

Storage: Unsung star of the global oil and LNG supply chain

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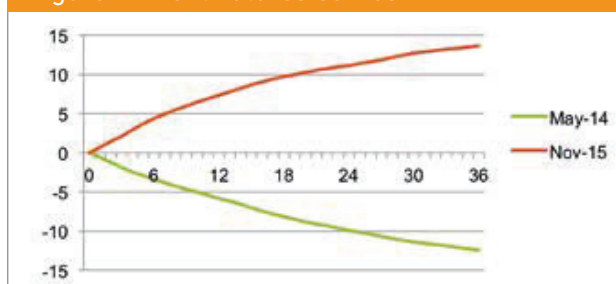


As global crude supplies have increased in recent years due to the shale boom in the US and the return of Iran to international markets, storage has become a key concern. In the US alone, total hydrocarbon inventories (outside of the emergency Strategic Petroleum Reserve) have increased over 30 per cent in 2015-16 versus their average levels, adding approximately 350 million barrels of crude and products that have needed to be managed. This type of rapid increase can strain supply chains, and certainly had a role in bringing oil prices down from previous highs. However, by being able to store, manage and transport these supplies, commodity trading firms have played a key role in stabilising oil markets at recent levels.

Commodity trading is at its heart a fundamentally physical business, based on robust supply chains and particularly on extensive logistics networks encompassing production facilities, ports, terminals, pipelines and storage facilities spanning the globe. Storage in particular plays a key role in these logistics networks, both as commercial storage for crude oil, refined products such as gasoline and diesel, and Liquefied Natural Gas (LNG), and in the strategic petroleum reserves which consuming countries build to see them through periods of supply volatility.

As in many industries, the current level of product supplied at any given point in time may not match the current level of demand, either globally or on a country-specific level. The imbalance can work in either direction, with too little or too much supply versus the level of apparent demand. In commodities futures markets, instances where the prompt or spot price is higher than future months (which are therefore at a discount) is known as backwardation, and can be caused by supply disruptions or a surprise to the upside in demand; conversely, a

Figure 2: Brent Futures Curves



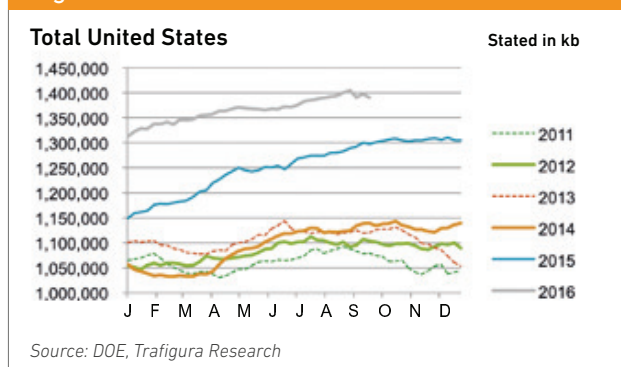
situation where future supplies are priced higher (at a premium) to the prompt price is known as contango. If the level of contango in the market is large enough, it can outweigh the cost of storage, which makes it economic for traders to store crude or products in order to capture the timespread value.

We saw this type of "super-contango" in global crude markets in 2015, when tepid demand and robust supplies led to an oversupplied market, causing prompt prices to fall sharply. By storing the excess crude, much of it on floating storage vessels or tankers, commodity traders were able to help absorb the surplus volumes and ensure the market was not flooded. Once demand picked up, helped considerably by the lower price of crude, the volumes stored offshore were brought into consuming centres around the world.

The importance of storage can be seen in other ways as well. In recent years, the advent of shale oil in the US has led to significant surpluses of crude supplies in the middle of that country. At times, these volumes have threatened to exceed available storage capacity in the region. This has led to WTI, the regional benchmark price and also one of the key global marker prices, to come under significant pressure and reverse its previous premium to Brent; this in turn has made exports of oil from the US economically viable for the first time in decades.

In emerging markets, strategic storage has started to become a key component of consuming countries' energy security strategies. China and India have both built significant storage capacity to serve as strategic petroleum reserves (SPRs). These strategic reserves emulate the SPRs originally built in the major OECD countries, where total volumes equivalent of up to 90 days of average consumption are kept on hand in order to meet supply disruptions, price shocks or other untoward circumstances. While the OECD SPRs have mostly been filled for some time, the new SPRs in Asia are still in the process of being filled, and have in fact contributed materially to implied global demand growth figures in 2015-16.

Figure 1: Total Commercial Stocks



Source: DOE, Trafigura Research



Oil is far from the only commodity where storage plays an important role. The LNG market has undergone significant changes in recent years, changes which are likely to continue for the foreseeable future and will make storage an increasingly important factor in the market. We have seen rapid demand growth globally, as economies have developed and their citizens' income levels rise, in turn leading to demand for both more and cleaner power generation. We have also seen a number of countries, including Egypt, Jordan, Argentina and Kuwait, facing temporary shortfalls in power generation, and turning to FSRUs (Floating Storage and Regasification Units) in order to access the market more quickly. The increase in the number of LNG importers has been met with a similar trend on the supply side, with new sources as disparate and far-flung as the US, Australia, Russia and the eastern Mediterranean all coming into play. As a result, the market has shifted away from its traditional model of a handful of consumers buying directly from a handful of key producers. Instead, we are seeing an increasing fragmentation of the LNG market.

Smaller consumers are becoming more prevalent in the LNG market. Whereas previously the active buyers were the major consumers of Japan, Korea and the EU, who would contract on a long-term basis to buy LNG in the tens of millions of tonnes per year (mtpa), the recent trend has increasingly been of countries such as Jordan, Argentina and Egypt looking for short-term strips of cargoes for periods under a year, typically across a season. These new importers generally import less than 10 mtpa, whereas Japan alone imports more than 80 mtpa.

The shift away from pure point-to-point, fixed term and fixed volume agreements has taken place rapidly over the last few years, initially coming in the form of shorter-term contracts such as the three-year one (compared with the traditional 20-

year contracts) signed between Centrica, a major UK energy company, and Qatar, one of the largest LNG suppliers. We are now seeing countries turn to even shorter-term contracts to meet seasonal upticks in electricity demand. Indeed, in September 2016 over 35 cargoes traded on a spot tendering basis for Q4 delivery, amounting to approximately 2 million tonnes of supply, a marked increase from past years, when minimal numbers of cargoes were tendered on a spot basis. Over 75 per cent of new importers in the last 5 years have not signed a contract longer than one year.

The unique and difficult physical nature of natural gas means that in order to transport it, the gas must undergo supercooling and pressurising to transform it into LNG, which can then be transported by ships. This complex handling increases overall costs, and also means that LNG cannot generally be stored in the same manner as oil or other commodities like metals or coal, or at least not as easily. As the LNG market continues its fragmentation as outlined above, the emerging consumers who may be more seasonal or shorter-duration than traditional markets will need a more flexible supply chain that will allow delivery of cargoes on a shorter, more responsive timeframe, particularly given weather concerns and seasonal demand swings. As such, the ability to store LNG will become increasingly valuable, given the role it will play in being able to meet the more demanding nature of the market in the future.

In many ways, storage is one of the unsung stars of the global energy supply chain. Despite its low profile however, storage looks set to play an ever-increasing role, as global energy markets become more complex, integrated and volatile, and energy supply chains move to a more flexible, robust and just-in-time model to help meet the needs of a changing market. ●

Figure 3: China stocks up 20%

