commodity Exchange (COMEX) | 72,802,171 | 57,564,840 | 26.5% |
| 7 | Aluminum Futures, Shanghai Futures Exchange | 65,423,439 | 44,391,785 | 47.4% |
| 8 | Copper Futures, Shanghai Futures Exchange | 54,100,135 | 72,394,915 | -25.3% |
| 9 | Silver Futures, Shanghai Futures Exchange | 53,111,169 | 86,501,561 | -38.6% |
| 10 | Aluminium Futures, London Metal Exchange | 51,429,383 | 53,073,441 | -3.1% |
| 11 | SPDR Gold Shares ETF Options * | 33,418,599 | 52,017,471 | -35.8% |
| 12 | Copper Grade A Futures, London Metal Exchange | 33,885,113 | 36,947,881 | -8.3% |
| 13 | Special High Grade Zinc Futures, London Metal Exchange | 29,642,124 | 26,942,407 | 10.0% |
| 14 | Copper (HG) Futures, Commodity Exchange (COMEX) | 27,051,503 | 21,524,547 | 25.7% |
| 15 | Silicon Manganese (SM) Futures, Zhengzhou Commodity Exchange | 24,921,207 | 1,364,525 | 1726.4% |

Data source: FIA

- Zinc, nickel, aluminum and copper futures on SHFE ranks, respectively, fourth, fifth, seventh and eighth among the metals futures products worldwide.

Overall transactions of nonferrous metals futures

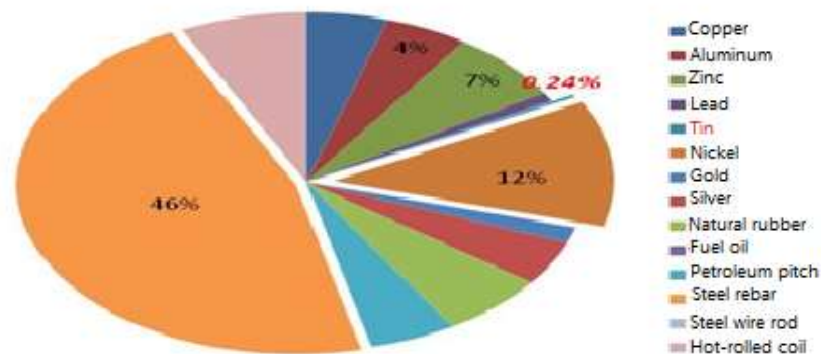
Transactions of China's nonferrous metals futures products in first half of 2018

| Product | Trading volume (ten thousand lots) | YoY % | Turnover (trillion yuan) | YoY % |
|-----------------------------------|------------------------------------|---------------|--------------------------|---------------|
| Copper | 2494.32 | -5.49 | 6.51 | 5.38 |
| Aluminum | 2554.75 | -0.45 | 1.85 | 3.99 |
| Zinc | 3536.51 | -28.00 | 4.38 | -19.61 |
| Lead | 466.22 | -15.52 | 0.45 | -6.66 |
| Nickel | 6364.97 | 131.75 | 6.69 | 195.63 |
| Tin | 129.43 | 22.35 | 0.19 | 25.33 |
| Nonferrous metals in total | 15546.20 | 0.63 | 20.06 | 23.11 |

Data source: SHFE

- From the perspective of trading volume: nickel>zinc>aluminum>copper>lead>tin;
From the perspective of turnover: nickel>copper>zinc>aluminum>lead>tin
- Tin futures market in the first half of 2018:
 - 1.2943 million lots were traded, up by 22.35% YoY Turnover reached 0.19 trillion yuan, up by 25.33% YoY.
 - Tin futures represents 0.24% of SHFE total trading volume and 0.5% of the turnover.

Distribution map for China's nonferrous metals futures products transaction in first half of 2018



Data source: SHFE

Listing of nonferrous metals brands

Nonferrous metals delivery brands listed in SHFE (as of end-2017)

| | Copper | Aluminum | Lead | Zinc | Nickel | Tin |
|---|--------|----------|-------|-------|--------|------|
| Domestic brand | 28 | 39 | 20 | 23 | 6 | 7 |
| Overseas brand | 30 | 3 | 0 | 3 | 3 | 0 |
| Total | 58 | 42 | 20 | 26 | 9 | 7 |
| Output of domestically-listed brands (10,000 tons) | 600.9 | 903.2 | 220.6 | 361.5 | 21.9 | 18.2 |
| Ratio of domestic total output (%) | 67.6 | 28.3 | 46.8 | 58.1 | 66.2 | 63.6 |

Data source: SHFE

As of end-2017

- The output of domestically-listed nonferrous metals delivery brands on SHFE reached 21.263 million tons.
- A total of 123 Chinese companies and 39 overseas companies were listed.

Designated delivery warehouses of nonferrous metals futures

Distribution of SHFE-designated nonferrous metals delivery warehouses (as of end-2017)



Data source: SHFE

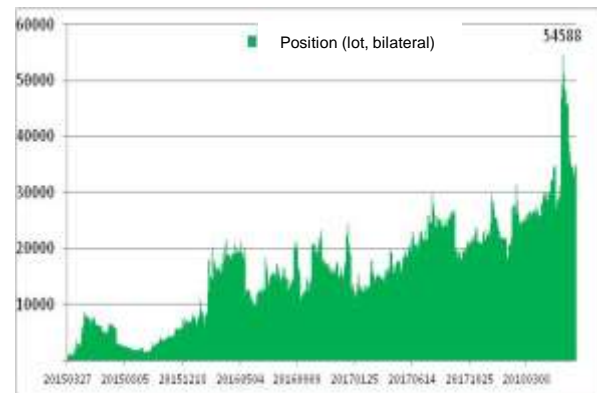
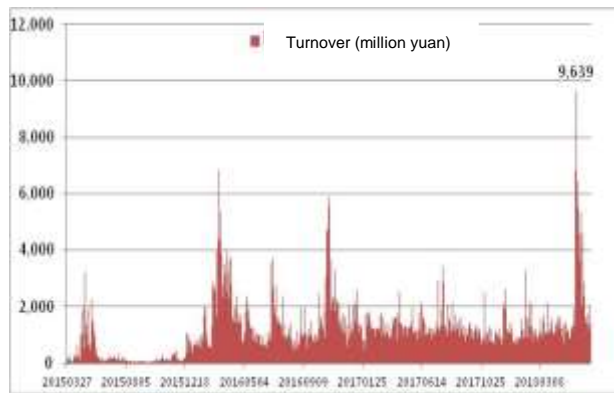
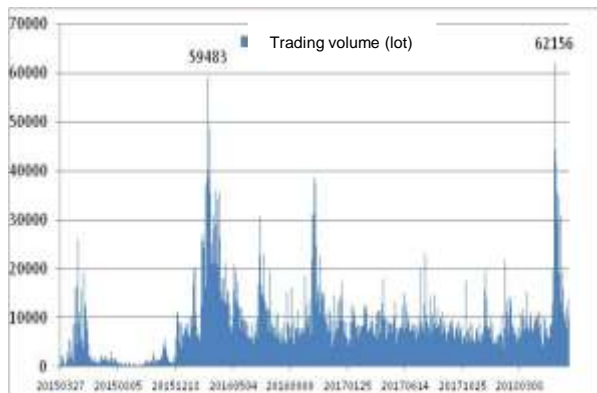
| | East China | South China | North China | Central China | Southwest | Total |
|----------|------------|-------------|-------------|---------------|-----------|-------|
| Copper | 21 | 2 | - | 0 | - | 23 |
| Aluminum | 29 | 5 | 3 | 6 | 2 | 45 |
| Zinc | 18 | 4 | - | - | - | 22 |
| Lead | 10 | 3 | 3 | - | - | 16 |
| Nickel | 16 | - | - | - | - | 16 |
| Tin | 4 | 2 | - | - | - | 6 |
| Total | 97 | 16 | 6 | 7 | 2 | 128 |

Data source: SHFE

- The aluminum futures delivery warehouse is preliminarily distributed nationwide. Tin delivery warehouse is distributed in East China and South China.
- Along with the execution of “One Belt One Road” strategy and the opening-up of futures market, the delivery warehouses will be distributed worldwide.

Transactions of China's tin futures

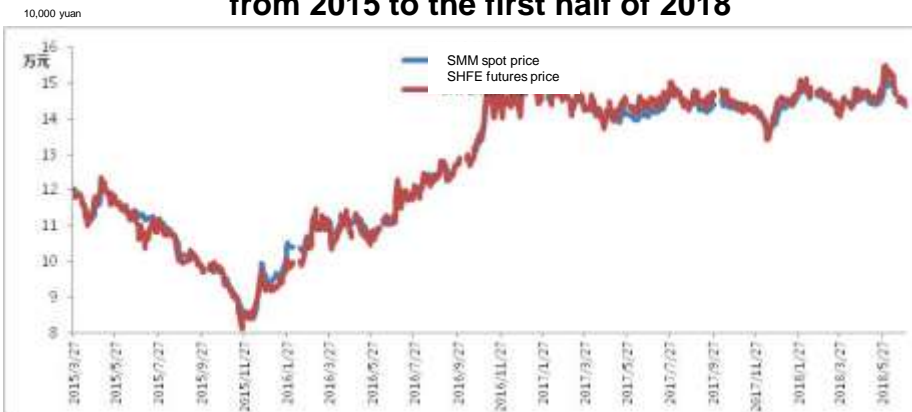
Trading volume, turnover and positions of tin futures during the period from the listing to the end-June of 2018



- Tin futures contract was listed for trading on March 27, 2015.
- Tin futures had operated stably with active market transactions during the period from the listing to the end-June of 2018.
 - Total trading volume reached 7.062 million lots (unilateral); total turnover reached 926.68 billion yuan (unilateral); daily average open interest: 16,005 lots (bilateral)
 - Tin price fluctuated relatively sharply in the first half of 2018, with the trading volume and turnover (May 30) as well as positions (May 31) all reached record high since it was listed.

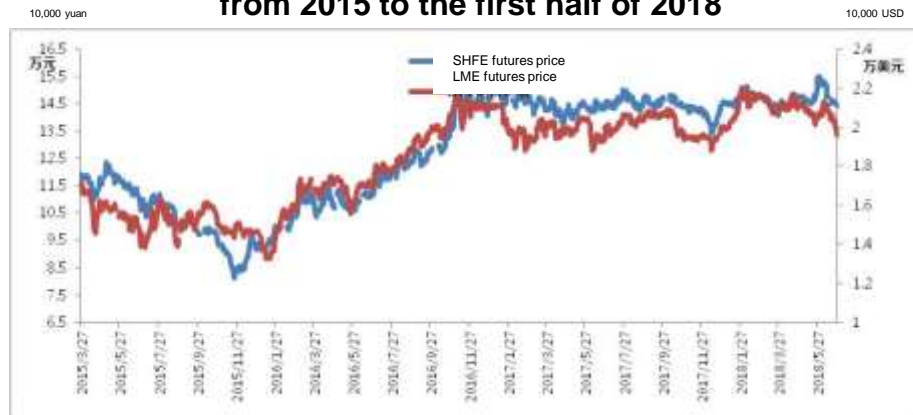
Correlation of tin futures price both domestic and abroad

Domestic tin futures and spot price trends from 2015 to the first half of 2018



Data source: SHFE; Reuters

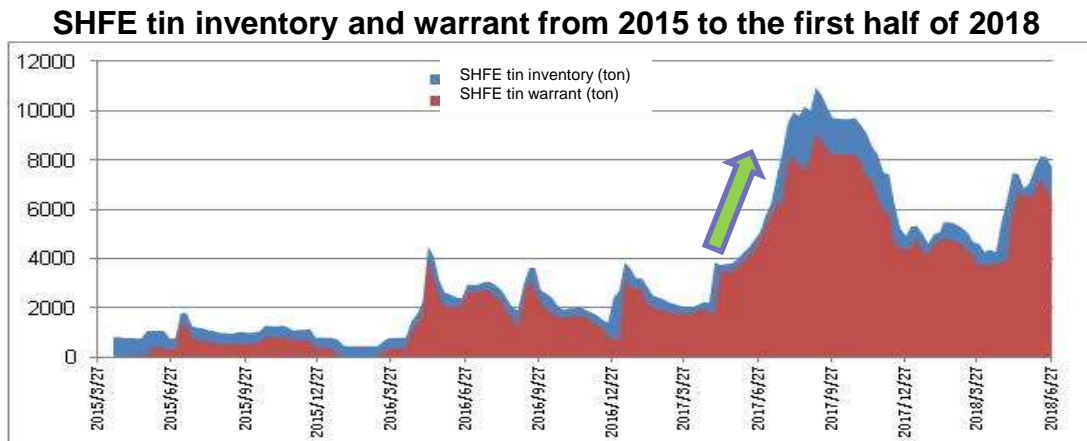
Domestic and overseas tin futures price trends from 2015 to the first half of 2018



Data source: SHFE; Reuters

- Domestic tin futures is highly consistent with the price trend on the spot market
 - Price correlation coefficient was 0.996 from 2015 to the first half of 2018
- Domestic tin futures is highly consistent with the overseas futures price trend
 - Price correlation coefficient was 0.942 from 2015 to the first half of 2018; China abolished the 10% tariff on tin ingot export in 2017.

Inventory serves as an important indicator to reflect supply and demand



- The delivery warehouse inventory of SHFE tin futures reached 7,717 tons and futures warrant reached 6,538 tons as of the end-June of 2018.
- The inventory of domestic tin market is gradually becoming visible and transparent.

Interpretation of SHFE inventory indicators

| TIN | | | | | | | | | | Unit: Tonnes |
|--------------|-----------------------|---------------|---------|-----------|---------|----------|---------|----------------------------|-----------|--------------|
| Area | Warehouse | Previous week | | This week | | Change | | Available storage capacity | | |
| | | Subtotal | Futures | Subtotal | Futures | Subtotal | Futures | Previous week | This week | Change |
| Shanghai | Guochu Tianwei | 1551 | 1303 | 1441 | 1109 | -110 | -194 | 1697 | 1891 | 194 |
| | Zhongchu Dachang | 861 | 741 | 836 | 703 | -25 | -38 | 2259 | 2297 | 38 |
| | Subtotal | 2412 | 2044 | 2277 | 1812 | -135 | -232 | 3956 | 4188 | 232 |
| Guangdong | Nanchu | 477 | 252 | 415 | 252 | -62 | 0 | 2748 | 2748 | 0 |
| | 830 Huangpu | 2900 | 2363 | 2802 | 2277 | -98 | -86 | 637 | 723 | 86 |
| | Subtotal | 3377 | 2615 | 3217 | 2529 | -160 | -86 | 3385 | 3471 | 86 |
| Jiangsu | Zhongchu Wuxi | 0 | 0 | 0 | 0 | 0 | 0 | 2000 | 2000 | 0 |
| | SIPG Logistics Suzhou | 1798 | 1793 | 1794 | 1777 | -4 | -16 | 207 | 223 | 16 |
| | Subtotal | 1798 | 1793 | 1794 | 1777 | -4 | -16 | 2207 | 2223 | 16 |
| Total | | 7587 | 6452 | 7288 | 6118 | -299 | -334 | 9548 | 9882 | 334 |

- Futures: referred to those quantity that has been registered as futures warrant by the registered delivery brand in the designated delivery warehouse
- Subtotal: referred to the futures warrant and the spot quantity that could be registered as the futures warrant in the warehouse (note: non-delivery brand in the warehouse is not included in the statistics)

Listed delivery brands of tin futures

Listed brands, packaging standard, premium and discount standard for SHFE tin ingots

| No. | Country | Registered Product | Place of origin | Registration Date | Trademark | Grade/Specifications | Premium and Discount | Size | Weight (kg) | Set/lot |
|------|---------|---|--------------------------|-------------------|-----------|----------------------|----------------------|-------------|-------------|---------|
| 1001 | China | Yunnan Xiye Co., Ltd. | Geju, Yunnan Province | 201503 | YT | SN99.90A | Premium RMB 800/ton | 420*105*100 | 25 | 40 |
| | | | | | | SN99.90AA | | | | |
| | | | | | | SN99.95AA | | | | |
| 1002 | China | China Tin Group (Guangxi) Co., Ltd. | Labin, Guangxi Province | 201503 | Jinhai | SN99.90AA | Premium RMB 300/ton | 475*130*85 | 25 | 40 |
| 1003 | China | Yunnan Chengfeng Non-ferrous Metals Co., Ltd. | Geju, Yunnan Province | 201503 | Yunheng | SN99.95AA | Premium RMB 300/ton | 400*105*100 | 25 | 40 |
| 1004 | China | Geju Kai Meng Industry Co., Ltd. | Geju, Yunnan Province | 201503 | Yunkang | SN99.95AA | Flat | 420*105*100 | 25 | 40 |
| 1005 | China | CNMC (Guangxi) PGMA Co., LTD | Hezhou, Guangxi Province | 201507 | PGMA | SN99.90AA | Flat | 425*125*90 | 25 | 40 |
| 1006 | China | Maanshan Weitai Tin Co., Ltd. | Maanshan, Anhui Province | 201511 | ZhenWei | SN99.95AA | Flat | 420*105*100 | 25 | 40 |
| 1007 | China | Geju Zhi Mining and Smelting Co., Ltd. | Geju, Yunnan Province | 201512 | YS | SN99.95AA | Flat | 410*100*100 | 25 | 40 |

Data source: SHFE

- There are 7 listed delivery brands in tin futures as of the end-2017, with the deliverable output reaching 101,000 tons, or 63.8% of the national total, which can satisfy the market delivery demand.
- The work of listed delivery brands will continue to be promoted in the next step.

Designated delivery warehouses of tin futures

SHFE-designated delivery warehouse & premium and discount standard

| No.↖ | Warehouse↖ | Address↖ | Premium and discount standard in different places↖ |
|------|---|--|---|
| 1↖ | Tianwei Warehousing Co., Ltd., Shanghai Guochu Group↖ | Xingta Road No.1289, Huangdu Industrial Park, Jiading District, Shanghai Municipality↖ | Standard price↖ |
| 2↖ | CMST Development Co., Ltd.↖ | Nanda Road No. 137, Baoshan District, Shanghai Municipality↖ | Standard price↖ |
| | | Chengnan Road No.32-1, Wuxi City, Jiangsu Province↖ | Standard price↖ |
| 3↖ | Guangdong Branch No.830, State Reserve Bureau↖ | Kaifa Avenue No.1330, Luogang District, Guangzhou City↖ | Standard price↖ |
| 4↖ | Nanchu Management Group↖ | Fo-Luo Highway No. 166, Chancheng District, Foshan City, Guangdong Province↖ | Standard price↖ |
| 5↖ | Jinshu Warehousing (Shanghai) Co., Ltd., SIPG↖ | Gangcheng Road No.8, Suzhou National New & Hi-tech Industrial Development Zone (SND), Suzhou City↖ | Standard price↖ |

Data source: SHFE

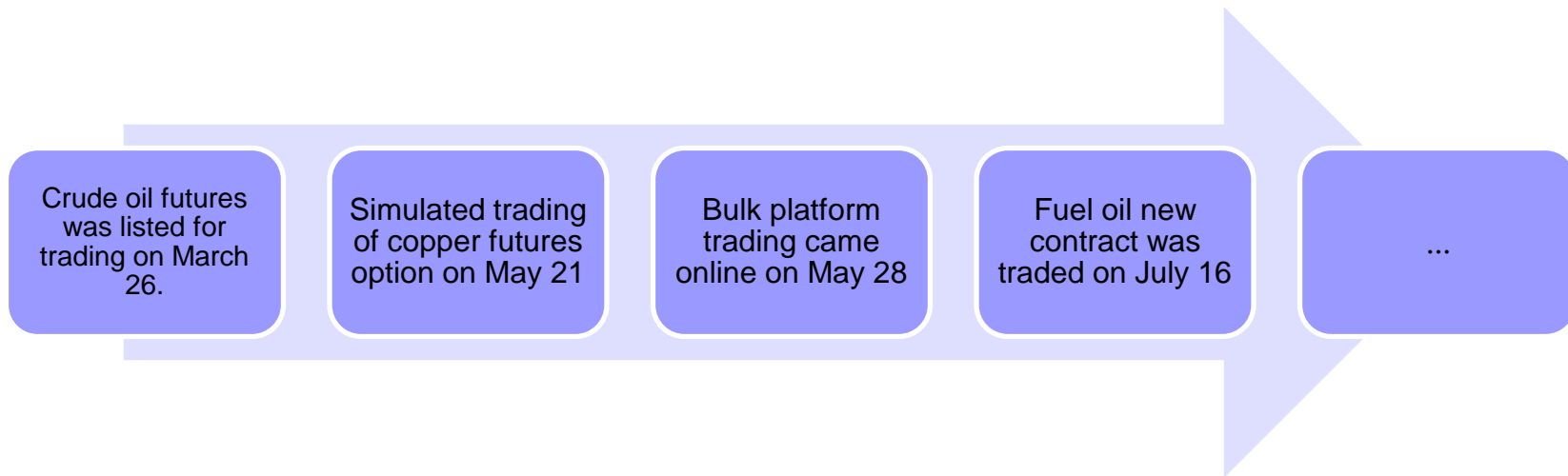
- Principle for establishment of delivery warehouse: principle of consumption/distribution center
- Regional premium and discount: temporarily not available
 - Given the relatively higher unit value of tin ingots, the ratio of regional freight difference against the tin value is particularly small.
- Storage method: indoor storage inside warehouse
 - National standard GB/T728-2010

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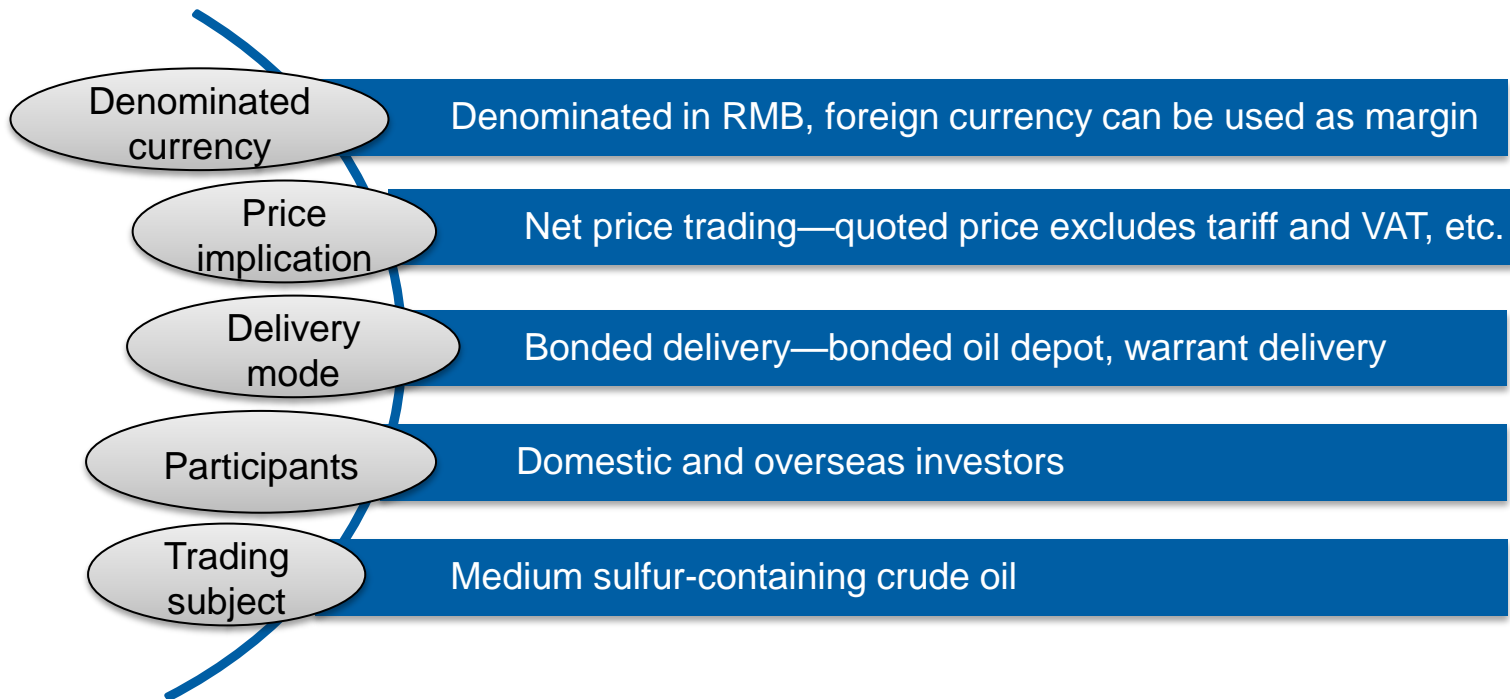
Outlook for China's nonferrous metals futures market



SHFE business innovations in 2018



Crude oil futures was listed for trading



Simulated trading of copper futures

Simulated trading contract of copper futures option

| | |
|-------------------------|--|
| Contract subject matter | Cathode copper futures contract (5 tons) |
| Contract type | Call option, put option |
| Trading unit | 1 lot cathode copper futures contract |
| Price quotation unit | RMB yuan/ton |
| Minimum price variation | 1 yuan/ton |
| Price limit | Same as the cathode copper futures contract |
| Contract months | Same as the underlying futures contract |
| Trading hours | 9:00 ~ 11:30 a.m. 1:30 ~ 3:00 p.m. and other time periods as specified by the exchange |
| Last trading day | The 5th day from last in the first month prior to the underlying futures contract delivery month, and the last trading day could be adjusted by the exchange in case of legal holidays. |
| Expiration day | Same as the last trading day |
| Exercise price | Exercise price covers the price range corresponding to the +/- one times the price limits and the settlement price in the previous trading day of the cathode copper futures contract. Exercise price ≤ 40000yuan/ton, exercise price spacing is 500yuan/ton. 40000yuan/ton < exercise price ≤ 80000yuan/ton, exercise price spacing is 1000yuan/ton. Exercise price > 80000yuan/ton, exercise price spacing is 2000yuan/ton. |
| Exercise mode | European mode, the buyer can apply for or give up exercise rights before 15:30 p.m. on the maturity date |
| Trading code | Call option: CU-contract month-C-exercise price Put option: CU-contract month-P-exercise price |

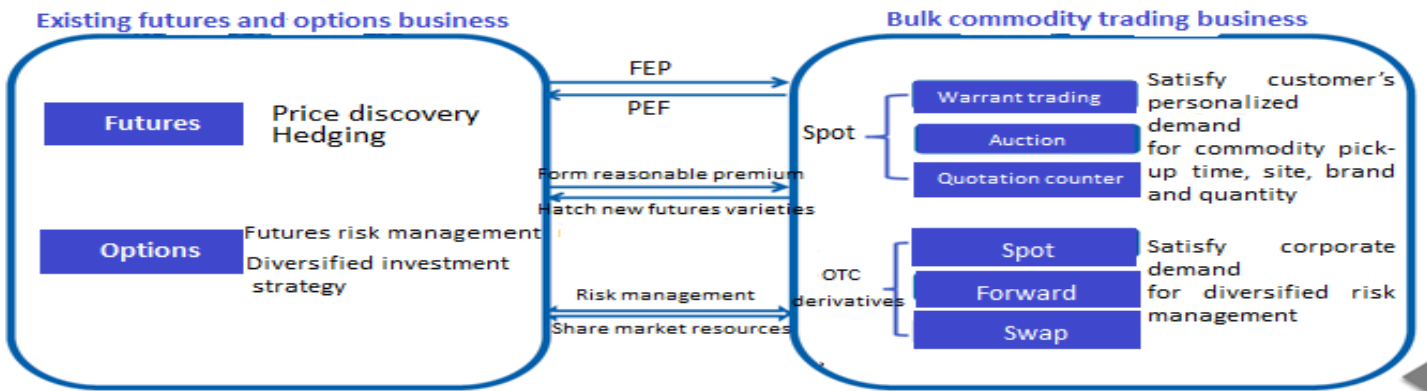
Relevant parameters and position limit quantity of copper futures option

| Item | Parameter value of simulated trading |
|--|--|
| Option pricing adopts risk-free interest rate | 1.5% (one-year deposit rate of the central bank) |
| Initial volatility of option pricing | 90-day historical volatility of the underlying futures main contract |
| Option opening charge | 5 yuan/lot |
| Option closing charge | 5 yuan/lot |
| Option closing today charge | 5 yuan/lot |
| Option exercise (performance) charge | 5 yuan/lot |
| Opening charge for the futures which is generated after the exercise (performance) | 0 yuan/lot |
| Option self-hedging charge | 5 yuan/lot |
| Futures self-hedging charge after the exercise (performance) | 0 yuan/lot |
| Maximum order of the limit order | 100 yuan/lot |

| Position limit of the simulated-traded copper futures option | From the futures contract listing to the second month prior to the delivery month (from the option contract listing to the first month prior to the expiration month) | | | The first month prior to the futures contract delivery month (Option expiration month) | | |
|--|--|--------|--------------|--|--------|--------------|
| | Limit amount (lot, unilateral) | | | Limit amount (lot, unilateral) | | |
| | Non-futures company member | Client | Market maker | Non-futures company member | Client | Market maker |
| | 5000 | 5000 | 10000 | 1600 | 1600 | 3200 |



Bulk trading platform came online



➤ Address the conflict between the standardization of futures market trading and the diversification of customer demand

- Relatively-concentrated delivery sites vs. relatively-scattered industrial layout; Fixed delivery time vs. flexible spot trading time
- Standardization of delivery specifications vs. diversity of spot trade quality; Single transaction mode of centralized bidding vs. various demand such as inquiry transaction

➤ SHFE bulk commodity trading platform came online on May 28

- Copper and aluminum were the first batch of products to come online

Transactions of bulk trading platform

Ceremony for bulk trading platform to come online



➤ As of July 5, 2018

- There were accumulatively 951 standard warrant trading for copper and aluminum, with 7,969 warrants in total; The accumulative trading volume was 199,600 tons and the accumulative turnover reached 4.809 billion yuan.
- In the first month after it came online, a total of 238 warrant traders applied for registration.
- Seller quotation is currently available, premium/discount quotation and full price quotation are adopted.
- After success of the pilot project, it shall be gradually extended to lead, zinc, tin, nickel and non-standard warrant trading

➤ Trading platform needs to be improved and optimized continuously

- Margin ratio of invoice is relatively higher, tax (stamps duty)

Tin futures contract to be continuously optimized and deepened

Discontinuous problem of contract

| | | | | | | | | |
|-----|--------|--------|--------|--------|-------|-------|-------|------|
| 237 | 沪锡主力 | 144620 | 144610 | 144660 | -0.41 | 19578 | 21428 | -784 |
| 238 | 沪锡1801 | 145220 | 145090 | 145340 | -0.19 | 154 | 784 | -26 |
| 239 | 沪锡1802 | — | 143140 | 147180 | — | 0 | 4 | 0 |
| 240 | 沪锡1803 | — | 144550 | 147930 | — | 0 | 0 | 0 |
| 241 | 沪锡1804 | — | 143980 | 147130 | — | 0 | 0 | 0 |
| 242 | 沪锡1805 | 146350 | 146410 | 147010 | -0.55 | 6 | 48 | 4 |
| 243 | 沪锡1706 | — | — | — | — | 0 | 0 | 0 |
| 244 | 沪锡1707 | — | 141170 | 147020 | — | 0 | 2 | 0 |
| 245 | 沪锡1708 | — | 143680 | 145880 | — | 0 | 0 | 0 |
| 246 | 沪锡1709 | 144620 | 144610 | 144660 | -0.41 | 19578 | 21428 | -784 |
| 247 | 沪锡1710 | — | 143510 | 145080 | — | 0 | 4 | 0 |
| 248 | 沪锡1711 | — | 143380 | 147610 | — | 0 | 0 | 0 |
| 249 | 沪锡1712 | — | 143430 | 147950 | — | 0 | 0 | 0 |

- **Discontinuous problem of tin futures contract: the main contract jumps in January-May-September**
 - It is not advantageous for futures price to become the pricing benchmark of the spot industry; The hedging target and result of companies by utilizing the futures market is influenced.
- **Main reason: relatively lower ratio of industrial clients**
 - Ratio of corporate clients in copper and other products transactions is 60-70%, tin merely around 15%.
- **To be addressed by the introduction of market-maker system and measures**

Innovative products of nonferrous metals futures market

Alumina futures and aluminum alloy futures products



- Introduction of alumina and aluminum alloy futures
 - In-depth industrial survey, design of futures contract and relevant rules
 - Product marketing and investors education activity
- Support fund companies to develop ETF or LOF products for the listed nonferrous metals futures
- SHFE nonferrous metals index futures should be listed for trading ASAP



Promotion of nonferrous metal barcode technology in the industry

Non-uniform barcode format, difficult to read data, poor universality across the upstream and downstream

Encoding Rule and Barcode Identification for Non-ferrous Metal Smelting Product



YNYT 1209—2010

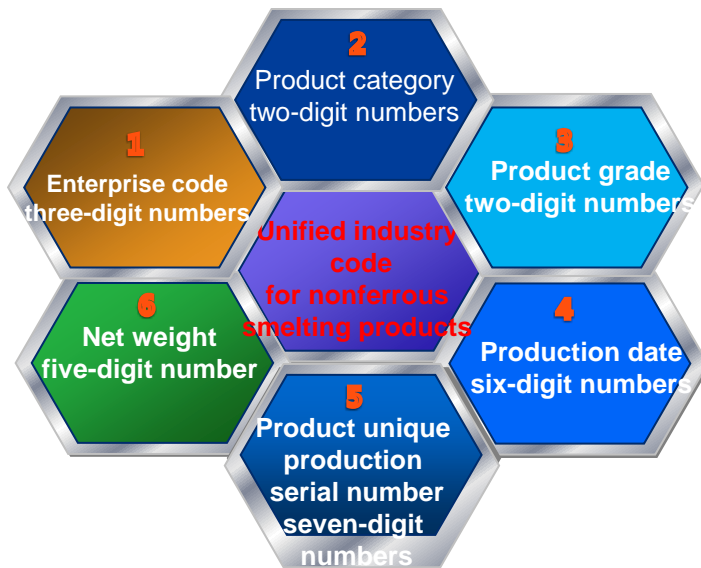
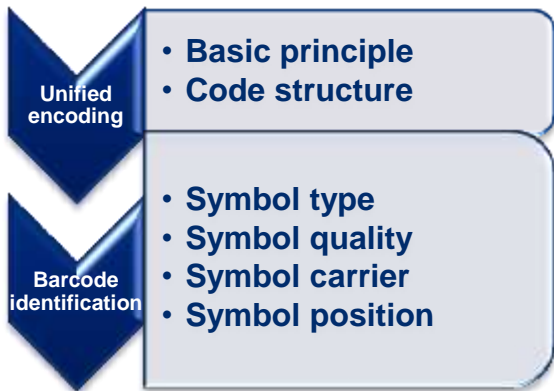
有色金属冶炼产品编码规则与条码标识

- 范围
 - 本标准规定了有色金属冶炼产品编码规则与条码标识的术语和定义、编码、条码格式表示、本标准适用于铝锭、阴极铜、阳极铜、铸锭、铸锭、以稀贵金属冶炼产品与铝锭、铜锭与铸锭的标识、用于有色金属冶炼产品在生产、加工、仓储、销售、物流、贸易、供应链各环节的信息采集及跟踪溯源。
- 规范性引用文件
 - 下列文件对于本文件的理解和应用必不可少，凡是注日期的引用文件，仅所注日期的版本适用于本文件。凡是未注日期的引用文件，其最新版本（包括所有的修改单）适用于本文件。
 - GB/T 10297 信息分类和编码规则 术语和定义
 - GB 13004 商品条码 零售商品条码与标识表示
 - GB/T 18005 条码术语
 - GB/T 18038 信息代码 自动识别与数据交换技术 条码符号印刷颜色的规范
 - GB/T 18039 商品条码 支付标识符
 - GB/T 18044 信息代码 支付标识符
 - GB/T 18047 信息代码
 - GB/T 18048 商品条码 条码符号印刷质量的检测
 - GB/T 21043 条码术语
 - GB/T 21074 信息代码
 - ISO/IEC 16093 信息技术 自动识别和数据交换技术 数据矩阵条码符号与系统规范 (Identification technology—Automatic identification and data capture technology—Data matrix bar code system specification)
 - ISO/IEC TR 24934 信息技术 自动识别和数据交换技术 直接部件标识 (DPM) 标识方法 (Identification technology—Automatic identification and data capture technology—Direct Part Mark (DPM) coding method)
- 术语和定义
 - GB/T 18005 规定的术语及下列术语的定义适用于本文件。
 - 3.1 企业代码 *manufacturer code* 有色金属冶炼产品生产企业的企业代码，由 6 位数字组成，上海期货交易所负责分配和管理。
 - 3.2 产品类别代码 *product classification code* 制造过程、地理方位及生产方法有色金属冶炼产品类别的代码，由 3 位数字组成。
 - 3.3 产品品种代码 *product grade code* 有色金属冶炼产品品种级别的代码，由 3 位数字组成。



Promotion of nonferrous metal barcode technology in the industry (2)

Encoding Rule and Barcode Identification for Non-ferrous Metal Smelting Product



The unified industry code for nonferrous metal smelting products includes enterprise code, product category code, product grade code, production date code and product unique production serial number code as well as the net weight code, with the six data items consisting of 25-digit code.



Conclusion

- The robust development of China's nonferrous metals futures market provides the industry with favorable risk management vehicles and pricing mechanism
 - China's tin futures market operate steadily since its listing, but with relatively fewer trading volume and lower participation degree
 - The tin futures trading volume, turnover and position all reached record high ever since its listing in the first half of 2018.
- SHFE accelerates product innovation and market service in 2018
 - Crude oil futures was listed on March 26 for trading, nonferrous metals futures market will speed up the opening-up process
 - Simulated trading of copper future option has already started.
 - Bulk commodity trading platform (copper and aluminum) has come online
 - Both the product innovation and listing work are accelerated for stainless steel futures and alumina futures
- SHFE is actively promoting the application of nonferrous metals barcode technology to the whole industry





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Thanks !

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