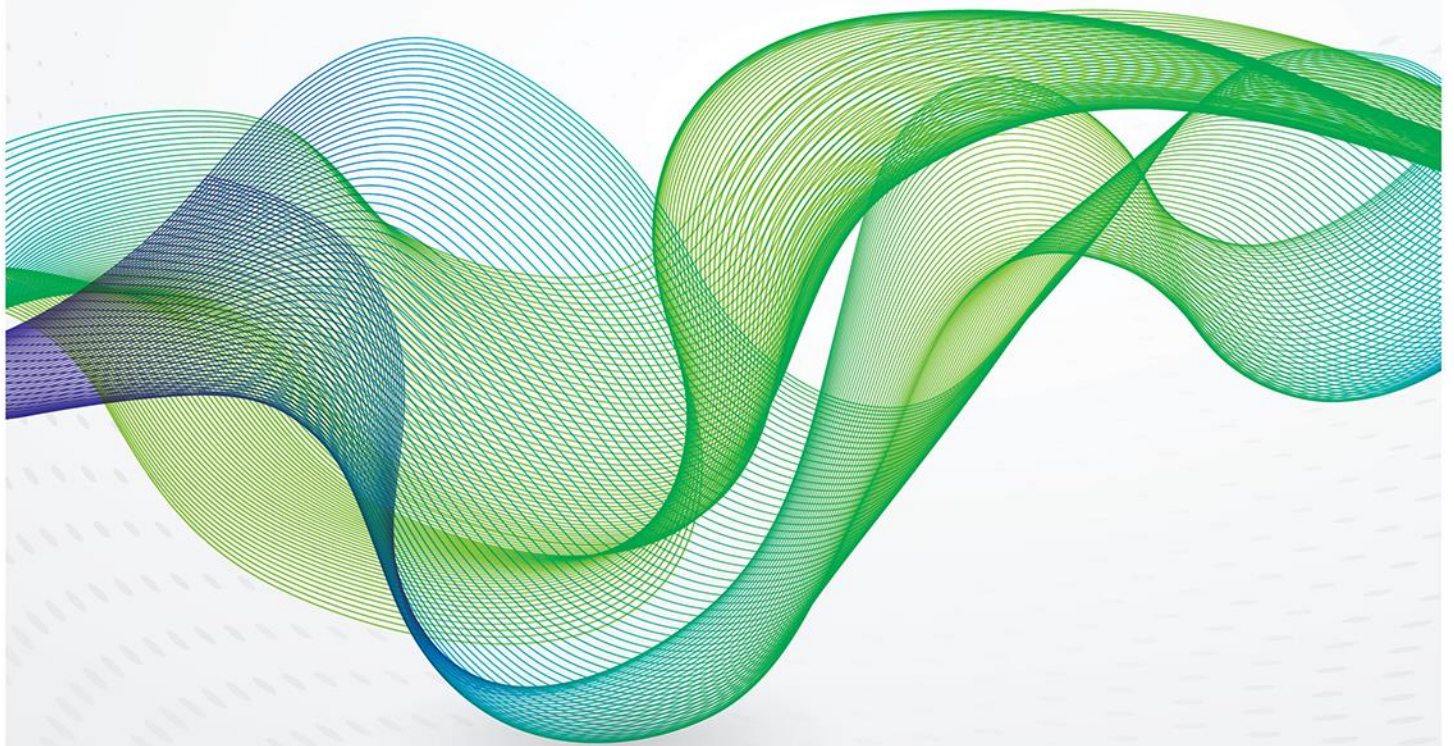


September 2021

China's SPR release: a test of mechanisms rather than a show of market might





China's announcement that it will release oil from its Strategic Petroleum Reserve (SPR), a first such announcement and release, is hugely significant. But its importance stems from the institutionalization of China's SPR programme rather than the near-term impact on markets and flows. Indeed, the decision to release crude from the SPR follows similar releases of metal and grain reserves, which have all been aimed at taming inflationary pressure given rising input costs. But the volumes released in the first batch are a drop in the ocean compared to China's total imports and are unlikely to impact global prices or radically alter import flows. Moreover, they are unlikely to significantly dent producer price inflation because of the small size of the release and the domestic product pricing mechanism. The first auction, is therefore likely, first and foremost, a test of the newly created SPR mechanism. It has the added benefit of helping refining margins (for the buyers of the crude) and improving State finances given that the crude auctioned on 24 September was placed in tank in April-May 2020 and sold at \$65-\$70 per barrel. In the coming months, the government could draw down stocks from additional tanks to further test the mechanism especially if this first release is deemed a success. But even additional draws, which would likely be to the tune of 20 mb, are unlikely to fundamentally alter China's import needs as the tanks will need to be replenished subsequently. Indeed, in the near-term, any weakness in crude buying will be related to refining margins and a weak demand outlook rather than the SPR release.

China's SPR comes of age

International oil markets were perplexed in July this year by rumours that China was planning on, or had already, released crude from its SPR.¹ An awkwardly-worded notice published on 9 September 2021 by the National Food and Strategic Reserves Administration (NFSRA), the first official announcement discussing a release of crude stocks, provided little clarity as to whether any releases had already taken place, and how many were likely to come,² although it did specify that releases will be conducted in "batches and rotations". But a second notice on 14 September, by the same—and as far as oil markets are concerned, obscure administration—detailed how the release(s) would work. In this communique, the NFSRA formally announced the first release from China's SPR, implicitly affirming that no official drawdown had taken place in July (although companies have been drawing down their commercial inventories). More importantly, it highlights that China now has a formal SPR release mechanism.³

The first auction—which is billed for 'trial' implementation—was held on 24 September, during which the government made 7.34 mb available (see Figure 3 below for details on the crudes and tanks). The bidding took place through an online platform, the National Oil Reserve Center which was launched ahead of the release,⁴ with a simulated bidding round on 23 September. The notice further detailed who can participate, stipulating that bidders must have remaining import quotas for crude oil; use the crude for integrated refining and chemicals plants; have a good credit score and comply with the national oil refining industry policy. So even though the reference to import licences suggests that non-state refiners can bid, the mention of integrated plants and good credit scores would seem to prioritise the state-owned majors and the large integrated independents such as Rongsheng, Hengli and perhaps in the future Shenghong, over the Shandong independents. Moreover, the stipulation that "the crude oil should mainly be used for chemical and chemical fibre" production limits many of the small Shandong independents and would seem to fit the new integrated refiners such as Hengli.

Bidders were required to deposit a trading margin set at 40 yuan (\$6.21) per barrel, although this will be reimbursed for unsuccessful bids. Meanwhile there will be no transaction fees on the sale. The crude is not for re-sale, once again suggesting that should these guidelines remain in place for future releases, the Shandong teapots would be excluded from the trade. The notice gives no indication of the starting price for the bidding, although the barrels offered in this first round were all put into tanks between April

¹ "China Offered Millions of Barrels from Oil Reserve to Cool Rally", *Bloomberg*, 21 July 2021

² "The State Bureau of Grain and Material Reserves organizes the release of crude oil from State Reserves" 9 September 2021, (Chinese), http://www.lswz.gov.cn/html/xinwen/2021-09/09/content_267472.shtml

³ "The National Oil Reserve Centre announces the launch of the first SPR bidding round in 2021", 12 September 2021 (Chinese), http://www.lswz.gov.cn/html/tzgg/2021-09/14/content_267508.shtml

⁴ The National Oil Reserve Centre <http://123.127.88.176:9000/tradeclient/> (Chinese)



and August 2020, suggesting they were bought at a low price and the starting price may be lower than current market costs.

A tale of two (or even three) tanks

Before discussing the potential outcomes and implications of the first bid round, it is useful to provide some background and context to China's SPR mechanism and to the various types of crude tanks.

China's SPR was conceived in 1993, but was approved by the government in 2003, when the government included a target to "accelerate the construction of the national oil reserve system, including strategic and civilian use" in the 10th Five Year Plan (2001-2005). Construction started in 2004, and was planned to consist of three distinct phases, with the aim of reaching 90-100 days of import cover by 2020 which, at the time, was estimated at 500-550 mb. While the Chinese SPR is modelled around the IEA's emergency response measures, the stated goal of China's SPR includes an emergency response mechanism to deal with both energy security and pricing volatility.⁵ Indeed, from the outset, even though plans were vague, Chinese analysts and leaders seemed to make the distinction between Strategic Petroleum Reserves (SPR), commercial reserves and other types of reserves (owned by small and medium-sized companies, sometimes also referred to as 'social reserves' in China). In the few mentions of the SPR by officials, it was discussed as a response to supply shocks as well as broader reserves used for stabilizing oil prices and ensuring the security of the national economy more broadly.⁶

The first four tanks in phase 1 (Figure 1) were selected based on access to import terminals, availability of transport infrastructure and their proximity to refining hubs. Construction was completed in 2008 with a total capacity of 103 mb and the tanks were filled in 2009. A National Petroleum Reserve Centre was also established in 2007 to oversee construction (although this was already well under way) and crude purchase. It was housed under the National Development and Reform Commission (NDRC), China's most powerful administrative body, although it was independent from the National Energy Administration, another unit under the NDRC responsible for the daily management of the energy industry.⁷ It is unclear when the management of oil reserves was transferred from the NEA into the NSFRA, although in 2018 the management of oil and gas reserves was already under the NSFRA, in conjunction with the NEA. A government notice lays out that the NEA outlines the plans for the SPR and puts forward proposals for the purchase, storage and utilization of stocks. This is then reviewed by the NDRC, submitted to the State Council for approval and then implemented by the NSFRA.⁸

With the successful construction of the first phase, the 11th FYP (2006-2010) mandated the construction of the second phase with around 200 mb of capacity, but the official language was now referring to "government oil reserves" as well as "corporate and commercial oil reserves" as part of the oil reserve system.⁹ The focus on corporate and independent tanks was likely due to two factors: First, China's oil demand was rising rapidly in the 2010s, far exceeding expectations, with import dependence also surging and raising concerns about supply security. This, in turn, required more barrels in order to meet the country's forward cover and more tanks to store them in. Second, the first phase of the SPR consisted of newly built tanks, leaving many existing commercial storage tanks idle. The government

⁵ The IEA states that its collective response system is "designed to mitigate the negative economic impacts of sudden oil supply shortages by providing additional oil to the global market. The system focuses on alleviating short-term oil supply disruptions either by increasing supply (e.g. releasing emergency stocks) and/or reducing demand (e.g. implementing demand restraint measures)." But it further notes that "The IEA emergency response system is not a tool for price intervention or long-term supply management". <https://www.iea.org/areas-of-work/ensuring-energy-security/oil-security>

⁶ For further discussion of China's SPR construction and historical development Lin Zhiqing, "International Oil Price Fluctuations and Construction of China's Strategic Oil Reserves", *East Asian Papers*, Issue 73, July 2009, Xie Nan et al, "Analysis of the optimization of China's SPR reserve replenishment and release strategy" (Chinese), *Journal of Xiamen University*, No 6, 2019. This is also reportedly stated in the "National Petroleum Reserves Regulations (Draft for Comments)" (Chinese) issued in 2006 by the NEA

⁷ "The National Petroleum Reserve Centre established; independent from the Energy Bureau", 18 December 2007, *Caijing*, <http://finance.sina.com.cn/roll/20071218/21481869812.shtml>

⁸ "Provisions on the functions, configuration, internal institutions and staffing of the National State Food and Reserves Administration" (Chinese, 11 September 2018, http://www.gov.cn/zhengce/2018-09/11/content_5320985.htm

⁹ "Petroleum reserves and the characteristics of oil reserves of major countries in the world" (Chinese), China Petroleum News, 6 March 2020, <http://news.cnpc.com.cn/system/2020/03/06/001765635.shtml>



then sought a way to harness all its existing capacity and encourage further development of new tank farms. What is more, in the second phase, the government sought to add storage capacity in China's hinterland as well as in underground tanks, but progress on the construction of designated underground SPR tanks was slow.¹⁰ With funding made available through policy loans with financial discounts for construction of SPR tanks,¹¹ the blurring of the storage lines would incentivize companies to build new facilities. But the lack of a regulatory framework regarding the release and replenishing of stocks as well as the lack of clarity on the financial terms of storage were widely seen as an impediment to the development of China's storage system.¹² There were suggestions that China should raise special funds for the management for the SPR through import and consumption taxes.¹³ In this context, it will be important to see how the profits from the SPR release will be used and whether there will be greater transparency going forward on replenishing stocks.

Nonetheless, construction of the Phase 2 sites began in 2010 and was completed in 2019, with tanks filling through 2019. Official statements, although they have been few and far between, about the SPR tanks confirm their existence: In November 2014, the government announced that Phase 1 has been filled and includes 91 mb of capacity. In June 2015, China announced that it had increased its reserves to 191 mb. The following year, in June 2016, the SPR, according to the government held 245 mb and in June 2017, a similar notice stated that China had stored 278 mb in nine bases, but the government in its announcements suggested that some of the oil was also stored in commercial tanks. Finally, in September 2019, an NEA official stated that China had around 80 days of forward cover, although this was in the SPR as well as commercial stocks. The NEA did not disclose the total volume.

China's oil storage system is a vast and fluid complex of SPR tanks and a myriad of refinery-gate and other privately owned stocks and while Phase 1 and 2 have been relatively well documented by the government, the Phase 3 tanks are a combination of commercial tanks leased out to the government and new dedicated SPR sites. But since the SPR and commercial tanks are run and operated by the state-owned majors, the majors seem to have been able to dip in and out of reserves according to their needs, complicating efforts by observers to gauge fill rates and movements in the SPR.

We estimate that China's total storage capacity—including SPR and commercial tanks—reached over 1,200 mb at the end of 2020 of which 302 mb are phases 1 and 2 of the SPR. Phase 3 includes close to 200 mb of additional capacity, but this is in both commercial and strategic tanks. This suggests that refinery gate and other commercial tanks (at ports for instance) account for the rest. And given the low crude prices in 2020, China stocked up on crude so that by the end of last year, we estimated that China had filled around 1,000 mb.¹⁴ Following large builds in Q1 21 (see Figure 2), and in light of reduced imports and the crackdown on the independents,¹⁵ Chinese refiners have drawn down commercial stocks to the tune of 30-50 mb (between April and July 2021). At time of writing, all stocks combined, China has now probably reached 90 days of forward cover, so in addition to the price movements, now is likely a good time to test the SPR mechanism, especially given the volatility in global energy markets and China's perception of its deteriorating external environment.

¹⁰ Meng Meng, Chen Aizhu, "China goes underground to expand its strategic oil reserves", Reuters, 6 January 2016, <https://www.reuters.com/article/us-china-oil-reserves-idUSKBN0UK2NO20160106>

¹¹ "Notice by the Finance Ministry and the National Development and Reform Commission regarding the Construction and Management of the First Phase of the National Petroleum Reserve Base", NDRC http://www.nea.gov.cn/2012-01/04/c_131262543.htm

¹² Discussed in several different reports including: Lin Zhiqing, "International Oil Price Fluctuations and Construction of China's Strategic Oil Reserves", *East Asian Papers*, Issue 73, July 2009; Yu Wenxuan "On the construction of the Legal Mechanism for China's Petroleum Reserve" (Chinese), June 2017, available at <http://energylaw.chinalaw.org.cn/portal/article/index/id/767.html>; "Taking a long term view of oil reserves", People's Daily, December 2016, http://www.gov.cn/xinwen/2016-12/05/content_5143017.htm

¹³ Li Xuejing, "Take advantage of the sharp drop in international oil prices to speed up the construction of China's SPR" (Chinese), China Securities Regulatory Commission, July 2015, http://www.csrc.gov.cn/pub/newsite/yjzx/yjbg/201507/t20150729_281801.html

¹⁴ Bassam Fattouh, Andreas Economou, Michal Meidan, "The COVID-19 Shock and the Curious Case of Missing Barrels", OIES Comment, December 2020, <https://www.oxfordenergy.org/publications/the-covid-19-shock-and-the-curious-case-of-missing-barrels/>

¹⁵ For the impact of the crackdown see OIES Oil Monthly, Issue 6, July 2021, <https://www.oxfordenergy.org/publications/oies-oil-monthly-issue-6/>

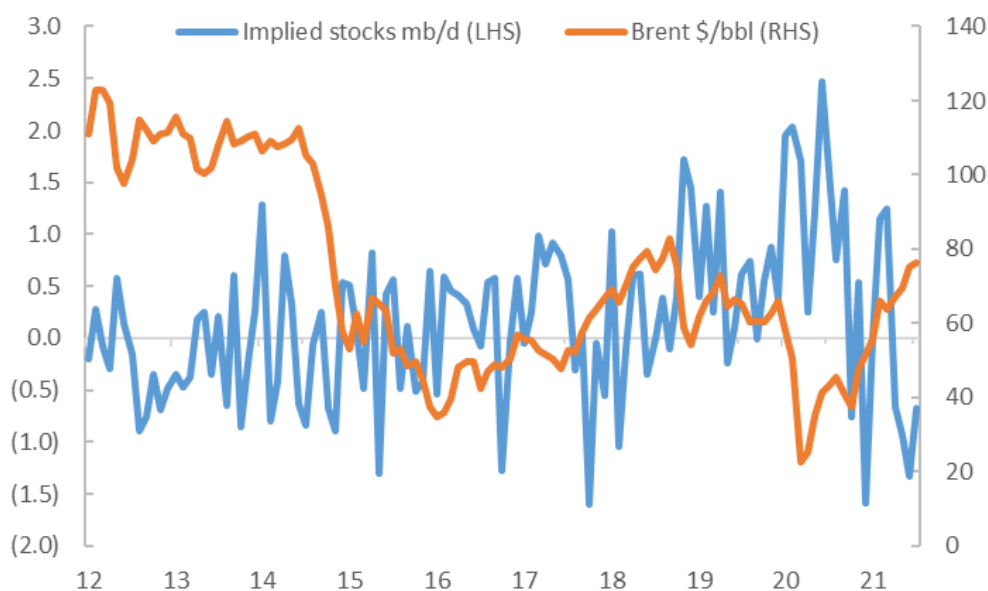
Figure 1: China's SPR system

Site	Province	Owner/operator	Size	Status	Date
Zhenhai	Zhejiang	Sinopec	33	Filled	2006
Huangdao (Phase 1)	Shandong	Sinopec	20	Filled	2007
Zhoushan (Aoshan)	Zhejiang	Sinochem	31	Filled	2008
Dalian	Liaoning	CNPC	19	Filled	2009
Phase 1		Capacity	103	Fill	
Lanzhou	Gansu	CNPC	19	Filled	2011
Dushanzi	Xinjiang	CNPC	20	Filled	2011
Tianjin (Phase 1)	Tianjin	Sinopec	20	Filled	2014
Huangdao (Phase2)	Shandong	Sinopec	19	Filled	2016
Jinzhou	Liaoning	CNPC	19	Filled	2018
Zhoushan (Phase 2)	Zhejiang	Sinochem	19	Filled	2017
Huizhou	Guangdong	CNOOC	31	Filled	2018-2019
Zhanjiang	Guangdong	Sinopec	32	Filled	2020
Tianjin (Phase 2)	Tianjin	Sinopec	20	Filled	2019
Phase 2		Capacity	199		
Total			302		

Source : Reuters, CNPC, Argues, IEA, OIES

But even though there is a correlation between stock builds and low prices, the relationship between stock draws and high prices is less obvious. And the extent to which this SPR draw is intended as a play on market structure remains unclear.

Figure 2: Implied stockbuilds and prices



Source: China Customs, NBS, OIES, Reuters

What now?

When considering that China has now likely reached the 90 day forward cover threshold, and has designed an SPR release mechanism (which apparently did not exist previously), the first SPR release seems like a test of mechanisms. To be sure, it also sends a message to the market, and mainly to OPEC, that China is dissatisfied with high global crude costs. This first release of 7.4 mb in itself may not move markets substantially, given that in August China imported over 320 mb, but the prospect of additional releases—with market sources suggesting as much as 20 mb over the next few months—are a cause for concern to the market as it could weigh on China's import requirements.

Yet in order to assess the potential for future releases, it would be useful to look at the reasons for this first SPR release. The notice issued on 9 September specifically said that the release aims “to ease the pressure of rising raw material prices” and follows on from the third release of copper, aluminum and zinc on 1 September¹⁶ which were deemed successful. The first batch of crude on auction on Friday 24 September will be released from tanks in Dalian, northern China (Figure 3).

Interestingly, 2.05 mb are located in Xingang, which are the designated SPR tanks but the additional 5.3 mb are on Changxing island, a tank farm connected to the 0.40 mb/d Hengli refinery, likely leased out to the SPR system. Three refineries are linked to these tanks via pipelines, including CNPC's 0.20 mb/d WEPEC refinery (which is also a joint venture with Total); PetroChina's 0.41 mb/d Dalian refinery as well as Hengli. Refiners elsewhere in China may be hard pressed to bid for the crude given the logistics involved in transporting it and storing it. Much will depend on the bidding price, which is expected to be made up of the cost of purchase (which in April 2020 was under \$30 per barrel), storage costs and marginal profit but all of these will likely see the start price well below current market values. That said, shipping the crude along the Yangtse river into southern China requires ship to ship transfers and is unlikely to be worth the cost and logistical headache for other refiners.

At the end of the September 24 auction, 4.4 mb of crude, out of the 7.4 available were sold to PetroChina's 0.41 mb/d Dalian and to private refiner Hengli. PetroChina bid for 950,000 barrels of Qatar Marine and 1.1 mb of Forties, paying \$65 per barrel for both grades. Hengli took 1.8 mb of Oman and 592,000 barrels of Upper Zakum stored at Changxing island, at \$65 per barrel and \$70.50 per barrel respectively. There were no takers for the 2.96 mb of Murban on offer. The results have not yet been confirmed by the National Oil Reserve Centre. But if true, they would represent a hefty profit for the State and an uplift to Dalian and Hengli's refining margins.

This uplift to refining margins could also result in the reduction of wholesale prices in Northern China, but is unlikely to impact prices beyond the region.

If this first release is indeed a test of the SPR mechanism, one or two additional releases are possible further south, in Zhejiang, where Rongsheng and Sinopec have refining facilities as well as in Guangdong province. But the price levels may be higher, as much of the crude purchased in 2020 went into tanks in Northern China whereas the Zhoushan crude reportedly went into storage before 2018. Such releases, depending on the final sale prices, when combined with the lower product export quotas granted to refiners and limp domestic demand could improve refining margins and push domestic wholesale prices down. However, it is important to note that officially, domestic product prices are set based on a basket of international crudes and it remains unclear how the prices of the crude released via the SPR would be factored into the pricing formula. In reality, refiners can set wholesale prices below the official benchmark, but prices at the pump remain elevated because of a slew of taxes.

¹⁶ “The National Food and Strategic Reserves Administration has successfully released the third batch of copper, aluminium and zinc reserves”, 1 September 2021, http://www.lswz.gov.cn/html/xinwen/2021-09/01/content_267405.shtml

Figure 3: China's first SPR release – crudes, volumes, tanks and bidding outcome

Batch number	Crude type	Volume (bbls)	Storage location and port	Specifications	Bidding outcome
Batch 1	Qatar Marine - API 32.37	951,137.06	Xingang Dalian,	In tank since April 2020,	PetroChina Dalian; \$65/bbl
Batch 2	Forties - API 40.70	1,095,565.49	Xingang, Dalian	In tank since August 2020;	PetroChina Dalian; \$65/bbl
Batch 3	Oman	1,790,956.51	Changxing island, Dalian	0.94 mb in tank since April 2020; API 33.2; 0.85 mb - API 33.	Sold to Hengli at \$65/bbl
Batch 4	Murban	2,953,927.17	Changxing island, Dalian	2.1 mb in tank April 2020: API 40.60; 0.8 mb in tank May 2020 – API 40.22 -	Unsold
Batch 5	Upper Zakum	592,030.55	Changxing island, Dalian	In tank May 2020 – API 33.80	Sold to Hengli at \$70.5/bbl

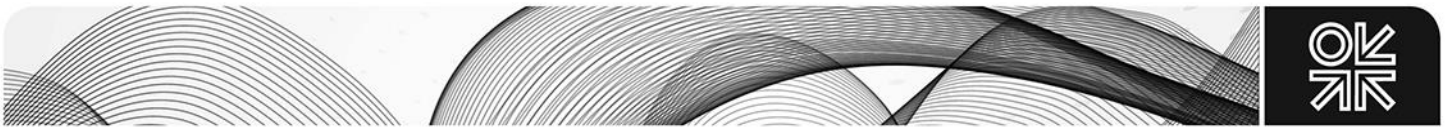
Source: NSFRA, NORC, Argus, Reuters, Bloomberg

A show of market force?

The SPR release is therefore likely driven by a combination of factors: an effort to tame domestic prices, an attempt to beef up state coffers—perhaps for future purchases—and a test of a new formal mechanism. But it remains unclear to what extent it is also intended as a show of China's pricing power internationally. There is much speculation that China is looking to influence global prices by selling cheap crude now, but that suggests that Chinese authorities have made assumptions about future prices, given that they will need to replenish reserves. This assumption may be a bit of a stretch as bureaucrats in the NSFRA are unlikely to be aware of international oil market dynamics to the extent that they would be willing to bet domestic reserves on future trends and profits. It seems safer to assume that, much like with metals, they are looking to send a domestic signal. That signal, however, does have global repercussions. A 7.4 mb release will not weigh on the market for long, but additional releases will be perceived as a bearish signal. And to the extent that refiners do not purchase spot crude, these sales weigh marginally on the front end of the curve.

It is important to keep in mind, however, that anything that is destocked from the SPR will need to be replenished—and the mechanism for that will also need to be tested—but more importantly, that China's lackluster appetite for crude predates the SPR release. Chinese refiners' crude imports in the next few months will only be marginally informed by an expectation of additional SPR releases, but rather by expectations of demand. Here too, however, the outlook remains unclear.

Domestic refining margins have picked up slightly in early September because the rice harvest typically boosts demand for diesel in September, while the Golden Week public holidays in early-October tend to support gasoline use. China's Single's Day (an online shopping day often equated to Black Friday and Cyber Monday combined) is also expected to bolster consumer demand and logistics activity in November. But a new outbreak of COVID-19 in southern Fujian province has already led to local travel restrictions. Combined with an uncertain outlook for the real estate sector as well as production curbs on steel to limit pollution and improve air quality ahead of the Winter Olympics next year, refining activity and therefore crude demand are likely softening. Moreover, many independent refiners have used up their import quotas and are waiting for another batch of quotas before they can secure cargoes. Overall,



however, despite a weaker outlook, Chinese refiners will likely look to secure crude ahead of year-end to ensure ample supplies for the Lunar New Year and the Winter Olympics. Travel bans and tight restrictions are to be expected for the Winter Olympics themselves, but with soaring coal and gas demand, the government will want to ensure ample domestic supplies to keep the lights on, including diesel backup. The SPR releases, even if they do reach 20 mb, are unlikely to alter these dynamics.