

China Petroleum Market Weekly Methodology

4 June 2018

Expiry date of this methodology document: 20 March 2021



Focus

Professional, all-round and in-depth research, analysis and insight for latest news and hot topics, covering industry policies, government policies, major projects, key industry developments, industry and market trends, supply and demand fundamentals and forecasts, etc.

ICIS Supply and Demand Balance Forecast Model for Crude, Gasoline and Gasoil

Supply Forecast Model

Gasoline and gasoil supply forecast model: ICIS calculates gasoline and gasoil output based on estimated domestic refineries' crude throughput, and the yield ratios of the two distillates based on historical trends and prevailing market fundamentals.

Changes in the domestic refineries' crude throughput are estimated based on the growth in China's refining capacity, the peak seasons/years for regular and scheduled refinery maintenance, as well as the impact of oil prices on refinery operating rates.

Refinery capacity growth is calculated according to new projects and/or debottlenecking plans of major Chinese refineries, and the launch schedules of these capacities. Expansion plans and operating patterns of domestic independent refineries are also taken into account in the crude throughput forecast model.

Demand Forecast Model

Crude demand forecast model: The crude oil demand forecast considers changes in crude throughput, and demand from the national strategic petroleum reserves (SPR) and commercial reserves, but it does not take into account daily changes in the commercial inventories.

Oil products demand forecast model: The demand forecast for major petroleum products is based on compound growth rates of consumption over the past five years, the elastic coefficient between energy demand and GDP growth, the development of substitute energies, and a number of other data series, including vehicle ownership, passenger vehicles sales, olefins production capacity, air transportation turnover, data from refining/petrochemical and shipping industries.

Gasoil includes vehicle-use gasoil and ordinary gasoil used in the industrial, fishing, mining, bunkering, logistics sectors and the tertiary industry etc.

Supply and Demand Balance Forecast Model

Based on above supply and demand forecast models, ICIS estimates the supply and demand balance level of major oil products and crude oil.

For the gasoline supply and demand balance forecast model, ICIS considers influential factors like gasoline output from refineries and the supply of blendstocks (such as mixed aromatics), as well as policy changes related to blending components such as methanol, ethanol etc.

ICIS' publishing schedule for 2018 quarterly forecast on China crude, gasoline and gasoil balance				
Product	Q1	Q2	Q3	Q4
Crude	18-Jan	19-Apr	12-Jul	11-Oct
Gasoil	25-Jan	26-Apr	19-Jul	18-Oct
Gasoline	25-Jan	26-Apr	19-Jul	18-Oct

Indicators

Covering crude, gasoil and gasoline

Including price trend of WTI, Brent and China's gasoline and gasoil; bi-weekly/weekly operation and refining margins of major refineries and independent refineries; bi-weekly gasoline and gasoil inventories of Shandong independent refiners; weekly prices, export and import margins of gasoline and gasoil in south China; monthly gasoline and gasoil exports data released by China customs.

Refining margins

Bi-weekly calculation of major refinery refining margin is based on below methodology:

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's refineries and the latter is typical for Sinopec's refineries. 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 Wednesday every two weeks, normally in the middle and at the end of each month. Main refined products include gasoline, gasoil, kerosene, LPG, naphtha, petroleum coke, 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 costs:

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 (cost & freight)
China assessment (M-1)

Note: M refers to front-month. For instance, for March margin, settlement price for March is used for Daqing crude cost, and CFR price for February is used for Oman crude cost.

Bi-weekly calculation of independent refinery refining margin is based on 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. The calculation of the integrated sales revenue of main products from these 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 every other Wednesday, typically in the middle and at the end of each month.

Refining margin = Integrated sales income from key refined products (gasoil, gasoline, LPG, petroleum coke, bitumen, naphtha, propylene, etc.) – Weighted average feedstock costs – Other processing costs.

Refinery operations

This section tracks turnarounds and operation dynamics of state-run major refineries bi-weekly.

ICIS research covers 41 key coastal or inland state-run major refineries, with annual topping capacities totalling 461m tonnes/year. These refineries' aggregated CDU capacity typically makes 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)

ICIS research covers 37 key independent refiners in Shandong, with annual topping capacities totalling 144.9m tonnes/year. These refiners' aggregated topping capacity makes up about 85% of the total topping capacity of all independent refiners in Shandong. The research is done every Thursday.

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

Import and export margins

The distillates import/export margins are calculated based on the formulae below:

Gasoil import margin = (wholesale price of GB IV gasoil in PRD)¹ – (after-tax CFR PRD price)

Jet fuel spread² = (domestic ex-refinery price)³ – (after-tax CFR China price)

Gasoil/gasoline export margin⁵ = (FOB Singapore - freight)⁴ – (ex-refinery price in PRD, excluding taxes)⁶

Jet fuel export margin⁵ = (FOB Singapore - freight)⁴ – (ex-refinery price, excluding taxes)⁶

Notes:

¹Selling price of imported cargoes. PRD = Pearl River Delta.

²A positive spread indicates import arbitrage window is open, and a negative spread indicates the reverse.

³Selling prices of domestic sales companies.

⁴Pre-tax price for exporting gasoil/gasoline/jet fuel from PRD to Singapore. Freight refers to China-to-Singapore freight rates.

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

⁶Chinese domestic refiners' selling prices.

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

Inventory

ICIS China's gasoline and gasoil inventory research covers 20 independent refiners in Dongying, Weifang, Binzhou, Zibo, Dezhou, Qingdao and Ji'nan in Shandong. These refiners' refined oil storage capacities amount to 2.487m cubic metres.

Data snapshots

Covers petroleum products data and economic data. Monthly updates of outputs, imports, exports and apparent consumption of crude, gasoline, gasoil, and kerosene in China's market, as well as China's macroeconomic data such as GDP, CPI, PPI and PMI.

News in brief

Covers economic news and petroleum industry news. Economic news include China's macroeconomic developments and key economic policies.

Petroleum industry news is categorised into petroleum upstream, mid-stream and downstream news, company dynamics and infrastructures. These cover:

- Monthly analysis of official import/export/production data

- Monthly crude runs target tracking
- Key projects developments
- Fuel price adjustments and movements
- Market supply and demand fundamentals
- Up-to-date industry/market news

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.

ICIS contact details

To comment on this document or request further information please contact:

Li Li



Head of Crude and Distillates, China

Li.Li@icis.com

+86 20 3762 0120

Yu Yunfeng

Senior Analyst, Crude & Distillates, China

Yunfeng.Yu@icis.com

+86 20 3763 7112

Patricia Tao

Head of Refineries, China

Patricia.Tao@icis.com

+86 20 3762 0203

For regulatory or compliance issues please contact:

Richard Street

Head of Regulation and Compliance

Richard.Street@icis.com

+44 207 9111427

