US crude delivered to China:

Pricing North American grades vs global competitors in Asia

As the US Gulf coast (USGC) cements its role as a global hub for crude price discovery, the need for transparency in the value of North American crude delivered to Asia-Pacific keeps growing. Argus illuminates that transcontinental trade by converting the key WTI Houston, Mars and WCS Houston assessments, for light, medium and heavy crude respectively, into their equivalent prices at the port of arrival in China.

This direct pricing connection between the source of the marginal barrel and marginal crude demand from Asia-Pacific's fastest-growing economies is one of the key drivers of today's global oil market.

US crude exports soared to a record of more than 1.7mn b/d in October 2017. Shipments to Asia-Pacific accounted for more than a third of that total, driven by strong demand from the region's top four oil buyers: China, India, Japan and South Korea.

Growing North American crude flows are giving Asian refiners increased flexibility to diversify their supply sources, as they benefit from competitive prices for delivered US crude relative to traditional sources in west Africa and the Middle East.

Argus now publishes prices for three key North American crude grades delivered to China – WTI Houston, Mars and WCS Houston – representing the three main quality segments at the USGC: light sweet, medium sour and heavy sour barrels.

Unlike Argus crude assessments at the USGC, the values for these three grades delivered to China are based on a port handling fee and freight cost net-forward calculation to derive a theoretical cfr price, which is not based on actual transactions for delivered crude. As liquidity develops in the delivered market, Argus aims to start reporting actual trade. Initially, these calculated prices for delivered crude can be a starting point for contract negotiations, a reference price in physical contracts in conjunction with a negotiated differential, or a comparative metric of relative values for trade flow analysis.

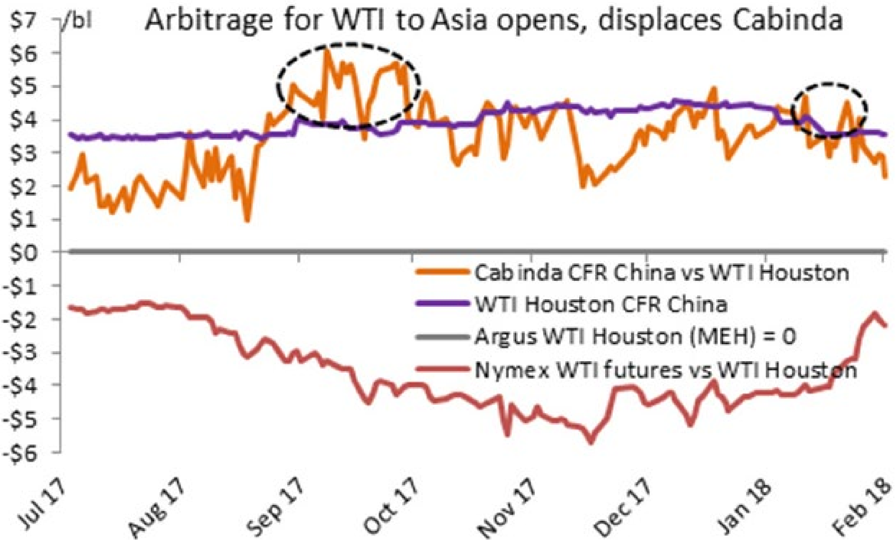
Prices of delivered crude to the Asian market are becoming more relevant for trading companies involved in the arbitrage of Atlantic basin cargoes. Bids and offers are increasingly being made on this basis and that may lead to the emergence of a market liquid enough to generate autonomous price discovery.

Moreover, the interplay of delivered US crude prices in the northeast Asian market with grades from other regions is sending back an important pricing signal to US exporters, who regularly track the value of waterborne shipments from the USGC.

US crude exports have not only surpassed expectations in terms of volumes, but also in terms of diversity of destinations and quality. Core Asian buyers have taken medium sour Mars and heavy sour Western Canadian Select (WCS), challenging the dominance of Middle Eastern suppliers for this type of crude east of Suez. It is the comparison of delivered prices that determines whether the arbitrage is open for North American flows to displace, for example, Iraqi, UAE or even Russian barrels.

Methodology: Argus takes the daily volume-weighted average (VWA) of all deals done during the entire trading day for WTI Houston, Mars and WCS Houston, adds export terminal costs and the daily freight rate for the USGC-to-China (Ningbo) route for VLCC (270,000t) cargoes and publishes the delivered price of these three grades in the Asia-Pacific section of the Argus Crude report. The VWAs for WTI Houston and Mars are at a differential to WTI Cushing, and the average differential is then applied to the Argus Formula Basis WTI price to arrive at a fixed price, reflecting the standard approach for other USGC grades. WCS Houston trades at a differential to the calendar month average of the CME's light sweet crude contract.

Delivered prices for US crude show how Permian WTI is displacing Angolan and Nigerian grades in Asia-Pacific



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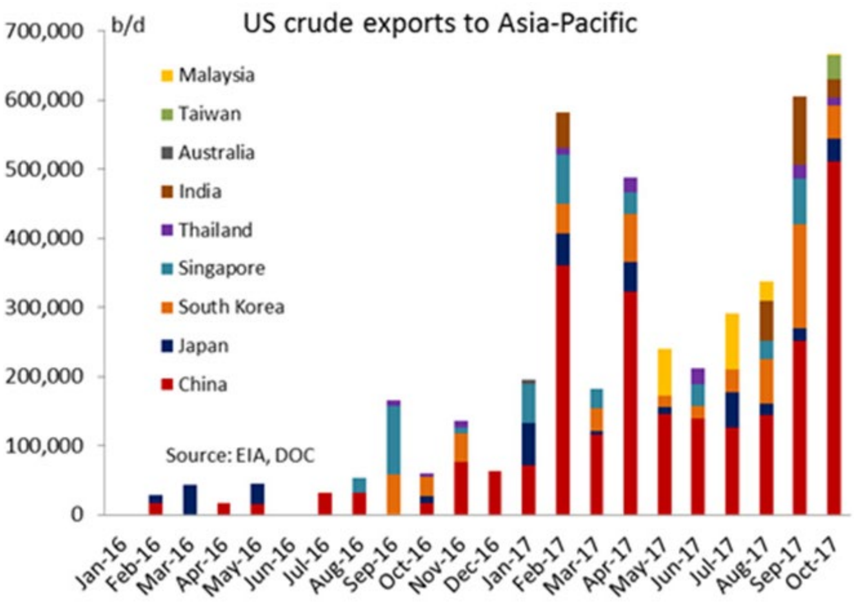
China on average accounts for about two-thirds of Asia-Pacific's total imports of US crude



The case for VLCC freight

Asian refiners aim to maximize long-haul VLCC shipments from the USGC to benefit from improved economies of scale for larger vessels. And US suppliers are upgrading infrastructure at the Corpus Christi, Houston and Beaumont/Nederland ports in Texas to accommodate larger tankers. The Louisiana Offshore Oil Port (LOOP) is the first in the US to handle periodical VLCC loadings and the Mars crude stream is connected to its loading buoys. Most shippers of other grades, however, still rely on reverse-lightering operations to assemble larger cargoes.

Spot trade for WTI crude at Houston has grown rapidly, reflecting both soaring production from the Permian basin in west Texas and expanded pipeline capacity delivering WTI to Houston. The Argus price assessment of unblended Permian-quality WTI at Houston represents the volume-weighted average of trade for a single grade of stable quality that should grow from nearly 700,000 b/d to more than 1mn b/d of supply as new pipelines reach capacity.

The use of volume-weighted average pricing creates a WTI price that reflects the broad market consensus of crude prices at the USGC, which is the most prolific and competitive refining marketplace in the world. Additionally, the link to CME's WTI futures market at Cushing means the coastal price is determined by a liquid and transparent differential to the world's most liquid and transparent crude futures contract. WTI Houston competes with international grades in the domestic US refining market and the international export market, so its price reflects the global value of an incremental barrel of crude supply. Both CME and ICE now list several futures contracts for WTI Houston with surging open interest, all of which are settled on the Argus price assessment for the grade.

The consistent quality of WCS and the growing ability to store and trade it in the Houston area establish WCS at Houston as a valuable proxy for overall heavy crude value. WCS in the Houston area is largely delivered by pipeline on the same timing as other US Gulf pipeline grades, backed by robust Canadian oil sands projects that continue to raise output.