

Capturing the Value From Supply-Side Shocks in the Heavy Crude Market

Philipp Galkin, Jennifer Considine and Evar Umeozor

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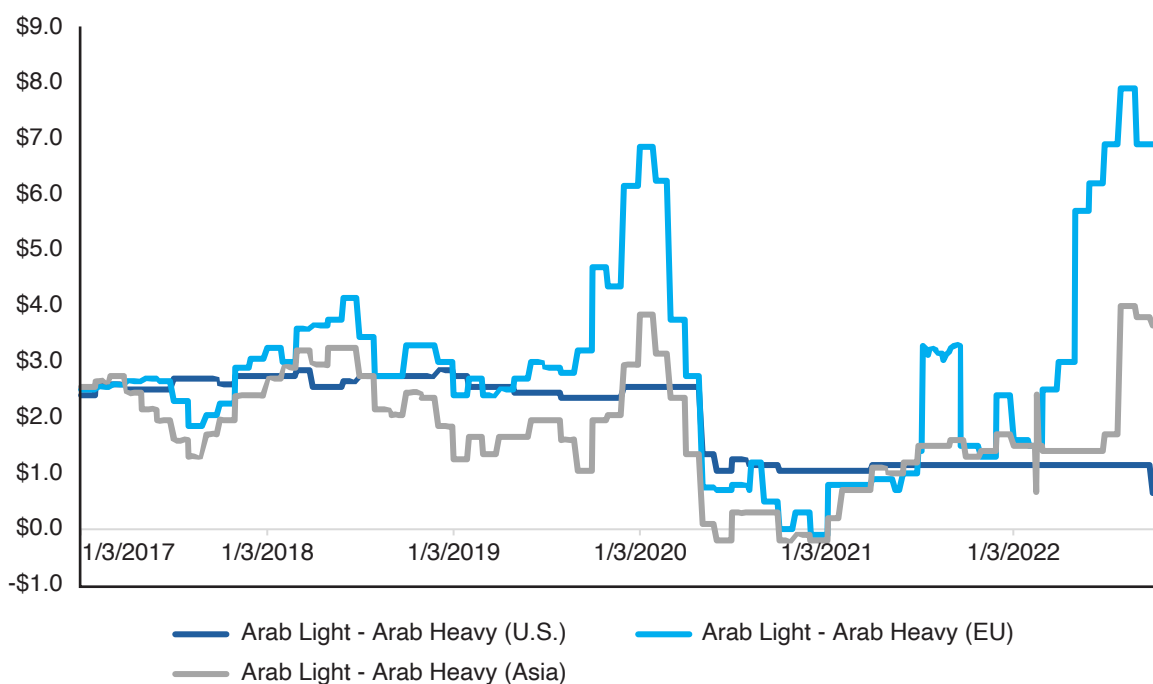
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The Russian-Ukraine conflict and sanctions on Russian crude oil flows have significantly affected world oil markets. Price volatility has increased, flows have been re-directed and there is considerable uncertainty concerning future energy policy. The implications of these changes affect all market segments including those where Russian supplies have been limited or absent. Thus, recent events have exacerbated problems observed in the already tight global heavy crude sector, where key exporters have been constrained either by sanctions (Iran and Venezuela) or by logistic bottlenecks (Canada).

Apart from Russia, Iran, Venezuela and Canada, the other major sources of heavy crudes are Mexico and Saudi Arabia. However, the Arab Heavy is lighter (~28° API) than the other heavy crude products (~20° API). Mexico has recently announced plans to stop exports of Maya from 2023 due to growing domestic demand. Adding pressure on the demand side, deep conversion refining capacity – suited for heavy crudes with high diesel yields – has been on the rise in the last decade through new and retrofit builds to accommodate the increasing stringency of sulfur content requirements for marine bunker fuels by the International Maritime Organization. This has driven the demand for very low and ultra-low sulfur fuel oils and diesel, among other fuels.

In the absence of market imbalances, heavy (and sour) crudes are normally sold at a discount to lighter (and sweet) crudes. Since 2020 and during 2022, this price differential has been extremely volatile. Figure 1 shows the historical trends in price differences between Arab Light and Arab Heavy shipped to major demand centers.

Figure 1. Price differentials between Arab Light and Arab Heavy, US\$.

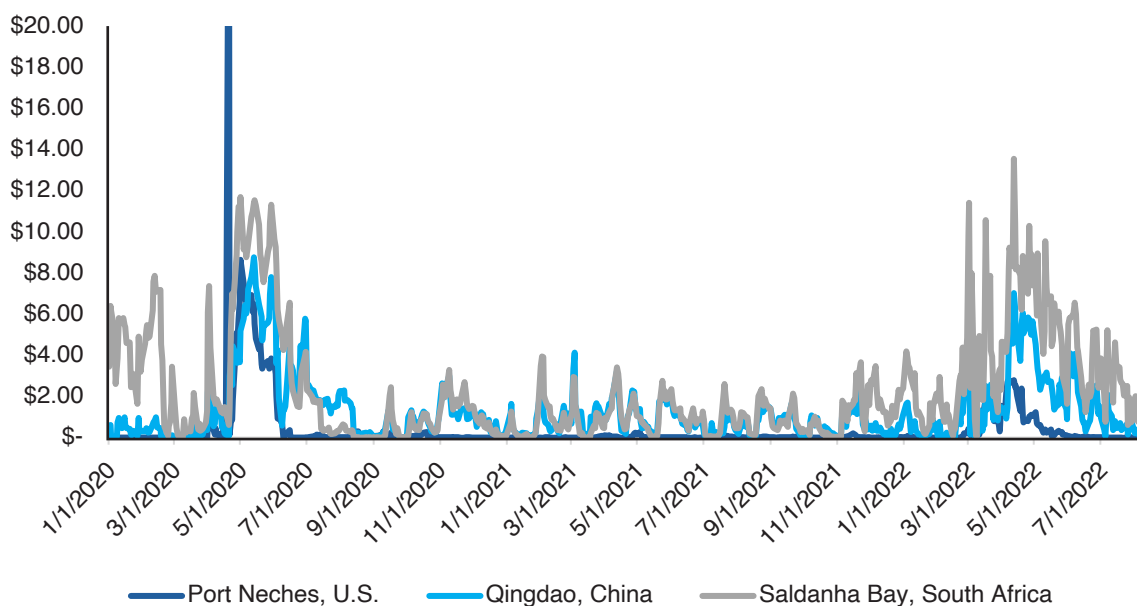


Sources: Bloomberg, KAPSARC calculations.

The general trend of higher volatility is accompanied by increasingly diverse geographic impacts. The deficit of heavy crude on the United States (U.S.) and Asian markets has kept the price differential between them lower than their historical averages for most of 2022. The U.S. premium – at a steady level of near \$1 – seems to be unaffected by the recent reshuffling of global crude flows, and is mostly driven by domestic factors, including the refining capacity and availability of Canadian heavy crude imports. The recent spikes in heavy-light crude price differentials in Asia and the European Union (EU) suggest that the global oil market continues to undergo significant shifts.

The impacts of these shifts, as well as the potential value that can be captured from the ensuing arbitrage opportunities, can be illustrated by the trends in spread option values (SOVs). Figure 2 shows SOVs for three global storage and processing hubs – Port Neches in the U.S., Qingdao in China, and Saldanha Bay in South Africa. In all three cases, we used the cost of Arab Heavy delivered to the location as a benchmark for all other delivered heavy crudes. A detailed description of the methodology and model used is given in Considine, Galkin, and AlDayel (2020).

Figure 2. Historical spread option values for heavy crude, U.S.\$ per barrel.



Source: KAPSARC calculations.

The magnitude of the impact of the 2022 supply shock – expressed as an SOV at Qingdao and Saldanha Bay – can be compared to that of COVID-19 in 2020. The U.S. Gulf Coast, on the other hand, has been more resilient to the supply shock of 2022 due to its significant exposure to heavy crude exports from Canada. For both supply shocks – COVID-19 in 2020 and the Ukrainian conflict in 2022 – the market has alleviated their consequences, both in terms of the price and geographic arbitrage, within several months. However, these moments of extreme disruption provide industry participants and traders, who have a

geographically diversified exposure to heavy crude storage, with an opportunity to capture significant value. Even during the ‘normal’ period between the two shocks, potential arbitrage gains exceeding \$2 per barrel have not been uncommon, illustrating the tight and volatile nature of the heavy crude market.

This imbalanced and volatile market state is likely to extend and even aggravate, at least in the short run, as supply-side constraints and shakeups continue to prevail. The EU is planning to impose a complete ban on Russian crude seaborne imports by the end of 2022, meaning that in the worst-case scenario around 1.3 million barrels per day (MMB/d) could be taken off the market (Reuters 2022a). OPEC+ is cutting its production quota by 2 MMB/d from November, although it is due to review this in December. On top of that, Mexico has been considering discontinuing its Maya crude exports from 2023 – estimated at 0.63 MMB/d (PEMEX 2022) – to secure domestic demand. With strategic stockpiles around the world at historical lows, and a shortage of OPEC spare production capacity, a complete ‘stoppage’ of Russian oil exports would be extremely difficult to offset in the short term (Finley and Krane 2022).

Moreover, the impact of potential supply relief measures will be limited. According to a recent announcement from the Biden administration, an additional strategic petroleum reserves (SPR) release of 15 MMb in December will be primarily composed of sweet crude from Big Hill and West Hackberry, with a 75:25 sweet-to-sour ratio (DoE 2022). With the U.S. SPR already at multi-year lows, one can hardly expect significant further releases in 2023.

No substantial progress is observed in relaxing the sanctions on Iranian or Venezuelan oil exports either. Some estimates suggest that the relaxation of Iranian sanctions could result in the immediate re-entry of 1-2 MMB/d into the oil market. However, this ignores the existing grey and black markets for crude oil. Exports from Iran and Venezuela have continued to China and India, despite U.S. sanctions. Thus, additional volumes, if any, are unlikely to provide substantial market relief (Brown 2022). Finally, Canadian heavy oil exports remain constrained by existing infrastructure and are mostly captured by the U.S.

Any additional supply shock to the already constrained heavy oil exports would be extremely difficult for the market to clear via price action, redirection of global oil flows, and adjusting refineries’ supply and product mix, at least in the short run. This may lead to a further development of the ‘shadow’ segment of global oil flows, driven by the supply deficit and significant price premium for sanctioned oil. In recent months, sanctioned oil cargoes have increasingly been reaching major import and trading hubs (The Maritime Executive 2022).

This situation may also trigger policy responses in two major areas: protectionism and the revision of sanctions. Following Mexico’s example, the U.S. is already debating whether to reinstate its ban on crude exports. On the other hand, the U.S. oil industry is joining the Europeans in their efforts to regain access to Venezuelan oil (Reuters 2022b).

Such market turbulence allows heavy oil exporters and traders to capture additional value and benefit from the price and location arbitrage, especially if they have a geographically diversified market presence and access to crude storage facilities. OPEC+ members with dormant heavy crude capacities may take advantage of this market opportunity when choosing the types of crude oil they produce to meet quota allocations. Oil exporting countries with sufficient operational flexibility can also leverage their increasing market power for their economic, and political, benefit.

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