上海原油期货和期权市场发展报告

2025 Development Report of the Shanghai Crude Oil Futures and Options Market

上海期货交易所 SHANGHAI FUTURES EXCHANGE

上海国际能源交易中心 SHANGHAI INTERNATIONAL ENERGY EXCHANGE

01

Milestones

上海原油期货大事记

2018

2018.03.15 上期能源完成香港自动化交易服务（ATS）注册。

2018.03.26 原油期货作为中国首个国际化商品期货上市。

2018.06.20 国内首船期货原油卸至大连中石油国际储运有限公司指定交割库。

2018.11.15 获得新加坡金融管理局（MAS）批准，成为认可的市场经营者（RMO）。

2019

2019.03.26 发布原油价格指数。

2019.10.30 增加中石化海南原油期货交割存放点，核定库容 100 万立方米，启用 40 万立方米。

2020

2020.04.16 增加大连北方油品储运有限公司作为原油期货指定交割仓库，增加大连中石油国际储运有限公司国际储备库作为原油期货指定交割仓库存放点。

2020.04.17 增加中化弘润石油储运（潍坊）有限公司作为原油期货指定交割仓库。

2020.04.20 达上市以来最高持仓量 18.84 万手。

2020.04.24 增加中国石化集团石油商业储备有限公司广东省湛江市临港工业园兴港大道湛江商储分公司、河北省唐山市曹妃甸工业区曹妃甸商储分公司作为原油期货指定交割仓库存放点。

2020.06.03 上期所和上期能源被纳入欧洲证券及市场管理局（ESMA）的第三国交易场所交易后透明度评估正面清单。

2020.08.01 达上市以来单月最大交割量 1385.9 万桶。

2020.09.07 增加大连中石油国际储运有限公司广西中石油国际储备库作为原油期货指定交割仓库存放点。

2020.10.12 推出原油期货结算价交易指令（TAS），发布日中交易参考价（Marker Price）。

2020.12.01 穆尔班原油被列入上海原油期货的可交割油种之中。自 2021 年 6 月 1 日起，穆尔班原油可入库生成标准仓单，并用于期货交割。

2021

2021.02.03 增加大鼎油储有限公司位于浙江省舟山市定海区临城街道岙山东路油库成为原油期货存放点。

2021.02.09 同意青岛海业摩科瑞仓储有限公司位于山东省青岛市黄岛区董家口港区港润大道油库成为原油期货存放点。

2021.06.21 原油期权在上期能源正式挂牌交易。

2022

2022.05.10 发布原油期货月均结算价。

2022.06.21 同意国投（洋浦）油气储运有限公司位于海南省洋浦经济开发区化学工业园区园一路北侧的油库成为我中心原油期货存放点。

2022.06.24 巴士拉中质原油和图皮原油被列为上海原油期货的可交割油种。自 2022 年 11 月 1 日起，巴士拉中质原油、图皮原油可生成标准仓单，并用于期货交割。

2022.07.06 达上市以来最高成交量 51.6 万手。

2022.09.02 QFI 可参与原油期货、期权等品种交易。

2023

2023.04.24 推出原油期货结算价交易指令（Trade at Settlement，TAS）优化业务。

2023.06.02 同意中国石化集团石油商业储备有限公司位于广东省湛江市临港工业园兴港大道的原油期货指定交割仓库存放点启用库容由 40 万立方米增加至 60 万立方米。

2023.08.25 自然资源部 财政部发布《关于制定矿业权出让收益起始价标准的指导意见》，明确以上海原油期货价格作为油气矿产矿业权出让收益起始价标准。

2024

2024.06.01 同意山东省港口集团有限公司、日照港油品码头有限公司、青岛振华石油仓储有限公司成为上海国际能源交易中心原油期货集团交割中心、集团交割仓库。

2024.06.17 芝加哥商业交易所（CME）开始发布对应上海原油期货收盘时间的 WTI 上海日中参考价（Shanghai Marker）及 TAM。

2024.12.31 境外参与者涵盖 6 大洲（亚洲、非洲、欧洲、北美洲、大洋洲、南美洲）36 个国家和地区。

待续……

2018

2018.03.15 INE completed the registration for Hong Kong Automated Trading Services (ATS)

2018.03.26 Shanghai crude oil futures debuted as China' s first commodity futures product open to international investors.

2018.06.20 The first ship of deliverable crude oil futures was unloaded into the designated delivery storage facility of Dalian PetroChina International Warehousing & Transportation Co., Ltd.

2018.11.15 INE was approved by the Monetary Authority of Singapore (MAS) as a Recognized Market Operator (RMO).

2019

2019.03.26 INE launched the crude oil price index.

2019.10.30 Sinopec Hainan company became a storage site of crude oil futures delivery, with an approved capacity of 1,000,000 cubic meters and an active capacity of 400,000 cubic meters.

2020

2020.04.16 INE approved Dalian North Oil Petroleum Logistics Co., Ltd. as a designated delivery storage facility, and expanded the storage site of Dalian PetroChina International Warehousing & Transportation Co., Ltd..

2020.04.17 Sinochem-Hongrun Oil Staging (Weifang) Co., Ltd. was approved as a designated delivery storage facility for crude oil futures.

2020.04.20 The open interest hit a new high of 188,352 lots.

2020.04.24 Sinopec Petroleum Reserve Co., Ltd. Zhanjiang Branch at Lingang Industrial Zone, Xinggang Avenue, Zhanjiang, Guangdong Province, and Sinopec Petroleum Reserve Co., Ltd. Caofeidian Branch at Caofeidian Industrial Zone, Tangshan, Hebei Province became the storage sites of designated delivery storage facility.

2020.06.03 SHFE and INE were added to ESMA' s positive list for post-trade transparency as third-country trading venues.

2020.08.01 The monthly delivery quantity hit a new high of 13.859 million barrels.

2020.09.07 Guangxi PetroChina International Reserve Depot of Dalian PetroChina International Warehousing & Transportation Co., Ltd. became a storage site for crude oil futures.

2020.10.12 INE launched TAS (Trade at Settlement) order and released the Marker Price.

2020.12.01 Murban crude oil was added as another deliverable crude oil, eligible to be loaded in for the issuance of standard warrants and futures delivery from June 1, 2021.

2021

2021.02.03 The depot of Dading Petroleum Logistics Co., Ltd. at Aoshan East Road, Lincheng Sub-District, Dinghai District, Zhoushan, Zhejiang was approved as a storage site of crude oil futures.

2021.02.09 The depot of Qingdao Haiye Mercuria Oil Terminal Co., Ltd. at Gangrun Avenue, Dongjiakou Port, Huangdao District, Qingdao, Shandong was approved as a storage site for crude oil futures.

2021.06.21 Crude oil options were listed on INE.

2022

2022.05.10 INE released the Monthly Average Settlement Price (MASP) for crude oil futures.

2022.06.21 The depot of SDIC Oil & Gas Terminal Yangpu Co., Ltd. located to the north of Park Road No. 1, Chemical Industry Park, Yangpu Economic Development Zone, Hainan Province, was approved as a storage site for crude oil futures.

2022.06.24 Basrah Medium and Tupi were included as deliverable crudes for the Shanghai crude oil futures. They could be used for standard warrants issuance and futures delivery from November 1, 2022.

2022.07.06 The trading volume of INE crude oil futures hit a record high of 515,989 lots since its listing.

2022.09.02 QFI was approved to trade crude oil futures and options products.

2023

2023.04.24 INE improved TAS orders of crude oil futures.

2023.06.02 INE approved an expansion of the active capacity of the storage site operated by Sinopec Petroleum Reserve Co., Ltd. at the Lingang Industrial Zone, Xinggang Avenue, Zhanjiang, Guangdong Province, increasing from 400,000 cubic meters to 600,000 cubic meters.

2023.08.25 The Ministry of Natural Resources and the Ministry of Finance issued the *Guiding Opinions on Setting Starting Price Standards for the Mining Rights Grant Fee*, setting the starting price standard for the grant fee of oil and gas mining rights based on the price of Shanghai crude oil futures.

2024

2024.06.01 Shandong Port Group Co., Ltd., Rizhao Port Oil Terminal Co., Ltd., and Qingdao Zhen-Hua Oil Storage Co., Ltd. were variously approved as a Group Delivery Center and delivery warehouses for the INE crude oil futures.

2024.06.17 CME began to publish the WTI Shanghai Marker and the corresponding TAM at the closing time of the SC.

2024.12.31 Overseas participants now come from 36 countries and regions across 6 continents (Asia, Africa, Europe, North America, Oceania, and South America).

To be continued……

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2025年上海原油期货和期权市场发展报告

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2024 年，国际油价在全球地缘政治及宏观经济不确定性影响下，呈现先涨后跌、宽幅震荡的走势。上海原油期货（品种代码：SC）价格与境外原油期货价格总体保持高度联动，同时有效地反映区域现货市场变化，原油期权定价合理，与原油期货联动紧密，市场规模持续增长。

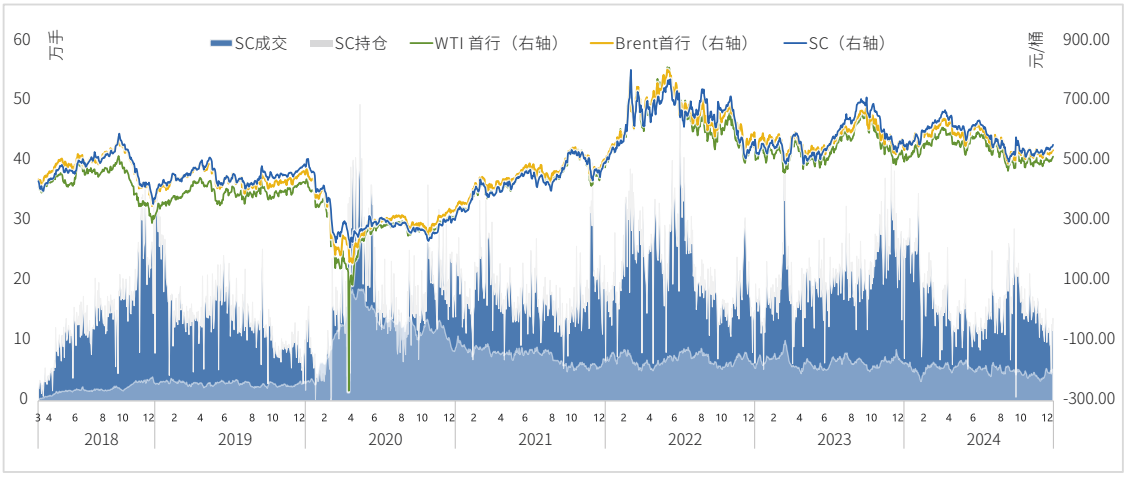
一、上海原油期货价格与境外市场高度联动，同时有效反映区域供需基本面变化特点

（一）国际油价总体呈现先涨后跌震荡走势

2024 年，国际油价在全球地缘政治及宏观经济不确定性影响下，呈现先涨后跌的震荡走势。上半年，在巴以冲突外溢、中东局势升温的影响下油价震荡上行，由于冲突未对供应产生实质影响，地缘溢价逐步消退。下半年，原油价格回归供需基本面主导，全球宏观经济走弱和能源转型抑制石油消费增长，OPEC+ 维持减产规模但非 OPEC 国家供应有所增长，油价震荡下跌。

截至 2024 年 12 月 31 日（周二），上海原油期货主力合约结算价 555.1 元 / 桶（约合 77.22 美元 / 桶），年内上涨 0.47%。Brent 原油期货首行合约结算价 74.64 美元 / 桶，WTI 原油期货首行合约结算价 71.72 美元 / 桶，年内分别下跌 3.12% 和上涨 0.10%。2024 年，上海原油期货与 Brent、WTI 原油期货相关系数分别为 0.94 和 0.92。

图1 原油期货价格走势



数据来源：上海国际能源交易中心、路透

（二）上海原油期货价格走势反映区域供需基本面变化

2024 年，受全球宏观经济走弱以及国内电动汽车、LNG 重卡对汽柴油车替代等因素影响，国内化工品及油品需求疲弱，原油消费和进口量同步下降。全国原油表观消费量约为 7.66 亿吨，同比下降 0.9%；原油进口量 5.53 亿吨，同比下降 1.9%。

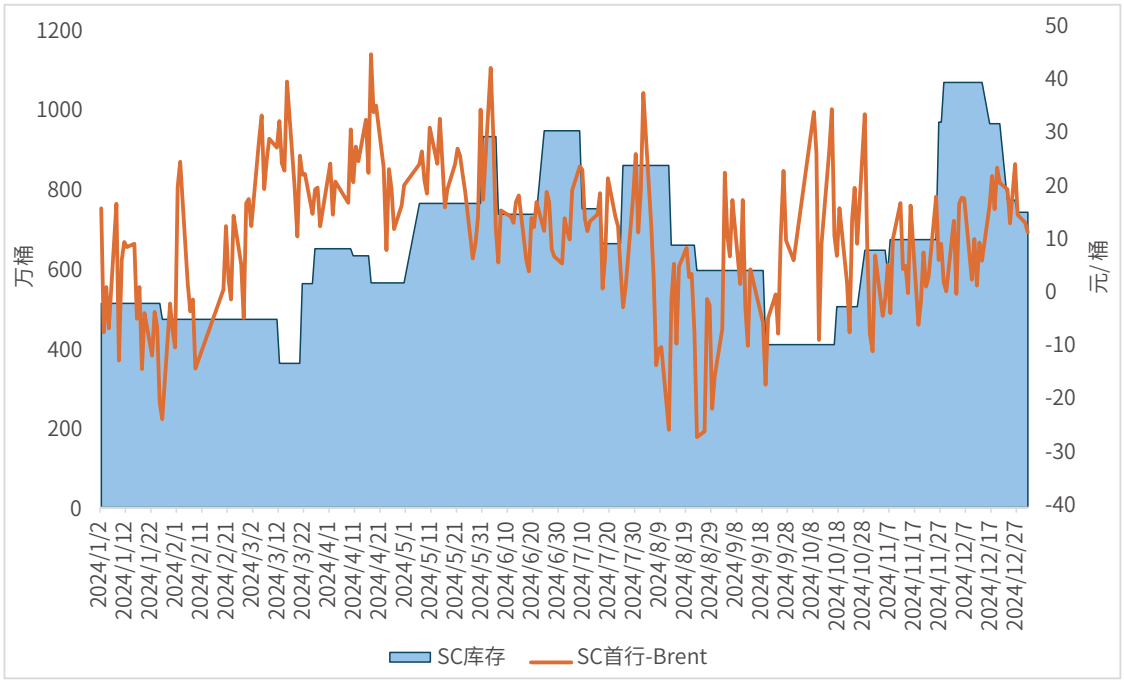
上海原油期货价格走势和仓单数量较好地反映了宏观经济形势、供需基本面和炼厂开工率变化。SC-Brent 价差在一季度上升至高位，二三季度震荡下行，四季度温和回升，与仓单数量呈现较为明显的负相关性。具体来看：

一季度，国内经济企稳回升，主营炼厂加工量提升，叠加中东局势紧张、OPEC+ 减产等因素影响，中质原油供应趋紧，原油期货仓单数量处于年内低位，价格走势强于境外。

二、三季度，受全球宏观经济走弱、国内新能源汽车替代等因素影响，化工和油品市场供需两弱，国内炼厂开工率震荡走低，山东独立炼厂开工率 7 月跌至近五年最低点 47.37%。期货仓单库存同步累库，并在 7 月达年内次高点 944.2 万桶；上海原油期货价格走势总体弱于境外市场，SC-Brent 价差震荡下行。

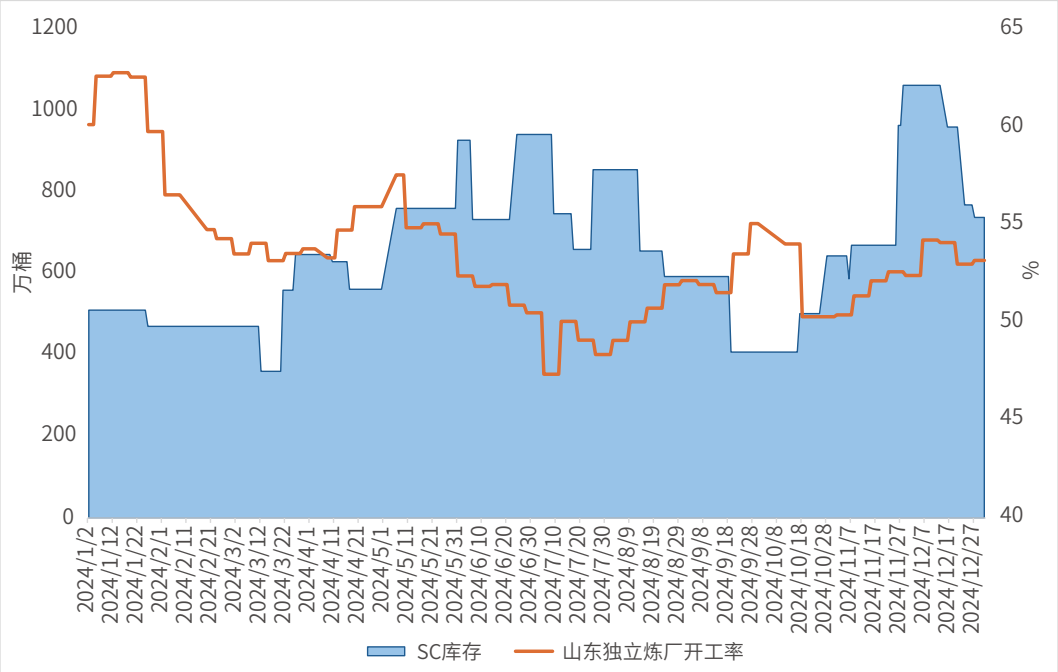
四季度，随着一系列稳经济政策措施出台，成品油市场触底回升，炼厂开工率有所回暖。同时，俄油贴水持续上涨、伊朗制裁收紧使得市场担忧情绪升温，上海原油期货价格走势强于境外市场。此外，人民币较美元汇率走弱也为上海价格提供了支撑。期货库存在补库后逐步下降，在年底降至 740.1 万桶。

图2 2024年境内外原油期货价差与上海原油期货库存变化



数据来源：上海国际能源交易中心、路透

图3 2024年山东独立炼厂开工率与上海原油期货库存变化



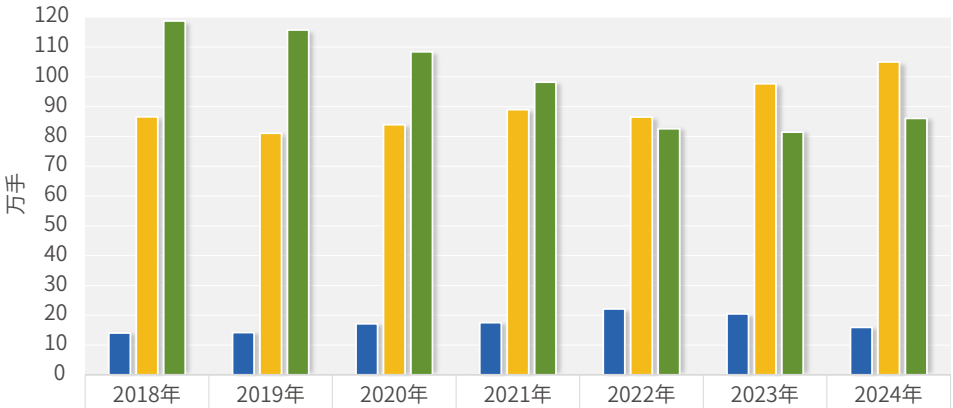
数据来源：上海国际能源交易中心、Wind

二、上海原油期货、期权联动发展

（一）上海原油期货市场规模有所下降，市场参与者结构日益完善

由于 2024 年价格波动率较 2023 年下降，以及交易限额措施的出台，上海原油期货市场成交持仓规模有一定下降。2024 年，上海原油期货日均成交 15.94 万手（单边，下同），同比下降 22.13%；日均持仓 5.21 万手，同比下降 19.97%；累计成交金额 22.21 万亿元，在境内商品期货中排名前列。

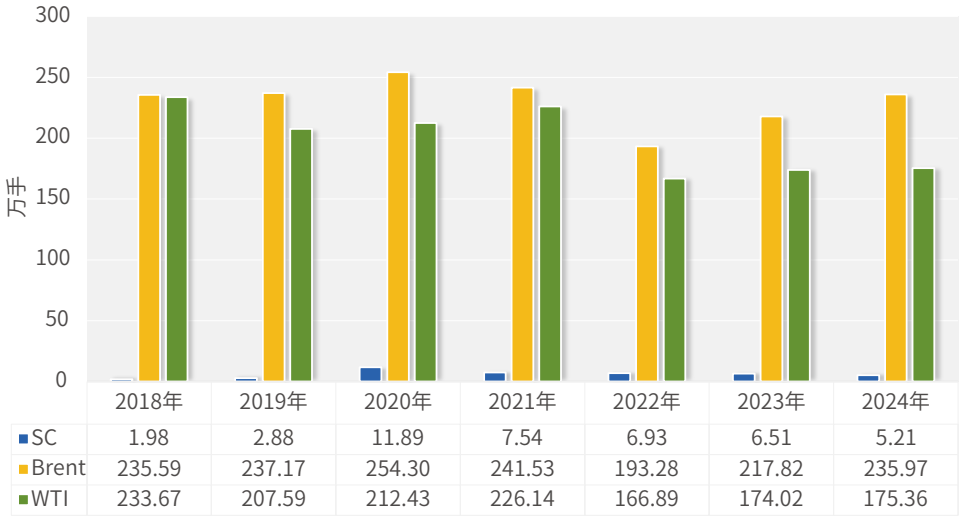
图4 上海原油期货日均成交情况



	2018年	2019年	2020年	2021年	2022年	2023年	2024年
SC	14.03	14.20	17.11	17.55	22.14	20.47	15.94
Brent	86.57	81.03	83.94	89.03	86.49	97.70	104.98
WTI	118.70	115.72	108.35	98.20	82.55	81.47	86.03

数据来源：上海国际能源交易中心、路透

图5 上海原油期货日均持仓情况

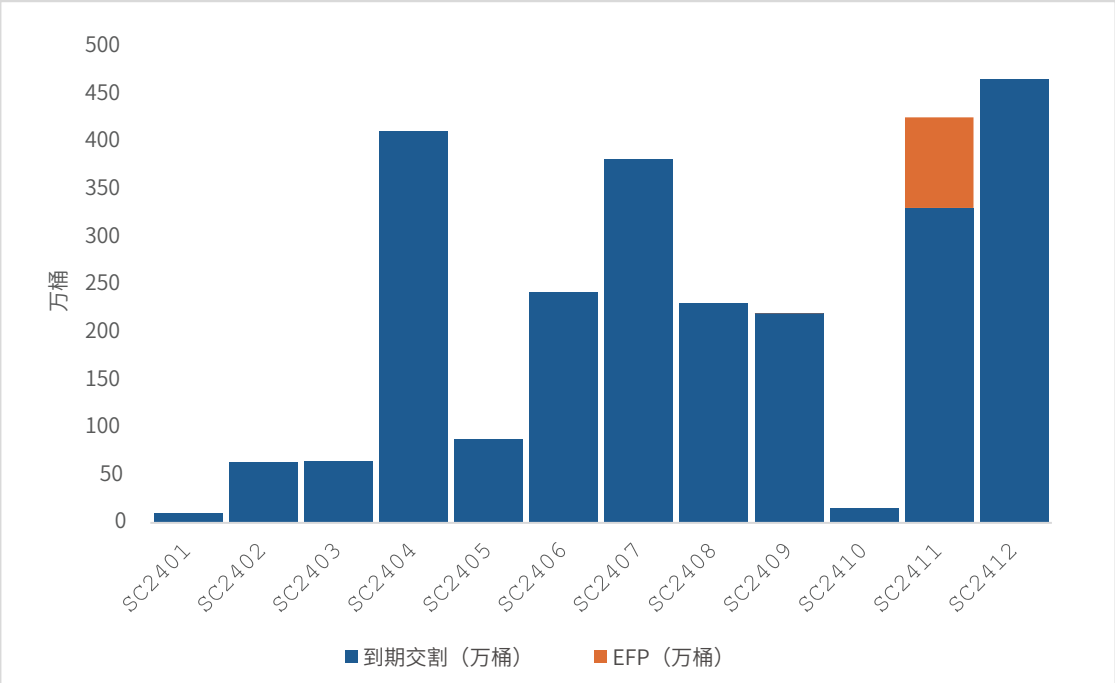


	2018年	2019年	2020年	2021年	2022年	2023年	2024年
SC	1.98	2.88	11.89	7.54	6.93	6.51	5.21
Brent	235.59	237.17	254.30	241.53	193.28	217.82	235.97
WTI	233.67	207.59	212.43	226.14	166.89	174.02	175.36

数据来源：上海国际能源交易中心、路透

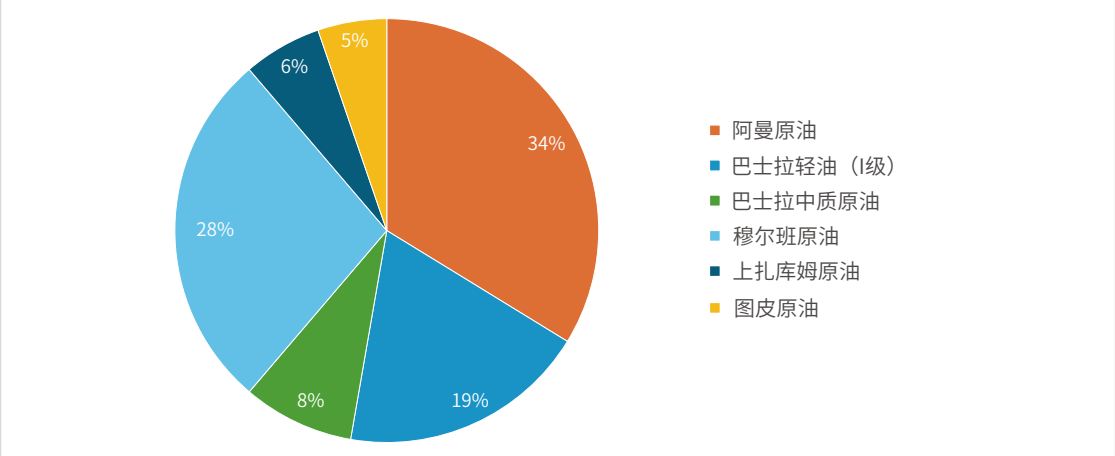
原油期货交割库容持续扩大，更好地满足市场交割需求。上期能源于 2024 年 6 月同意山东省港口集团有限公司成为上海国际能源交易中心原油期货集团交割中心，同意日照港油品码头有限公司、青岛振华石油仓储有限公司成为原油期货集团交割仓库。日照港油品码头有限公司启用库容 40 万立方米；青岛振华石油仓储有限公司启用库容 80 万立方米。截至2024 年底，上海原油期货共有 10 家交割仓库合计 19 个存放点。其中，上海市 1 个，广东省 2 个，浙江省 3 个，山东省 6 个，辽宁省 3 个，海南省 2 个，河北省 1 个，广西省 1 个，总核定库容 1919 万方，启用库容 1332 万方。从交割情况看，年内原油期货共交割 26177 手（含期转现，合 2617.7 万桶），交割金额 152.28 亿元。其中，SC2412 合约是交割量最大的合约，交割量达 4657 手，交割金额 24.78 亿元；阿曼原油是交割量最大的油种，交割量为 8515 手，占全市场总交割量 33.76%。原油期货交割环节促进了保税原油市场发展。2024 年注销的期货仓单中，受国内需求下降影响，直接报关进口的数量降至不到一成。转运出境、转保税现货的占比有所上升，其中，转运出境的数量约占四成，转保税现货的数量占一半左右。

图6 2024年上海原油期货合约交割量



数据来源：上海国际能源交易中心

图7 2024年上海原油期货各油种交割占比



数据来源：上海国际能源交易中心

表1 原油期货指定交割仓库及库容				
序号	指定交割仓库	存放点	核定库容	启用库容
1	中国石化集团石油商业储备有限公司	中国石化曹妃甸	100	40
2		中国石化日照	120	100
3		中国石化舟山	80	70
4		中国石化湛江	90	60
5		中国石化海南	100	60
6	中石油燃料油有限责任公司	中油湛江	70	50
7	中化兴中石油转运（舟山）有限公司	中化兴中	100	35
8	大连中石油国际储运有限公司	中油大连保税	145	145
9		中油大连国际	180	180
10	山东省港口集团有限公司	中油广西国际	20	20
11		山港青岛实华	40	40
12		山港海业董家口	100	40
13	洋山申港国际石油储运有限公司	洋山石油	30	20
14	大连北方油品储运有限公司	北方油品	40	10
15	中化弘润石油储运（潍坊）有限公司	弘润油储	500	300
16	大鼎油储有限公司	大鼎石油	44	22
17	国投（洋浦）油气储运有限公司	国投洋浦油储	40	20
18	山东省港口集团有限公司（集团交割）	山港日照	40	40
19		山港振华石油	80	80
合计			1919	1332

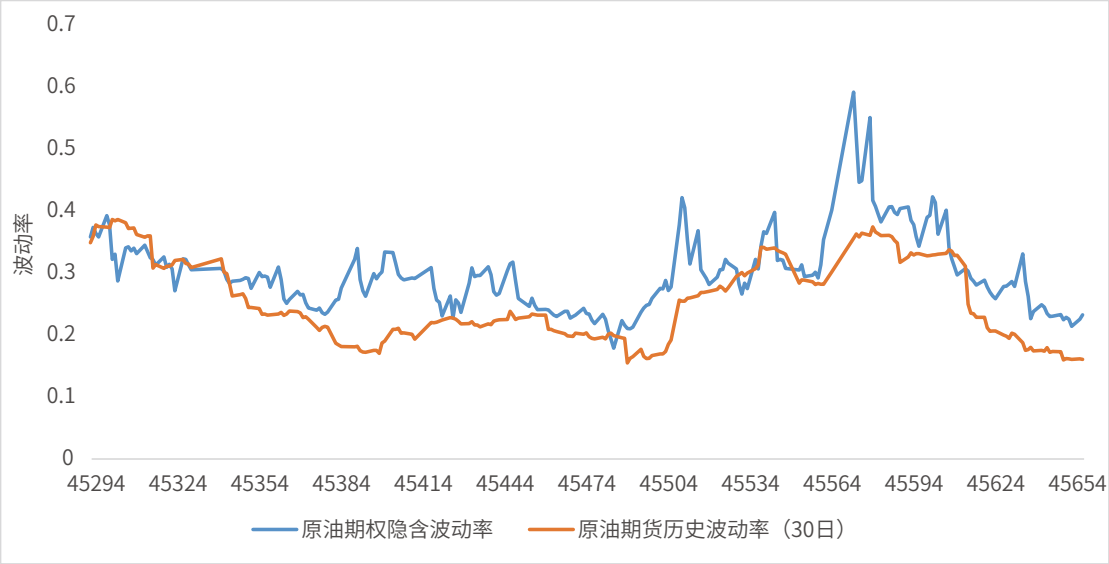
数据来源：上海国际能源交易中心,单位（万立方米）

原油期货市场参与者结构日益完善，境外交易者积极参与。原油期货法人客户日均成交占比超四成，日均持仓占比超过七成，机构交易者的交易、持仓和套期保值比例位居境内已上市期货品种前列。境外交易者参与程度进一步提升。2024 年，境外交易者日均成交占比超两成，日均持仓占比近四成。跨国石油公司、贸易商、投资银行、基金和资产管理公司中的标杆性企业均参与了上海原油期货交易。截至 2024 年底，境外交易者覆盖了六大洲近 36 个国家和地区。境外特殊参与者 1 家，备案的境外中介机构达 87 家。

（二）原油期权运行平稳，定价合理有效

2024 年，原油期权市场运行平稳，期权定价总体合理，主力系列期权隐含波动率基本处于 20%~60%，走势总体与标的期货的历史波动率一致，反映出原油期权市场投资者预期的波动与实际波动较为一致。

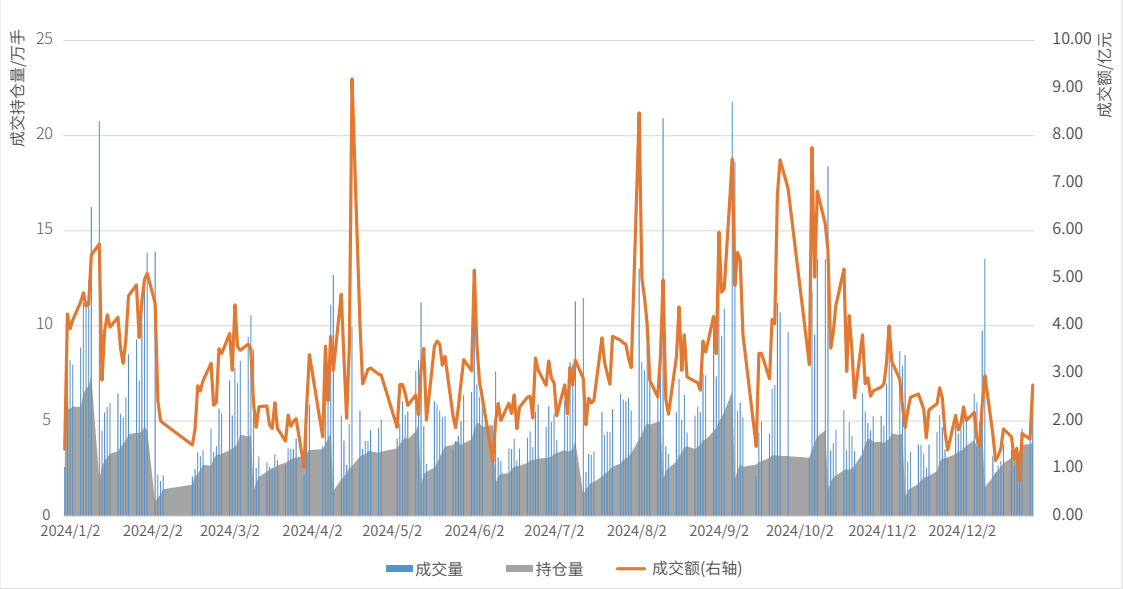
图8 2024年原油期权隐含波动率和上海原油期货历史波动率情况



数据来源：上海国际能源交易中心、路透

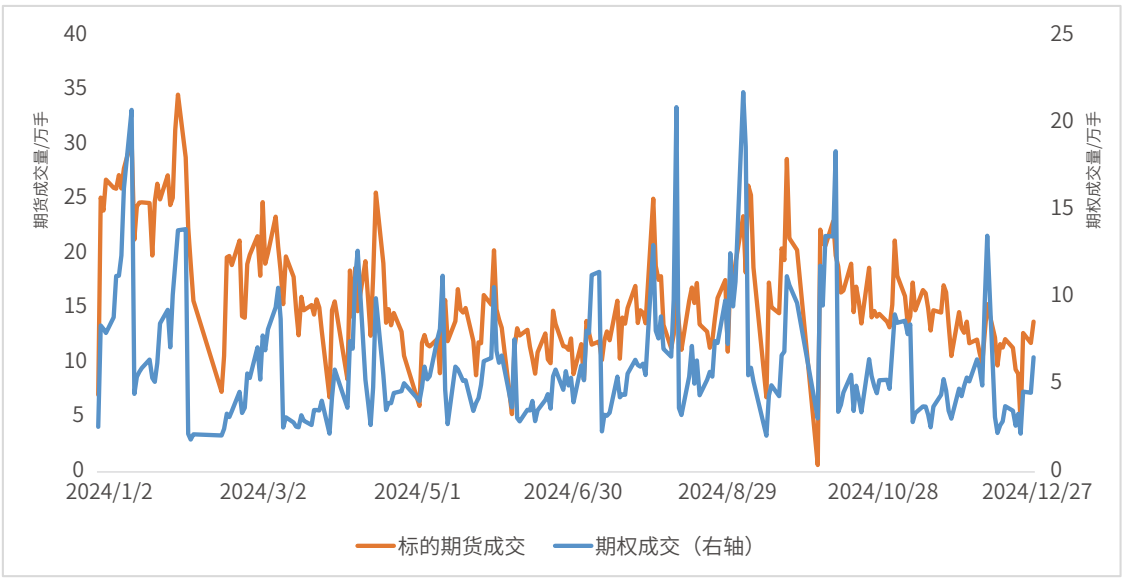
原油期权成交规模持续增长，与期货市场联动紧密。2024 年，原油期权日均成交量为 6.16 万手，同比增长 4.47%，日均成交金额为 3.17 亿元，日均持仓量为 3.26 万手，同比下跌 3.61%、14.68%。原油期权市场规模占期货市场规模的比例有明显提升，2024 年原油期权日均成交量与标的期货日均成交量的比例为 38.86%，日均持仓量与标的期货日均持仓量的比例为 62.66%，均较 2023 年增长近 10 个百分点，反映我国原油期货交易者运用期权开展风险管理程度不断提升。原油期权与标的期货联动紧密，当原油期货价格波动率增加、成交量大幅变化时，期权成交量也相应变化，期权、期货共同管理价格风险的特征明显。

图9 2024年原油期权成交持仓情况



数据来源：上海国际能源交易中心

图10 2024年原油期权和标的期货成交量情况



数据来源：上海国际能源交易中心

期权行权方面，行权总体为到期日实值期权行权转为标的期货，未发生深度虚值行权等情况，平稳有效地衔接原油期权和期货两个市场。

三、上海原油期货服务实体产业发展取得积极成效

（一）原油期货服务油气产业范围持续扩大

上海原油期货参与主体不断丰富，国际石油公司、原油贸易商、各类金融机构等积极参与原油期货，国内油田、炼厂、成品油贸易商、航空公司等上下游企业也开始使用原油期货作为风险管理工具。期货工具与生产经营的结合为企业提升经营水平提供了新的思路，成品油相关企业探索开发了基于原油期货价格点价的成品油销售方式，将成品油价格下跌风险转移至期货市场，有助于下游企业保障油品连续供应，提升经营效益。

（二）产业客户参与上海原油期货定价和套保能力有效提升

2024 年，上期能源继续推出上期“强源助企”原油期货项目，鼓励企业在现货贸易中使用上海原油期货计价。石油公司、勘探企业、炼化企业中的龙头企业积极参与，部分进口及国产原油的采购和销售使用上海原油期货作为计价基准。以此为契机，相关企业开始使用原油期货优化库存管理，并积极参与交割等环节，降低了原油进口成本，优化了企业的销售采购渠道。

（三）原油期货发展受到国际市场关注

随着市场参与主体进一步多元化，上海原油期货与国际期、现货市场联动效应进一步增强，市场相关机构更加关注原油期货发展。2024 年 6 月 17 日起，芝加哥商业交易所（CME）对应上海原油期货收盘时间，发布 WTI 原油期货的“上海日中交易参考价”（Shanghai Marker）并配套推出日中参考价交易机制（Trade at Marker），体现了国际石油市场对于上海原油期货的认可。

历经 7 年发展，上海原油期货和期权市场运行平稳，跨市场联动日趋紧密，参与主体不断丰富，价格有效反映了中国及亚太供需，已成为国际原油市场的重要组成部分。未来，上期能源将紧跟原油市场发展变化，不断提升原油期货运行质量，创新交易机制，为全球交易者提供更丰富的产品和更优质的服务。

境内外研究成果

Zou、Han 和 Yang（2024）对 INE 原油期货（SC）和期权的日内交易及报价数据，通过 1 秒、5 秒和 30 秒频率采样价格进行分析，对其价格发现能力展开研究。研究显示，在价格发现方面，INE SC 占据主导地位，期权市场为辅助。研究人员进一步发现，期权信息份额在一天内的分布呈现“W”形，这与期货市场日内交易量的变化趋势相契合，意味着两者在日内的交易活跃程度变化具有一致性。在影响价格发现过程的因素方面，INE SC 交易量在一天内呈现出有规律的变化，对价格发现有着重要影响。此外，研究人员推断，国际投资者对 INE SC 的影响程度相较于期权市场更高。

参考文献：Zou, M., Han, L., & Yang, Z. (2024). Price discovery of the Chinese crude oil options and futures markets. Finance Research Letters, 60, 104809. https://doi.org/10.1016/j.frl.2023.104809

He 等（2024）采用双重差分法研究（DID）发现，SC 的推出显著降低了能源依赖型企业的特质经营风险（idiosyncratic risk）。主要通过两点，一是 SC 为企业提供了套期保值工具，稳定了企业现金流，减少了原油价格波动对企业的冲击；二是 SC 市场的价格发现功能，使得企业能够更及时、准确地获取原油市场信息，进而增强其风险预判能力。此外，异质性分析 (heterogeneity test) 显示，SC 对企业特质经营风险的抑制作用在大型企业和竞争压力较高的企业中更为显著。对于大型企业，其资源和风险管理能力更强，能更好利用 SC 进行风险管理；竞争压力较高的企业，更有动力借助 SC 降低风险，提升自身竞争力。

参考文献：He, F., Chen, L., Hao, J., & Wu, J. (2024). Financial market development and corporate risk management: Evidence from Shanghai crude oil futures launched in China. Energy Economics, 129, 107250. https://www.sciencedirect.com/science/article/abs/pii/S014098832300748X

Yang 等（2023）通过将日内数据合并为 1 秒钟间隔（5 秒钟、30 秒钟作为稳定性检验），并采用三种价格发现衡量标准来比较 SC（上海原油期货）、WTI 与 Brent 的价格发现与市场流动性各项指标。研究结果表明 INE 上海原油期货市场（以下简称 SC）在日间交易时段相较于 WTI 和 Brent，主导了价格发现；同时在市场流动性方面几乎赶上了 Brent；在 COVID-19 期间，SC 也显示出了巨大的韧性。

参考文献：Yang, Z., & Zou, M. (2023). Price leadership in China’s oil futures market: take two. Applied Economics Letters, 1-9. https://doi.org/10.1080/13504851.2023.2208821

Naqvi和Mirza等（2023）运用GARCH模型和信息冲击曲线对2021年4月至2023年3月的每日数据进行分析。研究表明，INE　SC的回报率在一定程度上独立于全球其他原油市场走势，且INE SC相比与其他原油期货，回报率显示出了更高的稳定性和对负面信息冲击的抵御能力。

参考文献：Naqvi,B.,Mirza,N.,Umar,M.,&AbbasRizvi,S.(2023). Shanghai crude oil futures: Returns Independence, volatility asymmetry, and hedging potential. Energy Economics,128,107110.
https://www.sciencedirect.com/science/article/abs/pii/S0140988323006084#preview-section-snippets

Shao等（2023）通过多重分形分析（Multifractal Analysis）研究了新冠疫情对SC的短期影响。结果显示，新冠疫情爆发后，SC的市场效率以及与其他资产的交叉相关性显著增加。这些结果可能对资产配置、投资策略和风险监测具有重要意义。

参考文献：Shao, Y. H., Liu, Y. L., & Yang, Y. H. (2023). The short-term effect of COVID-19 pandemic on China’s crude oil futures market: A study based on multifractal analysis. Fluctuation and Noise Letters, 22(04), 2340001.
https://xueshu.baidu.com/usercenter/paper/show?paperid=1j500pw04r5d0tb0y50c0t30bw786193&site=xueshu_se

Ling等（2023）通过模型分析研究了原油市场（SC、WTI和布伦特）与金融市场（中国期货、债券、基金、股票和外汇市场）之间的波动溢出效应和非对称交叉相关性。相比于WTI和布伦特，INE原油期货市场对股票市场的影响最大。此外，除了债券市场外，当SC和布伦特市场上涨时，对金融市场的风险敞口更为显著。在金融市场中，SC-债券市场的不对称性比WTI-债券市场的不对称性强，但在市场有大幅波动的情况下, SC-债券市场的不对称性弱于布伦特-债券市场。

参考文献：Ling, M., & Cao, G. (2023). Analysis of Risk Spillover and Asymmetry Between Three Crude Oil Markets and Chinese Financial Markets. Fluctuation and Noise Letters, 2350017.
https://xueshu.baidu.com/usercenter/paper/show?paperid=166w0r00mf4w0m80fh1h0td0mp755195&site=xueshu_se

Yu，Yang和Webb（2022）用量化方法检验了2018年3月-2022年3月期间INE SC对19种亚洲原油现货价格的价格发现情况。研究表示，INE SC对可交割和一些非可交割油种都具有价格发现能力；INE SC对沙特的阿拉伯中质原油、科威特的科威特原油和伊朗的富鲁赞原油三种非可交割油种也具有类似于可交割油种的价格发现功能。

参考文献： Yu,Z.,Yang,J.,&Webb,R.(2022). Price Discovery in China's Crude Oil futures Markets: An Emerging Asian Benchmark? Journal of Futures Markets.
https://onlinelibrary.wiley.com/doi/full/10.1002/fut.22384

Yang等（2021）从风险溢出角度出发，通过数个GARCH模型获得风险值（VaR）的连接网络。文章发现，2018年3月至2020年4月期间，国际原油期货市场高度互联互通，并且INE SC一直是Brent和WTI原油期货的净风险接受者，尤其是在Covid-19爆发之后。

参考文献：Yang, Y., Ma, Y.-R., Hu, M., Zhang, D., & Ji, Q. (2021). Extreme risk spillover between Chinese and global crude oil futures. Finance Research Letters, 40, 101743–101743. https://doi.org/10.1016/j.frl.2020.101743

Li，Huang和Li（2021）研究了INE SC与Oman原油和OPEC参考的一揽子原油现货之间的价格相关性，以及INE SC的对冲效果。采用GO-GARCH模型分析2018年3月至2019年6月期间的每日价格，研究发现，相较于WTI和Brent原油期货，INE SC与现货市场之间的价格相关性更高，且INE对现货的对冲有效性也更高。

参考文献：LI, J., HUANG, L., & LI, P. (2021). Are Chinese crude oil futures good hedging tools? Finance Research Letters, 38, 101514.
https://doi.org/10.1016/j.frl.2020.101514

Yi，Yang和Li（2021）重点研究了2018年3月至2020年6月期间宏观经济不确定性对INE SC的解释和预测能力。作者使用CARCH-MIDAS模型解决数据频率差异的问题，发现在主要原油消费国——美国、中国和日本，以及主要原油出口国——英国、加拿大和俄罗斯的地缘政治风险、经济政策不确定性和传染病大流行等因素中，英国和日本的因素在预测INE原油期货波动中发挥的作用更大。

参考文献：Yi, A., Yang, M., & Li, Y. (2021). Macroeconomic Uncertainty and Crude Oil Futures Volatility–Evidence from China Crude Oil Futures Market. Frontiers in Environmental Science, 9.
https://doi.org/10.3389/fenvs.2021.636903

Lv，Yang和Fang（2020）研究INE SC与Brent和WTI原油期货相比，是否可以更好地帮助投资者对冲中国石油化工相关股票的风险。采用2018年至2019年数据以及DCC、DECO和Block DECO模型，研究发现， INE SC在对冲风险和分散投资组合方面比WTI原油期货表现更好，但与Brent原油期货相比则不然。

参考文献：Lv, F., Yang, C., & Fang, L. (2020). Do the crude oil futures of the Shanghai International Energy Exchange improve asset allocation of Chinese petrochemical-related stocks? International Review of Financial Analysis, 71, 101537–.
https://doi.org/10.1016/j.irfa.2020.101537

上海原油期货年度之“最”

表1. 价格表现 （主力合约）							
开盘价	最高价	最低价	收盘价	最大日波动率（99%CI,%）	期现价差（元/桶）		
					最高	最低	平均
544.0	681.5	490.2	559.9	4.62	19.71	-30.61	-3.38

表2. 交易情况							
交易						持仓	
累计成交（万手）	累计成交额（万亿）	日均成交（万手）	日均成交额（亿）	最高成交（万手）	日盘占比(%)	日均持仓（万手）	最高持仓（万手）
3856.35	22.21	15.94	917.96	34.62	26.74	5.21	6.87

表3. 交割								
累计交割(万桶,含期转现)	累计交割额（亿元）	交割量最大合约	单月最大交割量（万桶）	交割量最大油种	最大油种交割量（万桶）	交割量最大油库	最大油库交割量（万桶）	期转现（万桶）
2617.7	152.28	SC2412	465.7	阿曼原油	851.5	中油大连国际	618.8	95.2

2025 Development Report of the Shanghai Crude Oil Futures and Options Market

In 2024 under the effect of global geopolitical and macroeconomic uncertainties, international oil prices followed a steep inverted "V" trajectory. The price of the Shanghai crude oil futures (product code "SC") closely mirrored overseas futures prices while also serving as an effective indicator of the regional spot market. The SC options were traded at reasonable prices that had a strong correlation with the futures price, as the market continued to expand.

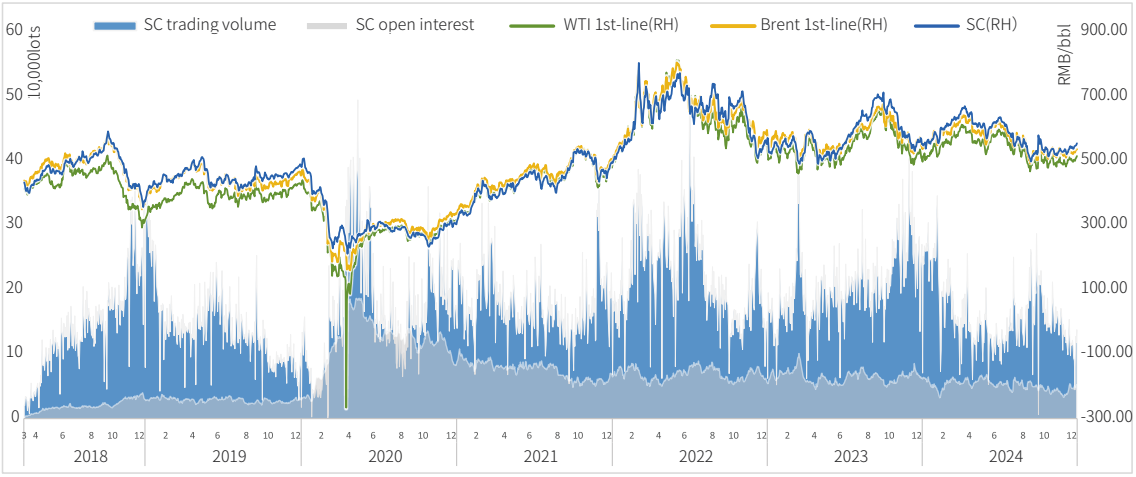
I. Strong Price Correlation with Overseas Markets and an Accurate Indicator of Regional Supply and Demand

(I) International oil prices followed an inverted "V" trajectory

In 2024 under the effect of global geopolitical and macroeconomic uncertainties, international oil prices followed an inverted "V" trajectory. In H1, spillover effect of the Israeli-Palestinian conflict and growing tension in the Middle East pushed up the oil price, but this "geopolitical premium" slowly evaporated as the conflict did not have a real impact on supply. In fact, market fundamentals would regain control of oil prices in H2. In particular, with the decision of OPEC+ to maintain its production cut being counteracted by the increased output from non-OPEC countries, oil prices trended downward under the combined effect of a slowing global economy and the ongoing energy transition, both of which curb the appetite for oil.

As of Tuesday, December 31, 2024, the settlement price of the most active SC contract closed at 555.1 RMB/barrel or 77.22 USD/barrel, up 0.47% over the year. In comparison, the settlement prices of the 1st line Brent and WTI contracts closed at 74.64 USD/barrel and 71.72 USD/barrel, losing 3.12% and gaining 0.10%, respectively. In 2024, the SC-Brent and SC-WTI correlation coefficients were respectively 0.94 and 0.92.

Figure 1: Overview of Shanghai Crude Oil Futures (SC)



Source: Shanghai International Energy Exchange (INE) and Reuters

(II) SC price reflected regional supply and demand

In 2024, a weakening global economy and the substitution of gasoline and diesel vehicles by electric cars and heavy-duty LNG trucks in China led to sluggish domestic demand for petrochemical and oil products, resulting in a decline of the oil consumption and import volumes. China' s apparent crude oil consumption for the year was approximately 766 million metric tons, down 0.9% YoY; crude oil imports fell 1.9% YoY to 553 million metric tons.

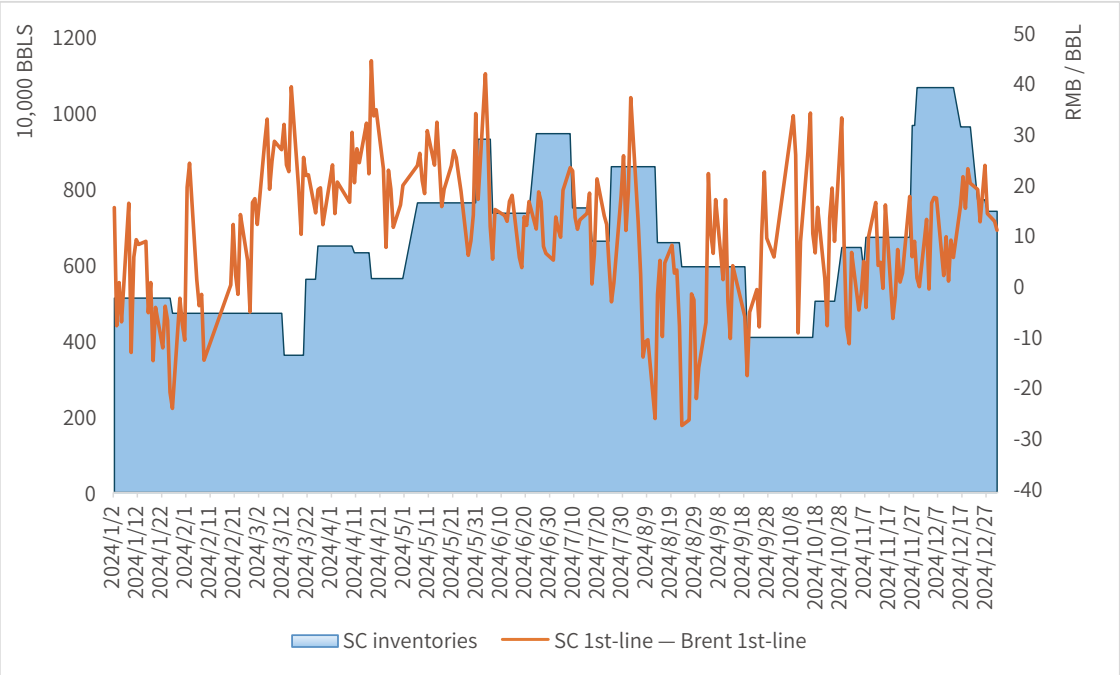
The SC prices and warrant quantities (i.e., inventories) proved to be an accurate indicator of the macroeconomic condition, the supply-demand fundamentals, and the refinery utilization rate. The SC-Brent spread reached a yearly high in Q1 before falling in Q2 and Q3, but recovered somewhat in Q4. This spread also showed a notable negative correlation with SC inventories.

Specifically, a rebounding domestic economy and increased output from the domestic oil majors, coupled with rising tension in the Middle East and production cut by OPEC+, tightened the supply of medium sour crudes in Q1, sending SC inventories to the lowest levels of the year. This also made SC priced consistently higher than the overseas counterparts.

Q2 and Q3 were a period of falling supply and demand for petrochemical and oil products, a result of a sluggish global economy and the growing substitution by new energy vehicles in China. Capacity utilization rate of domestic refineries also went down, with that of the independent refineries in Shandong fell to a five-year low of 47.37% in July. This drove the SC inventories to 9.442 million barrels in the same month, the second-highest point of the year. The price trend of SC was generally weaker than that of overseas markets, and the spread between SC and Brent fluctuated downward.

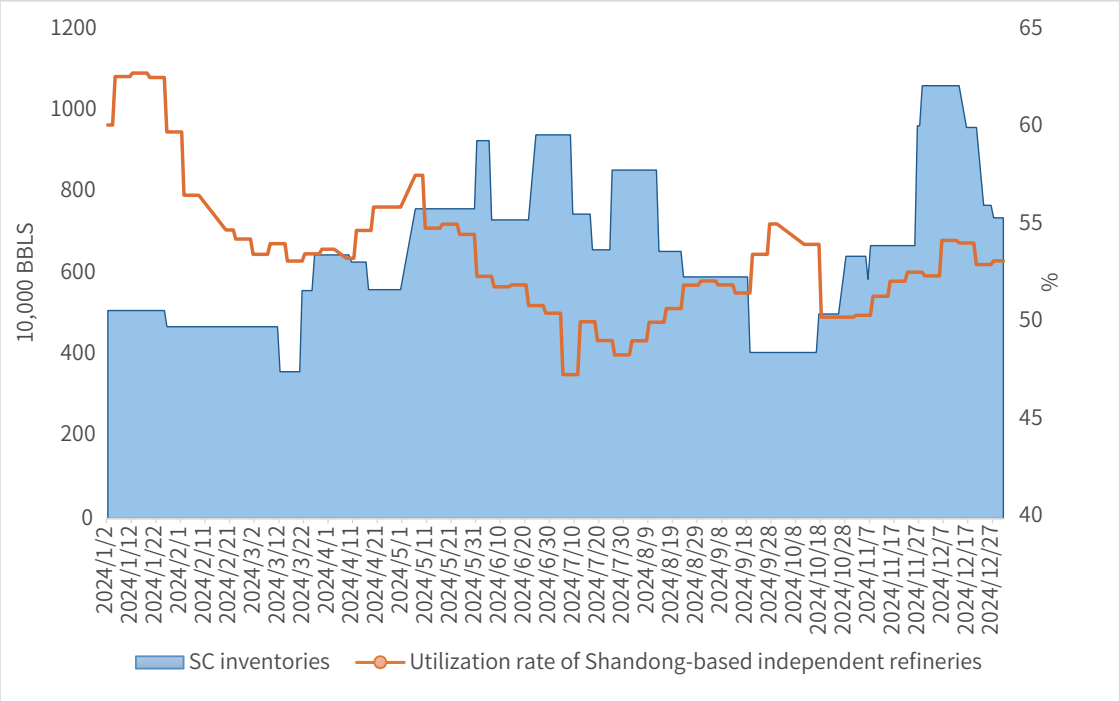
In Q4, with the introduction of a series of policies and measures to stabilize the economy, the refined oil product market bottomed out and rebounded, and the utilization rate of refineries started to pick up somewhat. The rising price of Russian oil and tightening sanctions on Iran added to a general sense of unease, enabling SC to overtake its overseas counterparts in pricing. SC prices were also supported by a weakening RMB against USD. The SC futures inventory gradually decreased after restocking and dropped to 7.401 million barrels by the end of the year.

Figure 2: Domestic-Overseas Crude Oil Futures Spread and SC Inventory Changes in 2024



Source: INE and Reuters

Figure 3: Utilization Rate of Shandong-based Independent Refineries vs. SC Inventory Changes in 2024



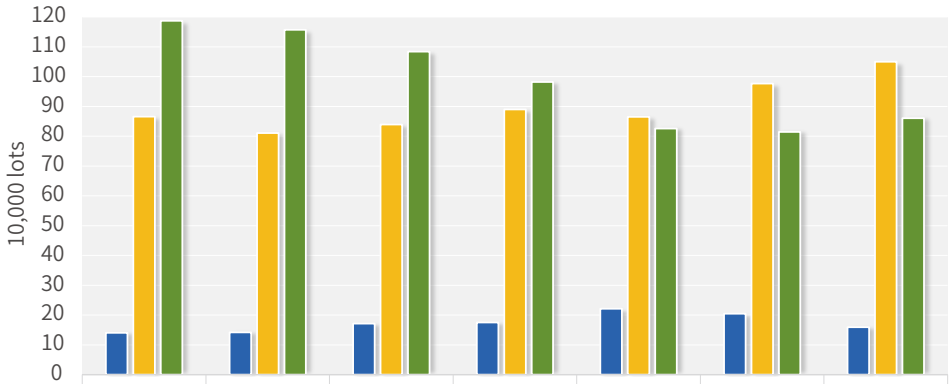
Source: INE and Wind

II. SC Futures and Options in Synergy

(I) Improving participant structure amid falling futures trading volume

Due to the lower price volatility in 2024 compared with 2023 and the implementation of trading limits on crude futures, trading volume and open interest of INE SC had declined to some extent. Specifically, in 2024 the average daily trading volume fell 22.13% YoY to 159,353 lots (single-counted here and hereinafter) and average daily open interest fell 19.97% to 52,146 lots. Cumulative turnover was RMB 22.21 trillion, making SC one of the largest commodity futures in China.

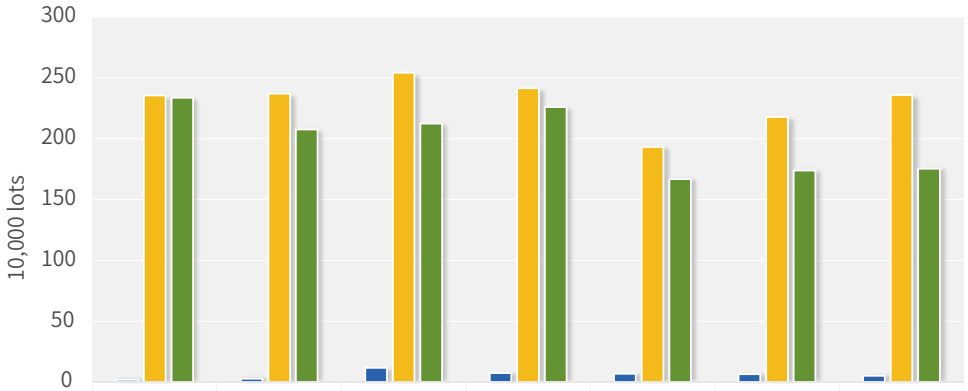
Figure 4: SC vs. Brent and WTI in Average Daily Trading Volume



	2018	2019	2020	2021	2022	2023	2024
SC	14.03	14.20	17.11	17.55	22.14	20.47	15.94
Brent	86.57	81.03	83.94	89.03	86.49	97.70	104.98
WTI	118.70	115.72	108.35	98.20	82.55	81.47	86.03

Source: INE and Reuters

Figure 5: SC vs. Brent and WTI in Average Daily Open Interest



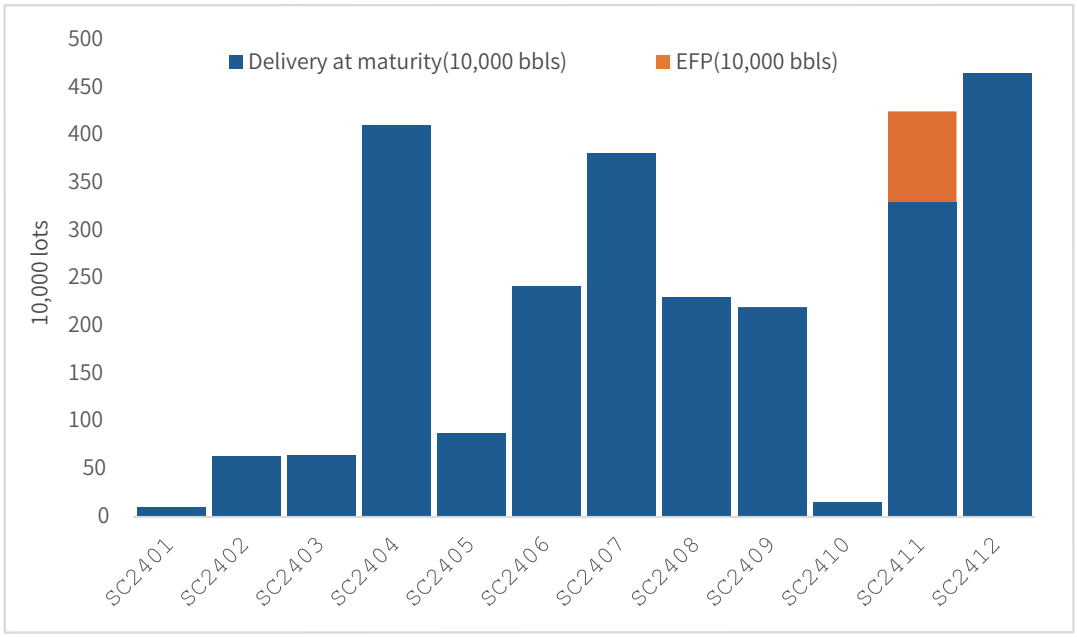
	2018	2019	2020	2021	2022	2023	2024
SC	1.98	2.88	11.89	7.54	6.93	6.51	5.21
Brent	235.59	237.17	254.30	241.53	193.28	217.82	235.97
WTI	233.67	207.59	212.43	226.14	166.89	174.02	175.36

Source: INE and Reuters

Storage capacity for SC designated terminals continued to expand to meet the growing delivery needs. In June 2024, INE approved Shandong Port Group Co., Ltd. as a Group Delivery Center for SC, and Rizhao Oil Terminal Co., Ltd. and Qingdao ZhenHua Oil Storage Co., Ltd. as designated delivery storage facilities for SC. Rizhao and ZhenHua have an active storage capacity of 400,000 cubic meters and 800,000 cubic meters, respectively. By the end of 2024, SC had a total of 19 depots managed by 10 storage facilities. In particular, there is 1 depot in Shanghai, 2 in Guangdong Province, 3 in Zhejiang Province, 6 in Shandong Province, 3 in Liaoning Province, 2 in Hainan Province, 1 in Hebei Province, and 1 in Guangxi Province. The approved storage capacity totaled 19.19 million cubic meters, with 13.32 million cubic meters available for active use. In terms of delivery, over the year, 26,177 lots of SC (equaling 26.177 million barrels including EFP) were delivered at a value of RMB 15.23 billion. SC2412 was the most delivered contract at 4,657 lots and RMB 2.478 billion in delivery value. Oman crude oil was the most-delivered crude stream, with a delivery volume 8,515 lots, accounting for 33.76% of the total delivery volume.

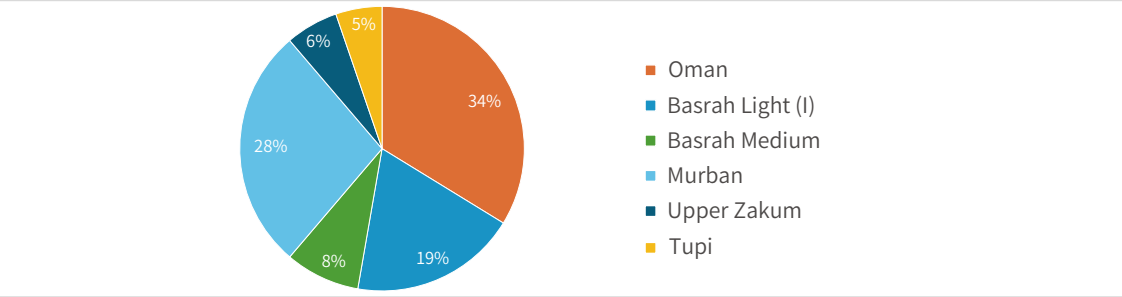
Physical delivery has been boosting the bonded crude oil market. Among the futures warrants that were cancelled and converted into spot goods in 2024, the quantity of import through direct customs declaration fell to less than 10% due to falling domestic demand. The shares of re-exporting and converting to bonded spot goods rose accordingly, reaching around 40% and around 50% of the total respectively.

Figure 6: Delivery of SC Contracts in 2024



Source: INE

Figure 7: Crude Oil Delivery Breakdown in 2024



Source: INE

Table 1: INE SC Designated Delivery Storage Facility and Capacity

S/N	Designated Delivery Storage Facilities	Depot	Approved Storage Capacity	Storage Capacity in Use
1	Sinopec Petroleum Reserve Co., Ltd.	SPRC Caofeidian	100	40
2		SPRC Rizhao	120	100
3		SPRC Zhoushan	80	70
4		SPRC Zhanjiang	90	60
5		SPRC Hainan	100	60
6	PetroChina Fuel Oil Company Limited	PetroChina Zhanjiang	70	50
7	Sinochem-Xingzhong Oil Staging (Zhoushan) Co., Ltd.	Sinochem-Xingzhong	100	35
8	Dalian PetroChina International Warehousing & Transportation Co., Ltd.	PetroChina Dalian Bonded	145	145
9		PetroChina Dalian Intl	180	180
10		PetroChina Guangxi Intl	20	20
11	Shandong Port Group Co., Ltd.	Qingdao Port Shihua	40	40
12		Qingdao Port Haiye	100	40
13	Yangshan Shengang International Oil Logistics Co., Ltd.	Yangshan Oil	30	20
14	Dalian North Oil Petroleum Logistics Co., Ltd.	North Petroleum	40	10
15	Hongrun Oil Storage & Transportation (Weifang) Co., Ltd.	Hongrun Oil Storage	500	300
16	Dading Petroleum Logistics Co., Ltd.	Dading Petroleum	44	22
17	SDIC Oil & Gas Terminal Yangpu Co., Ltd.	SOGTY	40	20
18	Shandong Port Group Co., Ltd. (group delivery)	Shandong Port Rizhao	40	40
19		Shandong Port ZhenHua	80	80
Total			1919	1332

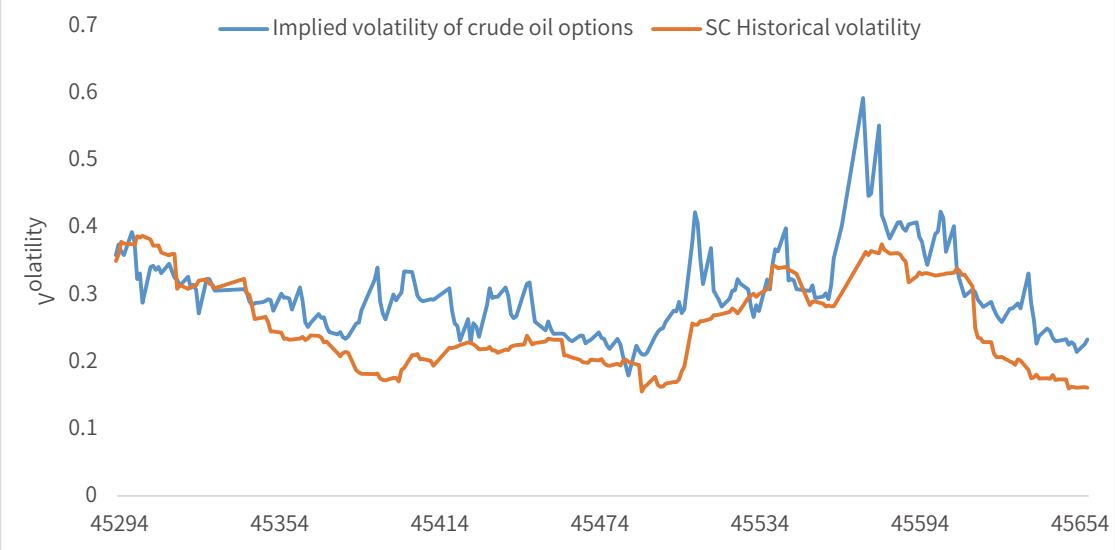
Source: INE; Unit: 10,000 cubic meters

The INE SC market has an increasingly healthy participant structure with strong engagement by overseas investors. Corporate clients contribute over 40% of the average daily trading volume and more than 70% of the average daily open interest. SC is also a leading Chinese futures product in terms of the trading volume, open interest, and hedging ratio of institutional investors. Participation by overseas investors continues to rise—in 2024, they accounted for more than 20% of the daily trading volume and more than 40% of the daily open interest. Leading multinational oil companies, trading houses, investment banks, and fund and asset management companies all trade in the SC market. By the end of 2024, these overseas investors represented 36 countries and regions across 6 continents; among them were 1 Overseas Special Participant and 87 Overseas Intermediaries.

(II)Crude Oil Options: Steady Performance, Reasonable and Effective Pricing

In 2024, the crude oil options market performed steadily. Pricing was generally reasonable, with the implied volatility of the option series corresponding to the most active futures contracts staying within a 20-60% band and the trend was generally in line with the historical volatility of the underlying futures. This shows that the volatility expected by investors of crude oil options is largely in consistent with the actual futures volatility.

Figure 8: Implied Volatility of Crude Oil Options in 2024 vs. SC Historical Volatility

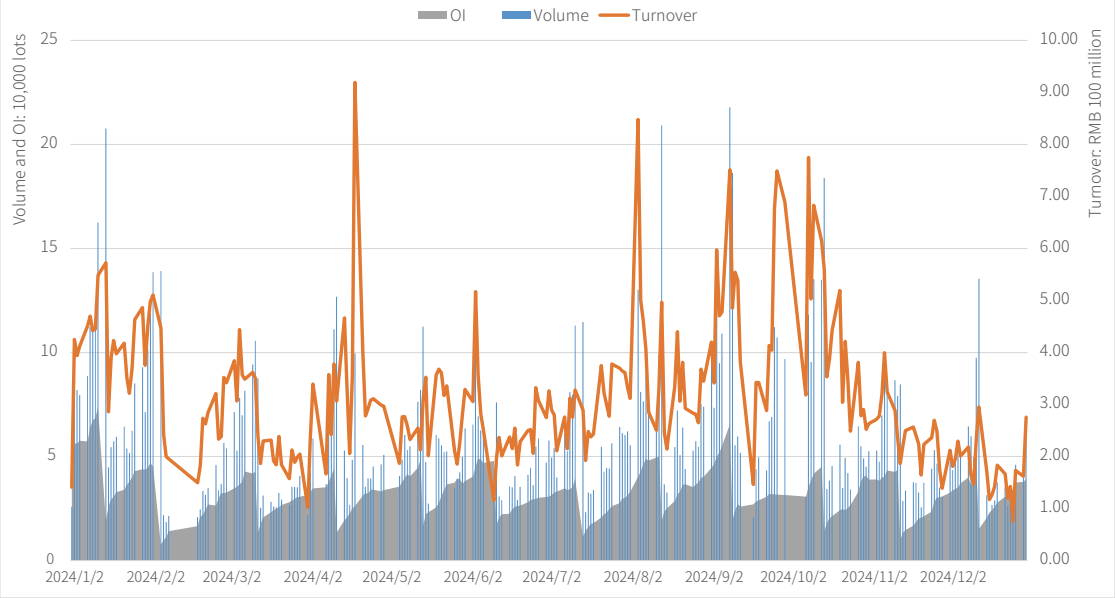


Source: INE and Reuters

The options market continues to grow in trading volume and shows close interaction with the futures market. In 2024, the daily average trading volume of Shanghai crude oil options went up 4.47% YoY to 61,622 lots; the daily average turnover fell 3.61% to RMB 317 million; and the daily average open interest retreated 14.68% YoY to 32,677 lots. The proportion of the crude oil options market size to the futures market size has increased significantly. In 2024, the ratio of the average daily trading volume of crude oil options to that of the underlying futures was 38.86%, and the ratio of the average daily open interest of crude oil options to that of the underlying futures was 62.66%. Both ratios increased by nearly 10 percentage points compared with 2023. This indicates a greater use of options

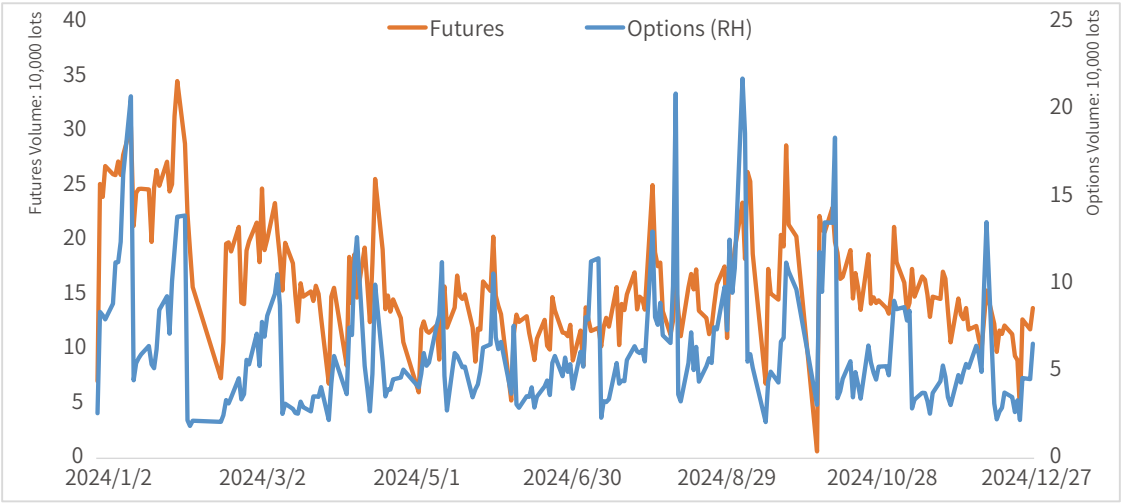
by investors in China to manage the risks of crude oil futures. Crude oil options also closely interact with the underlying futures: a rise in the volatility or a surge in the trading volume of futures will trigger a commensurate change to the options trading volume, underscoring their combined use for managing the price risk.

Figure 9: Trading Volume and Open Interest in Crude Oil Options in 2024



Source: INE

Figure 10: Trading Volume of Crude Oil Options and Underlying Futures in 2024



Source: INE

Most of the options exercised were exercised in-the-money upon expiration and converted into positions in the underlying futures. There was no instance of an exercise of deep out-of-the-money options, ensuring a smooth and effective linkage between the crude oil options and futures markets.

III. Shanghai Crude Oil Futures Have Attained Notable Accomplishments in Serving the Development of the Industrial Companies

(I) SC Expanding Service to Oil & Gas Sector

The INE SC market continues to attract new types of participants; international oil companies, trading houses, and various financial institutions are all heavily involved. Upstream and downstream companies such as domestic oilfields, refineries, refined oil traders, and airlines have also begun using crude oil futures to manage risks. In particular, the futures product has unlocked new ways to improve business. An example is that refined oil companies are developing sales models that reference the SC prices, thus transferring the downside risk to the futures market. This helps ensure a steady supply of refined oil products for their customers and greater profitability for themselves.

(II) Enhanced Pricing and Hedging by Industrial Clients

INE continued to run the Business Support Initiative for crude oil futures in 2024, to encourage firms to price spot trades based on SC prices. This initiative has been greeted with enthusiasm from the leading oil companies, exploration enterprises, and refining and chemical enterprises, who now use the SC prices in the sale and procurement involving imported and domestically produced oil. This development has also created opportunities for other firms to optimize inventory management with the Shanghai crude oil futures, and actively participants in delivery activities, bringing benefits including reduced cost of oil imports and optimized sales and procurement channels.

(III) Gaining Greater Attention from the International Market

As the market participant base becomes further diversified, the linkage between SC and international futures and spot markets has been further strengthened. Market - related institutions are paying even closer attention to the development of SC. On June 17, 2024, the CME Group released the WTI Shanghai Marker and the corresponding TAM (Trade at Marker) at the closing time of the SC. This reflects the international market's recognition of the influence of Shanghai Crude Oil Futures.

Seven years after the launch of the SC, the Shanghai crude oil futures and options markets are performing steadily and becoming tightly correlated with other regional markets. With an expanding range of participants and prices that accurately capture the supply-demand fundamentals in China and the Asia-Pacific region, they have grown into an integral part of the international crude oil market. Looking forward, INE will keep pace with the evolving global market, improve the efficiency and effectiveness of its crude oil futures, and introduce new trading mechanisms to provide global investors with more products and better services.

Domestic and Overseas Studies on INE Crude Oil Futures

Zou, Han, and Yang (2024) analyzed the price of intraday trades and quotations of INE crude oil futures (SC) and options at 1-, 5-, and 30-second sampling frequencies to study the price discovery function of the INE crude oil futures and options market. Results show that the futures lead the options in price discovery function. It is also found that the intraday distribution of options information share has a "W" shape, consistent with the intraday volume trend in the futures market. This suggests the two markets are consistent in intraday activities. Regarding the factors that affect the price discovery process, a crucial one is the seasonality pattern in intraday volume exhibited by INE SC. Furthermore, the researchers infer that international investors have a higher degree of influence on INE SC than on the options market.

Reference: Zou, M., Han, L., & Yang, Z. (2024). Price discovery of the Chinese crude oil options and futures markets. Finance Research Letters, 60, 104809. https://doi.org/10.1016/j.frl.2023.104809

Through a difference-in-differences (DID) approach, He et al. (2024) find that INE crude oil futures significantly reduces the idiosyncratic risk of energy-dependent firms. Two major factors contribute to this effect. First, INE SC works as a hedging tool that helps smooth out corporate cash flows as well as mitigate oil price shocks on firms. Second, the price discovery function offered by the INE SC market enables firms to obtain timely and accurate information on the commodity and, therefore, anticipate risks. In addition, heterogeneity test reveals that this reduction is more pronounced among large firms and firms with higher competitive pressures. In particular, large firms are better at managing resources and risks and hence can more effectively use INE SC as a risk mitigator, while firms with higher competitive pressures are more motivated to reduce risks with SC to stand out from the competition.

Reference: He, F., Chen, L., Hao, J., & Wu, J. (2024). Financial market development and corporate risk management: Evidence from Shanghai crude oil futures launched in China. Energy Economics, 129, 107250. https://www.sciencedirect.com/science/article/abs/pii/S014098832300748X

Yang et al. (2023) compared the price discovery, market liquidity, and other indicators among Shanghai crude oil futures (SC), WTI, and Brent, with intraday-day data consolidated into 1-second intervals (using 5-second and 30-second intervals for stability test) and three measures of price discovery. They found that SC has obtained a dominant role in price discovery relative to WTI and Brent during its day trading hours and has almost caught up with Brent in terms of market liquidity. During the COVID-19 pandemic, SC also showed great resilience.

Reference: Yang, Z., & Zou, M. (2023). Price leadership in China's oil futures market: take two. Applied Economics Letters, 1-9. https://doi.org/10.1080/13504851.2023.2208821

Naqvi, Mirza, et al. (2023) analyzed the daily data spanning from April 2021 to March 2023, using various GARCH models and News impact curves. The results reveal that the returns structure of INE SC is somewhat independent from global market movements, exhibiting greater stability and resilience to negative shocks than other crude oil futures.

Reference: Naqvi, B., Mirza, N., Umar, M., & Abbas Rizvi, S. (2023). Shanghai crude oil futures: Returns Independence, volatility asymmetry, and hedging potential. Energy Economics, 128, 107110.
https://www.sciencedirect.com/science/article/abs/pii/S0140988323006084#preview-section-snippets

Shao et al. (2023) studied the short-term influence of COVID-19 pandemic on SC via multifractal analysis. They found that market efficiency of SC and its cross-correlations with other assets increase significantly after the outbreak of COVID-19. These results may have important implications for assets allocation, investment strategies, and risk monitoring.

Reference: Shao, Y. H., Liu, Y. L., & Yang, Y. H. (2023). The short-term effect of COVID-19 pandemic on China's crude oil futures market: A study based on multifractal analysis. Fluctuation and Noise Letters, 22(04), 2340001.
https://xueshu.baidu.com/usercenter/paper/show?paperid=1j500pw04r5d0tb0y50c0t30bw786193&site=xueshu_se

Ling et al. (2023) conducted a series of model-based analyses to explore the volatility spillover effect and the asymmetric cross-correlation between three crude oil markets (INE, WTI, and Brent) and five financial markets (the Chinese futures, bond, fund, stock, and foreign exchange markets). In particular, the impact of the INE SC market on the stock market is greatest, especially with respect to the Brent and WTI. Except for the bond market, when the SC and Brent markets are increasing, the risk exposure to financial markets is more significant. Among financial markets, SC-Bond market asymmetry is stronger than WTI-bond market asymmetry, but weaker than that of the Brent-Bond market when there are large fluctuations.

Reference: Ling, M., & Cao, G. (2023). Analysis of Risk Spillover and Asymmetry Between Three Crude Oil Markets and Chinese Financial Markets. Fluctuation and Noise Letters, 2350017.
https://xueshu.baidu.com/usercenter/paper/show?paperid=166w0r00mf4w0m80fh1h0td0mp755195&site=xueshu_se

Yu, Yang, and Webb (2022) examined the price discovery performance of INE SC for the spot prices of 19 types of Asian crude oil from March 2018 to March 2022 using a quantitative approach. The study showed evidence of the price discovery function of INE SC for deliverable and some non-deliverable crudes. INE SC performs price discovery function for Saudi Arabian Medium crude, Kuwait crude, and Iran's Forozan crude in the way similar to other deliverable crudes.

Reference: Yu, Z., Yang, J., & Webb, R. (2022). Price Discovery in China's Crude Oil Futures Markets: An Emerging Asian Benchmark? Journal of Futures Markets.
https://onlinelibrary.wiley.com/doi/full/10.1002/fut.22384

Yang et al. (2021) built several GARCH models to obtain the value at risk (VaR) connectedness networks. They found that, between March 2018 and April 2020, the international oil markets were highly connected, with the INE SC persistently acting as a net receiver of the risks from Brent and WTI, especially following the Covid-19 outbreak.

Reference: Yang, Y., Ma, Y.-R., Hu, M., Zhang, D., & Ji, Q. (2021). Extreme risk spillover between Chinese and global crude oil futures. Finance Research Letters, 40, 101743-101743.
https://doi.org/10.1016/j.frl.2020.101743

Li, Huang, and Li (2021) investigated the price correlations between the INE SC and the spot prices of Oman and the OPEC Basket, as well as the hedging effectiveness of the INE SC. They analyzed the intraday prices from March 2018 to June 2019 with a GO-GARCH model and found that compared with WTI and Brent crude futures, INE SC showed higher price correlation with the spot markets and was a more effective hedging tool.

Reference: Li, J., Huang, L., & Li, P. (2021). Are Chinese crude oil futures good hedging tools? Finance Research Letters, 38, 101514-.
https://doi.org/10.1016/j.frl.2020.101514

Yi, Yang, and Li (2021) investigated whether the macroeconomic uncertainty factors can explain and forecast the INE SC’ s volatility for the period from March 2018 to June 2020. The authors used the GARCH-MIDAS model to address the differences in data frequency and found that among the major oil consumers (the United States, China, and Japan) and the major oil exporters (the United Kingdom, Canada, and Russia), geopolitical risk, economic policy uncertainty, and pandemics situation in the United Kingdom and Japan had greater predictive power for the volatility of the INE SC.

Reference: Yi, A., Yang, M., & Li, Y. (2021). Macroeconomic Uncertainty and Crude Oil Futures Volatility-Evidence from China Crude Oil Futures Market. Frontiers in Environmental Science, 9.
https://doi.org/10.3389/fenvs.2021.636903

Lv, Yang, and Fang (2020) looked into whether investors can better hedge against the risks of Chinese petrochemical stocks with the INE SC compared with the Brent and WTI crude futures. By constructing the DCC, DECO, and Block DECO models based on the data from 2018 to 2019, they found that the INE SC provided superior hedging and portfolio diversification results versus WTI, but inferior results versus Brent.

Reference: Lv, F., Yang, C., & Fang, L. (2020). Do the crude oil futures of the Shanghai International Energy Exchange improve asset allocation of Chinese petrochemical-related stocks? International Review of Financial Analysis, 71, 101537-.
https://doi.org/10.1016/j.irfa.2020.101537

Shanghai Crude Oil Futures in Numbers (2024)

Table 1: Price Performance (Active Contracts)							
Opening Price	Highest Price	Lowest Price	Closing Price	Max. Daily Volatility (99% CI, %)	Futures-Spot Spread (¥/barrel)		
					Highest	Lowest	Average
544.0	681.5	490.2	559.9	4.62	19.71	-30.61	-3.38

Note：The "active contract" refers to the contract with the largest open interest.

Table 2: Trading							
Trading						Open Interest	
Cumulative trading volume (10,000 lots)	Cumulative turnover (RMB trillion)	Average daily volume (10,000 lots)	Average daily turnover (RMB 100 million)	Highest daily volume (10,000 lots)	Proportion of daytime trading volume (%)	Average daily open interest (10,000 lots)	Highest daily open interest (10,000 lots)
3856.35	22.21	15.94	917.96	34.62	26.74	5.21	6.87

Table 3: Delivery								
Cumulative delivery quantity (10,000 bbl, including EFPs)	Cumulative delivery amount (RMB 100 million)	Contract with the highest delivery quantity	Highest monthly delivery quantity (10,000 bbl)	Most delivered Crude Stream	Delivery volume of the most delivered crude stream (10,000 bbl)	Storage facility with the highest delivery quantity	Highest delivery quantity by storage facility (10,000 bbl)	EFP volume (10,000 bbl)
2617.7	152.28	SC2412	465.7	Oman	851.5	PetroChina Dalian Bonded	618.8	95.2

03

Rankings of Crude Oil Futures Trading Volume

原油期货成交排名

2024年原油期货
交易量排名前二十会员名单

中信期货有限公司	新湖期货股份有限公司
东证期货有限公司	中信建投期货有限公司
国泰君安有限公司	南华期货股份有限公司
华泰期货有限公司	方正中期期货有限公司
中泰期货股份有限公司	光大期货有限公司
国信期货有限责任公司	东吴期货有限公司
银河期货有限公司	华闻期货有限公司
海通期货股份有限公司	五矿期货有限公司
徽商期货有限公司	广发期货有限公司
浙商期货有限公司	申银万国期货有限公司

Top 20 Members by Crude Oil Futures Trading Volume (2024)

CITIC Futures Co., Ltd.	Xinhu Futures Co., Ltd.
Orient Futures Co., Ltd.	China Futures Co., Ltd.
Guotai Junan Futures Co., Ltd.	Nanhua Futures Co., Ltd.
Huatai Futures Co., Ltd.	Founder CIFCO Futures Co., Ltd.
Zhongtai Futures Co., Ltd.	Everbright Futures Co., Ltd.
Guosen Futures Co., Ltd.	Soochow Futures Co., Ltd.
Galaxy Futures Co., Ltd.	Huawen Futures Co., Ltd.
Haitong Futures Co., Ltd.	Minmetals Futures Co., Ltd.
Huishang Futures Co., Ltd.	GF Futures Co., Ltd.
Zheshang Futures Co., Ltd.	Shenyin & Wanguo Futures Co., Ltd.

2024年原油期货
交易量排名前二十境外中介机构名单

横华国际期货有限公司

东证期货国际（新加坡）

亮点国际金融（新加坡）

高盛国际

摩根大通证券

时瑞金融服务

StoneX Financial Pte. Ltd.

亮点国际期货有限公司

辉立期货

群益期货(香港)有限公司

华泰（香港）期货有限公司

南华（新加坡）

法国巴黎银行

星展银行

德意志银行

ADMIS Singapore Pte. Ltd.

中国新永安期货有限公司

中信期货国际有限公司

凯基证券（新加坡）

麦格理期货（新加坡）

备注：境外中介机构名称请以英文版本为准

Top 20 Overseas Intermediaries by Crude Oil Futures Trading Volume (2024)

HGNH International Futures Co., Ltd.

Orient Futures International (Singapore) Pte. Ltd.

Bright Point International Financial (SG) Pte. Ltd.

Goldman Sachs International

J.P. Morgan Securities plc

Straits Financial Services Pte. Ltd.

StoneX Financial Pte. Ltd.

Bright Point International Futures Ltd.

Phillip Nova Pte. Ltd.

CSC Futures (HK) Ltd.

Huatai (Hong Kong) Futures Ltd.

Nanhua Singapore Pte. Ltd.

BNP Paribas

DBS Bank Ltd.

Deutsche Bank AG

ADMIS Singapore Pte. Ltd.

China Xin Yongan Futures Co., Ltd.

CITIC Futures International Co., Ltd.

KGI Securities (Singapore) Pte. Ltd.

Macquarie Futures (Singapore) Pte. Ltd.

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