

China Oil Market Report Methodology

04 June 2018

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China Oil Market Overview

Overview on the day's market sentiment and hot topics.

Distillates Market Index & Assessments

China Energy Index

The ICIS China Energy Index is a daily forecast of the guided retail ceiling price changes to be made by China's National Development & Research Commission (NDRC). The daily forecast takes into account a weighted average of the previous day's global crude futures settlement prices, and fluctuations in that weighted average over a 10-day period. Day 1 refers to the immediate working day after the NDRC-guided price changes are declared. Fluctuations in the weighted global crude futures prices are captured by comparing its prevailing 10-day average with the preceding 10-day average.

The NDRC announces its guided diesel and gasoline retail ceiling price changes on every 10th working day. It will only implement a guided price change if the fluctuation is more than CNY50/tonne.

Please see ICIS pricing methodology documents for these price assessments:

- China Middle Distillates Assessments
- China Light Distillates Assessments
- Domestic Jet Monthly Settlement Prices

Light/middle distillates import/export margins/arbitrage

The import/export margins are updated every Monday, based on the previous week's average prices and on these formulas:

Gasoil¹ import margin = (wholesale price of GB IV gasoil in PRD)² – (after-tax CFR PRD price)

Jet fuel spread³ = (domestic ex-refinery price)⁴ – (after-tax CFR China price)

Gasoil/gasoline export margin⁵ = (FOB Singapore - freight)⁶ – (ex-refinery price in PRD, excluding taxes)⁷

Jet fuel export margin⁵ = (FOB Singapore - freight)⁶ – (ex-refinery price, excluding taxes)⁷

Notes:

¹10 ppm sulphur content gasoil

²Selling price of imported gasoil. PRD = Pearl River Delta.

³A positive spread indicates import window is open, and a negative spread indicates the reverse.

⁴Transaction prices between Sinopec sales companies and CNAF.

⁵Positive margins indicate export arbitrage window is open, negative margins indicate the reverse.

⁶Price for exporting jet fuel and 500 ppm-sulphur content gasoil & gasoline from PRD to Singapore, excluding local taxes in China. Freight refers to China-to-Singapore freight.

⁷China refiners' selling prices for jet fuel and 350 ppm-sulphur content gasoil & gasoline.

1 tonne = 8.67 barrels of gasoline, or 7.45 barrels of gasoil, or 7.9 barrels of jet fuel

Consumption tax = CNY 2,109.76/tonne (gasoline), CNY 1,411.2/tonne (gasoil), zero (jet fuel)

VAT rate = 16%

Please see ICIS pricing methodology documents for the After-tax CFR PRD, Wholesale price PRD, Ex-refinery China and FOB Singapore price assessments.

Refinery: Major refinery turnaround schedule

Daily tracking turnaround, operation dynamics and throughput loss of totally 83 major refineries under Sinopec, CNPC, CNOOC, Shannxi Yanchang, and Sinochem for three months forward.

Refinery: Independent refinery turnaround schedule

Daily tracking turnaround and operation dynamics of over 50 key independent refineries primarily in Shandong provinces.

Refinery: Major refinery refining margin

This is based on an ICIS bi-weekly calculation of refining margins of major refiners.

ICIS calculates the refining margins of major refiners in north China and south China, which process domestic Daqing crude and Oman crude respectively. The former is typical for PetroChina refinery and the latter is typical for Sinopec refinery. ICIS calculates the refining margins based on two scenarios, one based on ex-refinery prices of refined products, and the other based on wholesale prices of refined products. ICIS also takes into account other costs, including feedstock logistic cost, processing cost and consumption tax on oil products. The research is done every other Wednesday, usually in the middle and at the end of each month. Main refined products include gasoline, gasoil, kerosene, LPG, naphtha, petcoke, bitumen, dry gas, wax and base oils.

Refining margin = Products sales income – Feedstock cost – Processing cost

Product sales income = Sum (Main products output ratio * ICIS assessment or official ex-refinery settlement prices)

For feedstock cost, Cost of Daqing crude = PetroChina's Daqing crude settlement price (M) + pipeline freight

Cost of imported Oman crude (Mark to market) = ICIS China Oman CFR China assessment (M-1)

Refinery: Independent refinery refining margin

Bi-weekly calculation of independent refinery refining margin, based on the below methodology:

ICIS calculates the refining margins of Shandong independent refiners by taking into consideration the weighted average cost of five main feedstocks – Merey, Oman, ESPO, domestic offshore crude and domestic Shengli crude. Integrated sales revenue of main products from the refiners is based on the average output ratio and selling prices. ICIS also takes into account other costs, including feedstock logistic cost, processing cost and consumption tax on oil products. The research is done Wednesday every two weeks, normally in the middle and at the end of each month.

Refining margin = integrated sales income from key refined products (gasoil, gasoline, LPG, petcoke, bitumen, naphtha, sulphur, propylene, etc.) – weighted average feedstock costs – other processing costs.

Refinery: Major refinery run rates

Bi-weekly tracking a snapshot of turnaround and operation dynamics of totally 41 key coastal or inland refiners, with annual topping capacities totalling 461m tonnes/year. These refiners' aggregated CDU capacity normally takes up about 79% of the total CDU capacity in the country. The research is done every other Thursday.

CDU operating rate = Daily throughput / (Total annual CDU capacity/350)

Refinery: Independent refinery run rates

ICIS research covers 37 key independent refiners in Shandong, with annual topping capacities totaling 144.9m tonnes/year. These refiners' aggregated crude throughput normally takes up about 85% of the total crude throughput of all the independent refiners in Shandong. The research is done each Thursday.

CDU operating rate = Daily throughput / (Total annual CDU capacity/333)

Market news: official s/d data analysis

Monthly analysis of official import/export/production and refinery throughput data.

Other market news

Stories on refinery dynamics, seasonality, trading activity, policy impact etc.

Independent Refinery feedstock arrivals

Daily tracking of Shandong independent refineries' feedstock arrivals for around 1 month forward.

Other principles and guidelines

Changes to methodology

All market evolve, and ICIS ensures its methodologies for market-reporting evolve in line with the markets.

ICIS therefore regularly conducts internal reviews of the appropriateness of its methodologies.

Draft changes are then made public and feedback requested from industry participants, with a minimum two-week notice period, except where a *force majeure* event (natural disaster, war, bankruptcy of a trading exchange etc.) makes necessary a shorter notice period.

ICIS is committed to reviewing all comments on proposed methodology changes, but in some cases may find it necessary to alter its methodologies against the wishes of some market participants.

Consistency

ICIS achieves consistency among its assessors in exercising their judgment by requiring all assessors to understand and follow this detailed methodology as well as the company's Editorial Standards document. In addition, ICIS employees are required to complete standard training before undertaking the work of a market reporter. Every reporter's work is peer-reviewed daily and spot-checked by senior management.

Adherence to these processes is documented at every stage.

Data standards

ICIS has a public Data Standards Policy which covers the type and quality of information gathered from market participants.

The following principles relate to ICIS gas market assessments and commentaries:

- Where possible, please allow ICIS access to active market traders and allow them to comment on active news stories.
- Where possible, please provide market data from both front and back-office functions.

- Where possible, please provide complete data and not a subsection.
- Flag inter-affiliate transactions.
- Flag sleeve trade.
- Flag spread trades.
- When a source or contact leaves the organisation, please contact ICIS to inform on the replacement (ICIS requests that both the source and the organisation contacts them).
- Where the information is not validated or confirmed by an official source, (i.e. rumour) please indicate as such.

Market communication

ICIS communicates with a broad range of market participants – traders, brokers, back-office employees, supply managers, operations personnel and company executives – to obtain market information.

ICIS communicates with participants by telephone, email, instant messenger and in person. All instant messages, email communication and notes of any in-person communication are archived and details of telephone communication are logged and stored in a database.

ICIS does not accept instant messenger communication from unknown parties. Reporters are required to verify a market participant's identity prior to using instant message communication.

ICIS does not regard attempts by companies to restrict communication with their employees as binding in any way.

ICIS has a duty to its subscribers to obtain the maximum possible amount of market information. ICIS treats all communication from market participants as confidential. ICIS reporters are bound by a Code of Conduct to report to their superiors any coercive or threatening communication from market participants, or any offers of inducements of any kind intended to influence an assessment.

Where improper communication appears to have taken place, ICIS will communicate in the first instance with senior management at the company or companies involved, and if necessary with relevant market authorities.

ICIS expects the highest standards of propriety from all market participants, and regards all communications from market participants as representative of the views of an individual's employer.

ICIS is committed to the highest levels of customer service, and has a formal feedback and complaints policy, which can be viewed here:

<http://www.icis.com/about/icis-feedback-policy>

Market data verification

ICIS will always make best endeavours to confirm bids, offers and transactions with the relevant party/parties. ICIS attempts to cross-check all market data received from a buy- or sell-side participant with the participant's trading counterparty.

Where all counterparties to a transaction cannot or will not confirm the data, ICIS will seek corroboration from other market sources.

Where transaction or bid/offer information was from a trader rather than from a company's back office, ICIS always seeks confirmation from other sources.

Where ICIS has grounds to doubt an item of market data, it may request further evidence that a transaction has taken place, including documentary evidence.

ICIS treats transaction data received from active brokerages as confirmed and treats bid/offer information as firm. This information will be considered in conjunction with other sources during the assessment and index process as described above.

In markets with low liquidity and a low number of participants, ICIS may choose to use unconfirmed data, but only in so far as it is aligned with other market information and comes from a source deemed reliable by ICIS based on previous interactions.

Selection of participants

ICIS policy on general market data is that it welcomes all information regardless of source or constitution as long as it is provided in good faith as true.

However, only active market participants verified as such by existing active industry participants and verified as a viable business by ICIS investigations will be allowed to contribute price data to ICIS for the purpose of assessing tradable market value under this methodology.

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