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Sweethearts of the Permian — Refinery Margin Jackpot

Crude discounts leave local plants in the catbird seat.

Morningstar Commodities Research
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Data Sources for This Publication
U.S. Energy Information Administration
CME Group
To discover more about the data sources used, click here.

Windfall Returns

Six refineries in West Texas and New Mexico, with just under 800 thousand barrels/day of crude capacity between them, are currently enjoying windfall returns due to the happy coincidence of their location. They are all situated just a crude gathering system away from discounted feedstock being sold at the Midland, Texas, trading hub for considerably less than their rivals are paying at the Gulf Coast or in the Midwest. These refineries were built years ago to take advantage of local output from the prolific Permian Basin, which has been producing crude for close to 100 years in remote West Texas. During the past six months, they have been transformed into high-margin stars in their owners' portfolios as they take advantage of local infrastructure constraints trapping abundant crude supplies inside the region. That congestion translates into cheap crude and refining margins over $15/barrel, higher than equivalent refineries at the Gulf or close to Cushing, Oklahoma, in the Midwest. This note looks at the Permian refineries and their recent bumper margins.

The Congestion

We described the current tight takeaway balance in the West Texas Permian Basin in a recent August note (see "The Permian Triangle: Midland Discounts Encourage Exports"). Growing crude output—estimated by the latest Energy Information Administration Drilling Productivity Report to be 3.4 million barrels/day this month (September 2018)—has overwhelmed local processing and pipeline takeaway capacity. As a result, crude supplies are backed up in the producing region waiting to find a route to Gulf Coast and Midwest markets. Not only are pipelines full, but limitations on rail transport availability are limiting that avenue to beat the congestion (see our June 2018 note "Why Crude by Rail Isn't Picking Up the Slack"). The last hope for stranded producers is truck transportation—the most expensive option—and that too is constrained by a severe driver shortage in the Permian. One result of all this congestion is that while producers are still drilling wells, they are now waiting longer to "complete" them (the process of fracking the well to produce hydrocarbons). The EIA reports 3,260 drilled but uncompleted wells in the Permian as of August, with 211 added during that month alone.

Discount Crude

The second consequence of the congestion is producers discounting their crude to entice shippers to offer up hard-to-find pipeline space. These discounts have grown wider since the start of the second quarter of 2018. For example, Permian West Texas Intermediate crude sold at the Cushing, Oklahoma, Midwest market hub during second-quarter 2017 cost an average $0.85/barrel more than the equivalent barrel at Midland, Texas, the Permian gathering hub—roughly the cost of pipeline tariffs between the two locations. The same crude over the same period in Houston cost an average $2.51/barrel more than

Midland, again close to the pipeline tariffs. Fast-forward to second-quarter 2018, and Cushing WTI averaged $8.23/barrel more than Midland, while Houston WTI was $12.54/barrel more than Midland. So far in third-quarter 2018 (through Sept. 14), the Midland discount to Cushing has averaged $15.21/barrel and the discount to Houston $18.58/barrel.

Location, Location

These discounts hurt producers, of course, but for those lucky enough to own a refinery in the region, they represent an opportunity for windfall margins. Exhibit 1 lists the six refineries that are in this sweet spot, located either directly in the producing regions of West Texas and New Mexico or in the Texas Panhandle, alongside pipelines coming out of the Permian toward Cushing. Two of these plants—the 135 mb/d El Paso, Texas, and 27 mb/d Gallop, New Mexico, refineries—are owned by Andeavor, which is in the process of being acquired by Marathon (see our May note "Has Marathon's Refining Empire Hit the Wall?"). Both plants have direct access to WTI crude from local gathering systems in the Permian, as well as the heavier West Texas Sour that is also produced in the region. Also directly located in the Permian are the 73 mb/d Delek Big Spring refinery, which runs 73% WTI and 27% WTS, and the 110 mb/d HollyFrontier Artesia/Navajo refineries, which typically run a 25% WTI and 62% WTS slate. Further away from the producing region is the 195 mb/d Valero McKee refinery, north of Amarillo, Texas; this has access to Permian crude from various gathering systems, as well as Cushing supplies, but mostly runs sweet crude, meaning it can take advantage of cheap Midland WTI. The 146 mb/d joint venture Phillips 66/Cenovus Borger refinery is also situated to the north of Amarillo in the Panhandle and has access to Permian gathering systems. According to company filings, the Borger refinery runs a mixture of medium and heavy sour crude, meaning that it can process WTS crude but is also configured to process Canadian heavy crude, such as that produced by joint owner Cenovus, delivered from Cushing.

Exhibit 1 Permian Basin Refineries

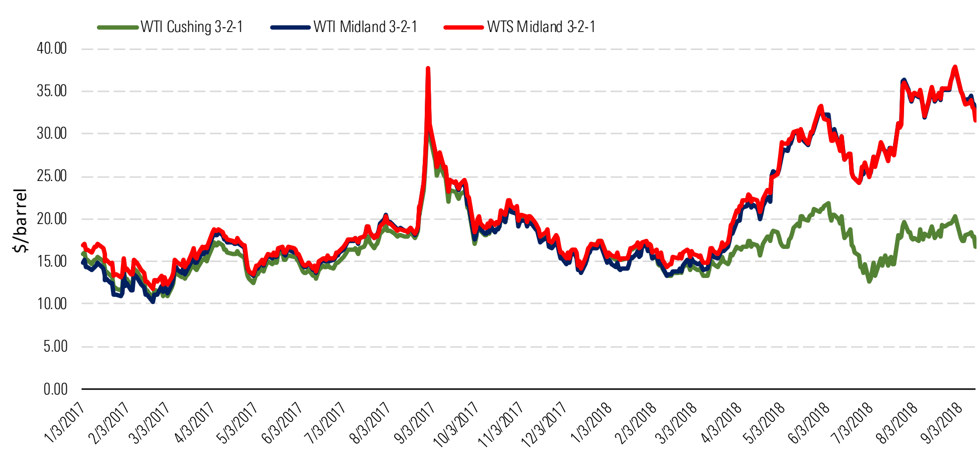
Refinery	State	Owner	Crude Process Capacity (mb/d)	Sweet Crude %	Medium Sour / Heavy Crude %
El Paso	TX	Andeavor	135	80	20
Gallop	NM	Andeavor	27	100	
Borger	TX	Phillips 66 & Cenovus	146		100
Big Spring	TX	Delek	73	73	27
Artesia/ Navajo	NM	HollyFrontier	110	25	62
McKee	TX	Valero	195	100	
		Total	**686**		

Source: Company websites and SEC filings, Morningstar

Fat Margins

When these refineries process WTI and WTS purchased at Midland discount prices, they typically sell the resulting refined products at prices set by the Gulf Coast market. The difference between those product prices and cheap crude feedstock represents fat margins. Our analysis of how fat those margins are is based on simple 3-2-1 crack spread analysis, where three barrels of WTI or WTS are processed to produce two barrels of gasoline and one barrel of diesel. Exhibit 2 shows 3-2-1 crack spread margins for WTI purchased at Cushing (green line), WTI purchased at Midland (red line), and WTS purchased at Midland (blue line) over the period from Jan. 1, 2017, to Sept. 14, 2018. The 3-2-1 crack averaged $16.67/barrel for Cushing WTI during 2017, with the Midland WTI crack $0.34/barrel higher at $17.01/barrel and WTS $0.97/barrel higher at $17.64. By the second quarter of 2018, the Midland WTI and WTS cracks had ballooned out to $8.23/barrel and $8.67/barrel higher than Cushing, respectively. So far in the third quarter, Midland margins for WTI and WTS are $15.21/barrel and $15.19/barrel higher than Cushing WTI, respectively. Assuming the six refineries process at least 600 mb/d of WTI and WTS per day between them, that represents over $9 million/day in additional margin for their owners (at $15.20/barrel average over Cushing)—plenty of incentive to keep these plants running at full capacity.

Exhibit 2 WTI and WTS 3-2-1 Crack Spreads



Source: CME Group, Morningstar

Party Continues

This refining margin bounty is also available to those refiners with plants in the Gulf Coast or Midwest regions that purchase their crude in Midland and ship it to market through previously committed pipeline capacity that they only pay the shipping tariff to use. And the good news for all these refiners is that the party will continue until at least the last quarter of next year, when new pipeline capacity is expected on line to ease the Midland congestion. Until then, as production continues to increase, the Midland discounts and refining margins can be expected to widen further as the congestion increases. The advent of new pipelines will end the discounts overnight, and based on previous experience, this may well push crude prices in Midland to premiums over Cushing and Houston as new shippers bid up crude to meet their volume commitments on the new pipelines.

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