



**CORNERSTONE ANALYTICS**

## Report Highlights

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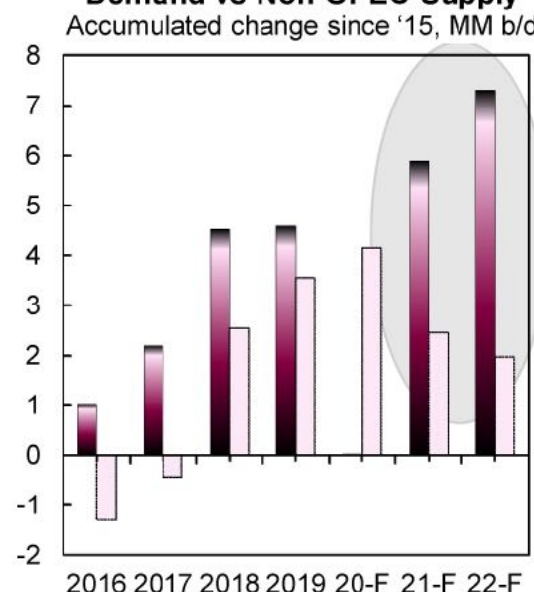


APRIL 24, 2020

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#### IT'S TOO SOON TO TALK ABOUT THE MEDIUM TERM, BUT IT ISN'T TOO SOON TO START THINKING ABOUT IT

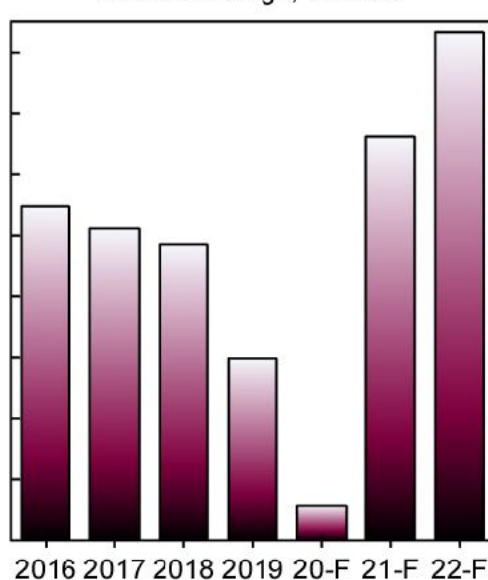
**Demand vs Non-OPEC Supply**  
Accumulated change since '15, MM b/d



While we're mired in a historic oil supply and demand imbalance, there're questions one should contemplate for the outlook after WuFlu demand effects abate. In our written and video updates we have purposely refrained from focusing on the medium term. The "why" is because we feel it unfitting to downplay significant near-term bearish issues since OPEC's punt on March 6<sup>th</sup> and because of the subsequent data in late March pointing to an epic demand contraction. We still think the focus needs to be on near term issues (we discuss another one on the following page), but we are getting some questions about what happens "down the road." In short, we see demand rebounding post 2020 without a consequent rebound in non-OPEC supply. The result is a material jump in the "call on OPEC oil" that we think will strain the group's production capacity and work away the inventory overhang that is likely to develop this year.

The building blocks of the forecast center on global oil demand returning to a trend growth figure post-2020. Oil demand remains joined at the hip with world economic activity meaning the end of isolating effects from the WuFlu will put growth back on solid footing. As to a muted non-OPEC production path, we're facing strong prospects for US output to decline further after this year before flattening out. This represents a dramatic change from the past decade. Shale's "twilight" hasn't been discounted by market players, nor have probable impacts from large capital expenditure cuts in the upstream business. The "call on OPEC crude" will rise to a historically high level (9% above the all-time peak) which will be a challenge given Venezuela, Libya and Iran issues not to mention other capacity risks. Hopes that electric vehicles "kill demand" remain misplaced and we contend that the downdraft in oil prices will likely lead to delays in the already struggling initiatives that have produced only a tiny footprint in the global auto fleet.

**"Call on OPEC Crude"**  
Annual average, MM b/d

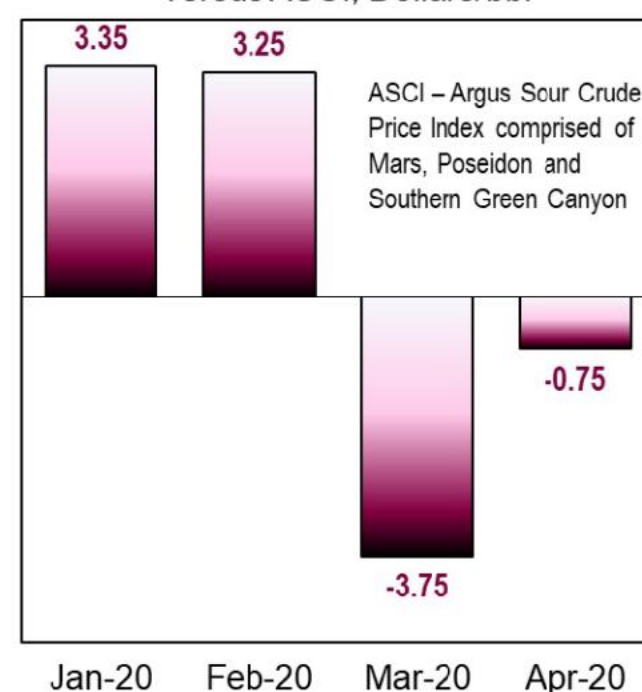


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#### US IMPORTS FROM SAUDI ARABIA TO SPIKE IN MAY

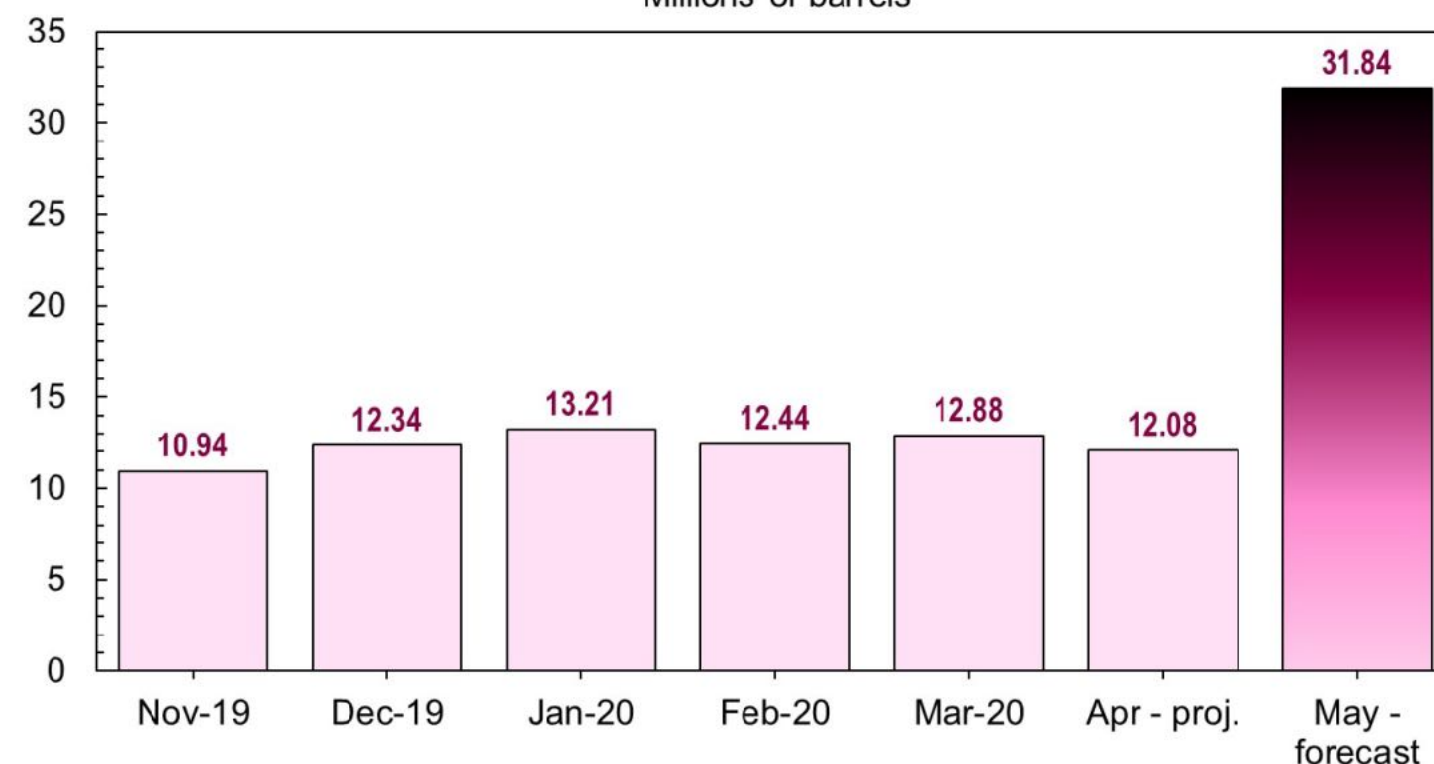
**Arab Light-to-USA Formula**  
Versus ASCI, Dollars/bbl



Indications from reliable sources are that a literal armada of crude laden tankers from Saudi Arabia will hit American shores next month. A wee less than 32 million barrels are scheduled to be delivered representing a near-tripling of flows compared with the preceding 6 months. As monthly numbers go, it'll be the highest level of imports from the KSA in a half-dozen years. The stepped-up purchases appeared to come in reaction to March's price formula adjustment (aka the Saudi price war). The differential to ASCI swung by -\$7/barrel, as detailed to the left.

The oil balance issue, of course, is that these delivered Saudi barrels will come at a time when US refinery run rates will still be depressed adding to an already evident swelling of inventories.

**Monthly US Imports of Crude Oil from Saudi Arabia**  
Millions of barrels



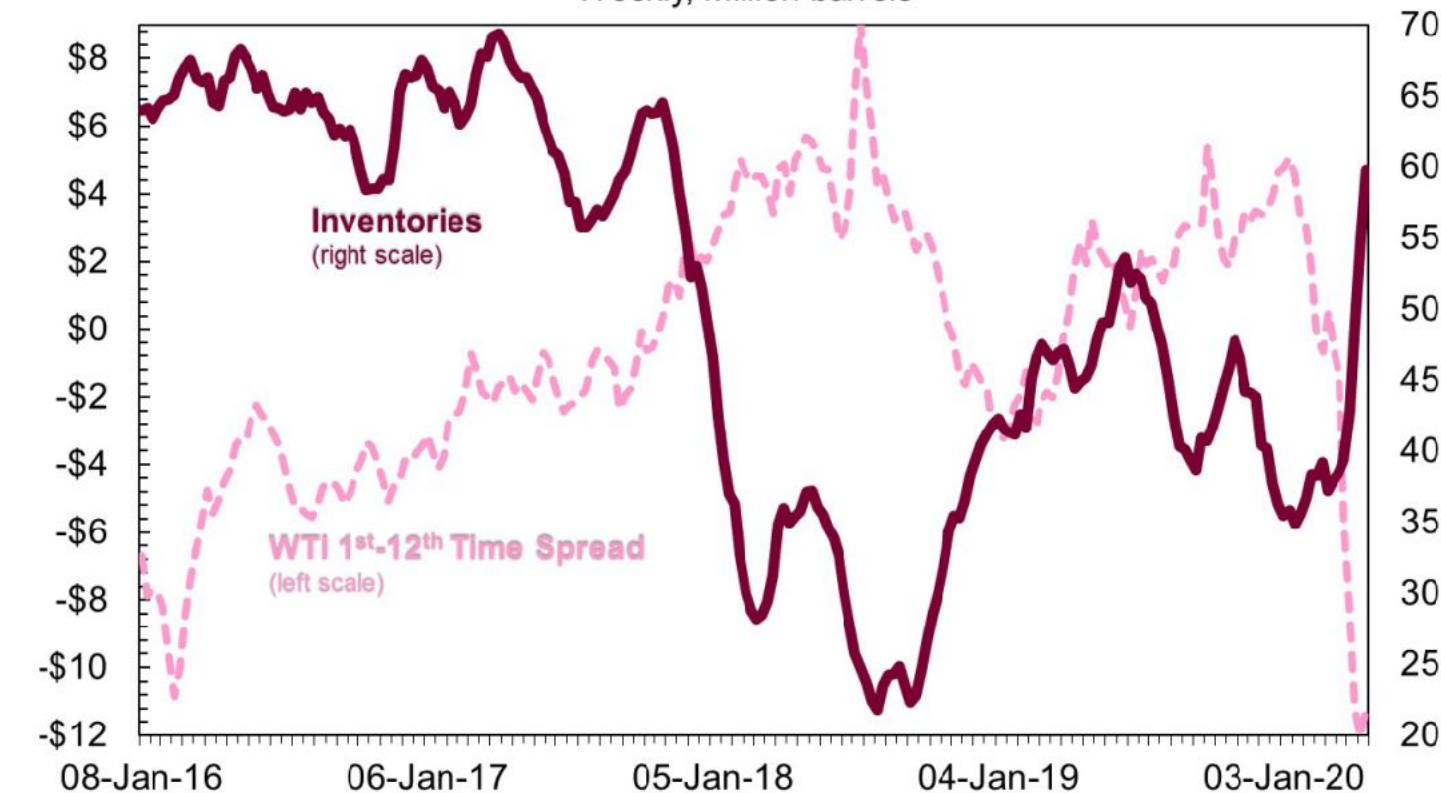
APRIL 24, 2020



#### JAMMING 10 POUNDS OF SALAMI INTO A 5 POUND WRAPPER

Crude stocks at Cushing, the delivery point for the NYMEX contract, are about 15% (or 10 million barrels) away from hitting the all-time high. Based on the weekly build rate of late, that 70 million barrels high watermark looks to get tested in the next two weeks. The very steep contango that developed in WTI's term structure reflects crude oil's storage in the large US market being filled towards capacity. This past week's contract expiration for May futures was related to the inventory capacity issue (in addition to holders of long contracts having been squeezed to liquidate open positions ahead of expiry). The inverse correlation between the time spread and Cushing crude stocks levels in our analysis below is what one should expect to see.

**Cushing Crude Stocks**  
Weekly, Million barrels

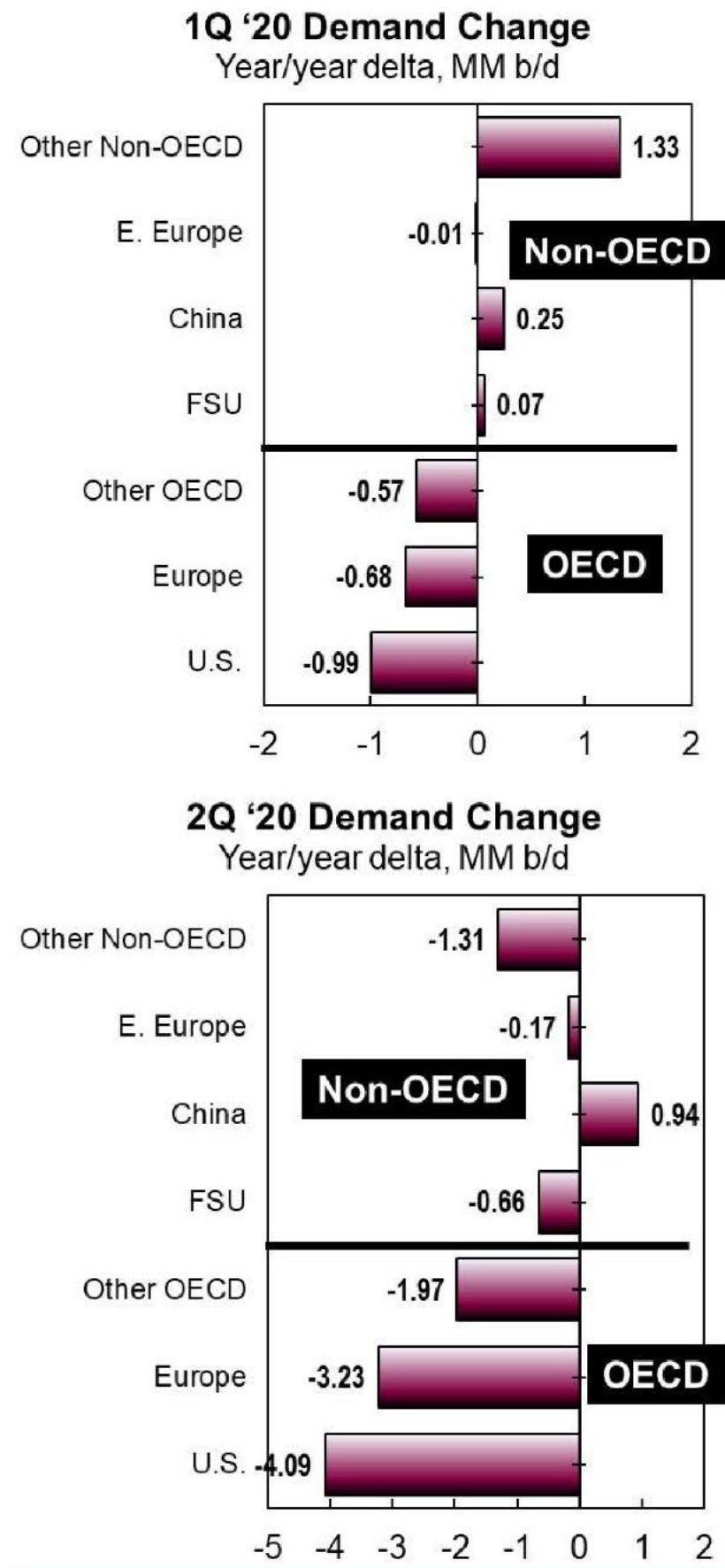


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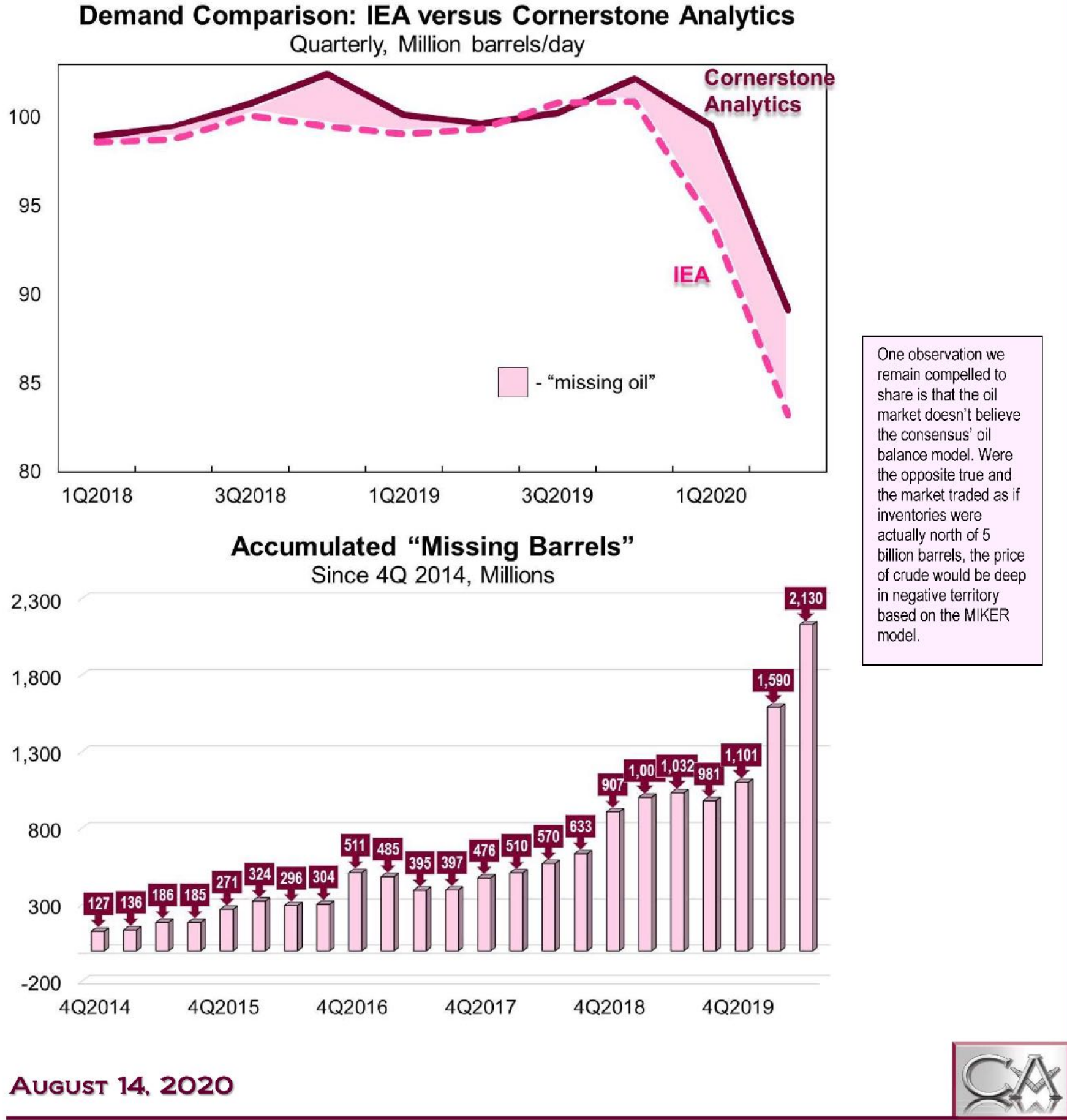


**AVOIDING THE PULL OF HABIT**



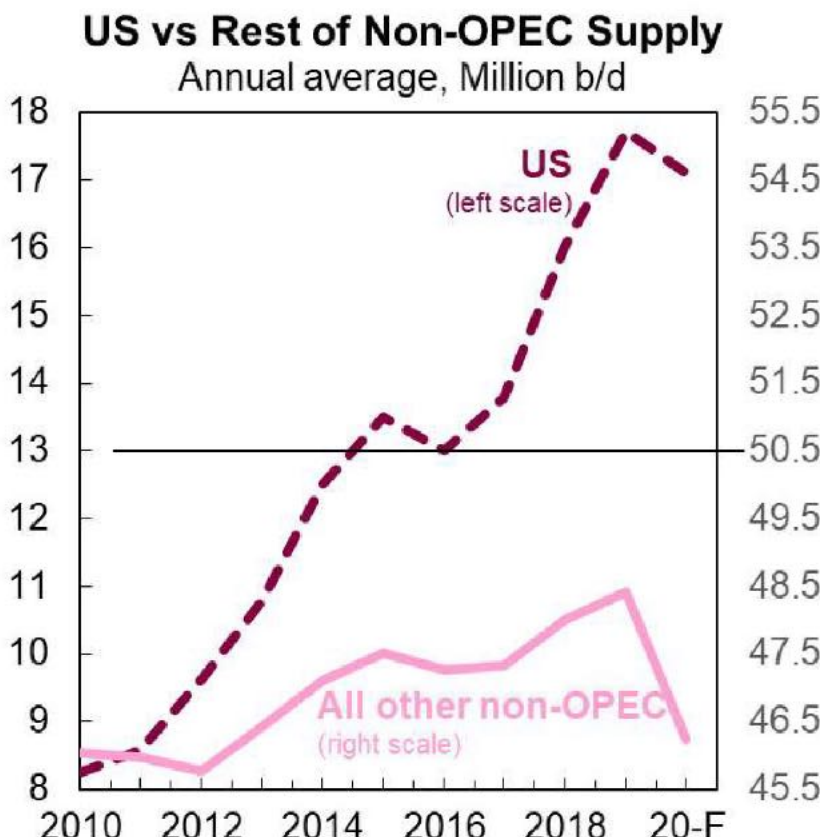
There are three main parts to today's report which are all follow-ons to the analyses we published yesterday; the first two of these center on demand. The main breakdowns we show for consumption detailed here are for the 1Q and 2Q 2020 periods – both are expressed as the year/year change in million b/d. Like 2008 and 2009, the weakness in consumption has been most pronounced in the OECD. In spite of many pundits assertions to the contrary (and the IEA's published data), China's demand is estimated by us as having posted gains in each quarter based on our assessment of Customs data (which we highlighted in Wednesday's video update). The data for demand in the 1<sup>st</sup> half of '20 jibes with one of our long held observations that non-OECD demand is more resilient than the OECD's. The emerging market economies tend to have higher GDP growth and they tend to have higher oil intensities (i.e. less fuel efficient). Over the past 20 years, almost 100% of the world's demand growth is attributed to non-OECD gains. A rub, of course, is that the IEA, when formed in 1974, built its system around the collection and dissemination of member country data – it was not concerned with the then 15 million b/d of non-OECD usage at that time. The still problematic issue of accurate timely data for non-OECD use is the key issue for the on-going "missing barrel" issue which we update on the following page.

The analyses on this page are updated with the latest available data. The IEA did make revisions in its demand series in its latest monthly update but they were relatively minor in scope. That said, the volume of "missing barrels" remains absurdly high, totaling north of the 2.1 billion barrel mark. "Missing barrels" is something of a misnomer in that the root cause is demand under-estimation (almost totally a function of too low a set of figures for the non-OECD). When the IEA finally bites the bullet and upwardly revises its series is anyone's guess. Until then, the consensus is still working with an oil balance model that has too low a set of demand figures and too low a number for the "call on OPEC crude."



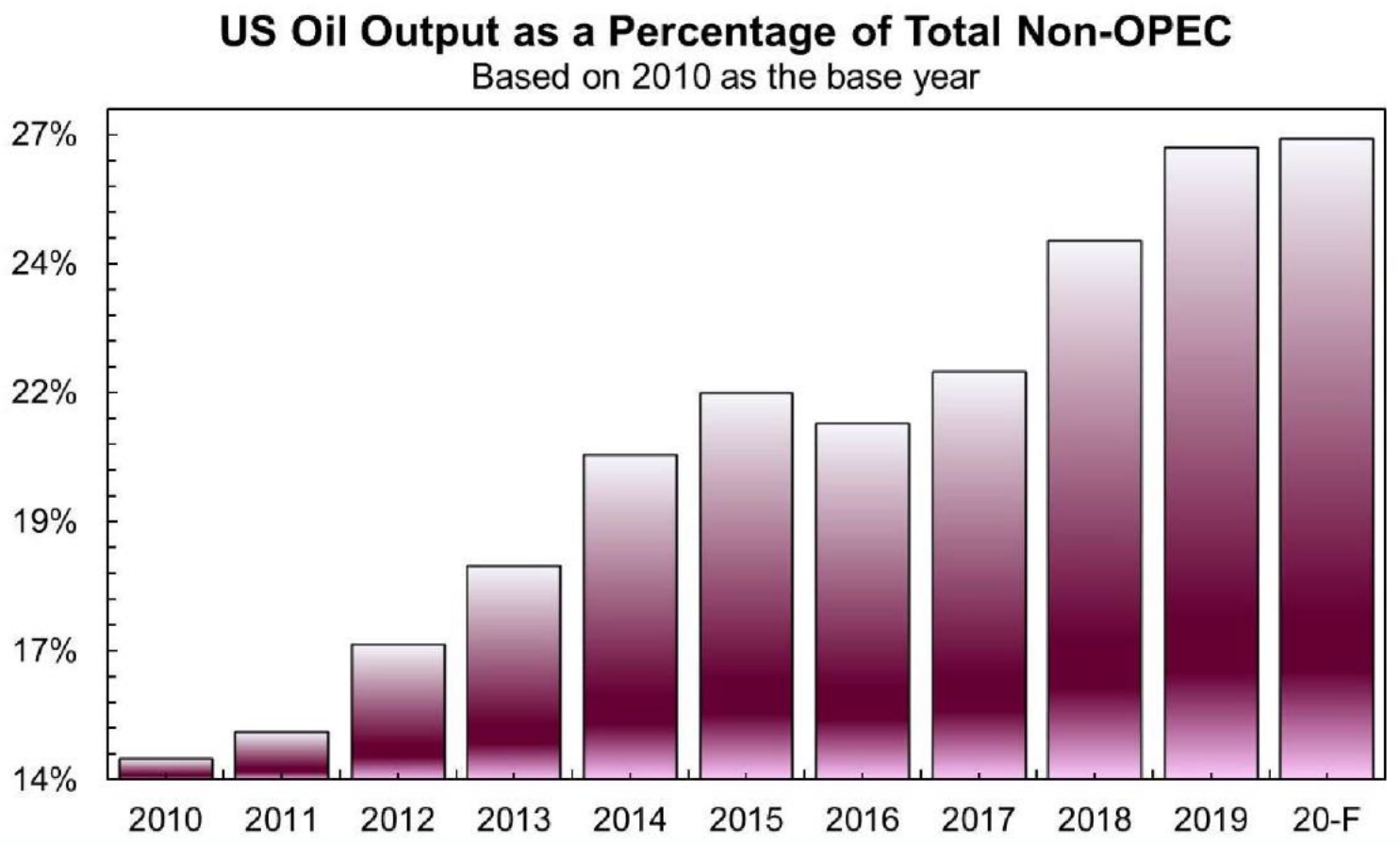


**TOUGH TO MAKE LEMONADE OUT OF LEMON PEELS**



Over the past 10 years, non-OPEC supply growth has been almost totally dominated by US shale. If our forecast proves close to the mark, US output will account for nearly 100% of all non-OPEC gains since 2010. The increase is why US output (crude, NGLs and biofuels) now accounts for 27% of total non-OPEC supply, up from a 14% share ten years ago. The pattern is also why most market watchers and pundits poo-pooed OPEC's output deal in November 2016 (the consensus believed US shale would more than offset any OPEC curtailment – which was dead wrong). Contrary to a widely held view that shale's growth would result in a perpetual over-supply (and low prices), the "twilight of shale" tagline we've used relates to a view we developed late in 2019 about prospects for US crude production to decline after 2020, about 5 years sooner than most believed possible.

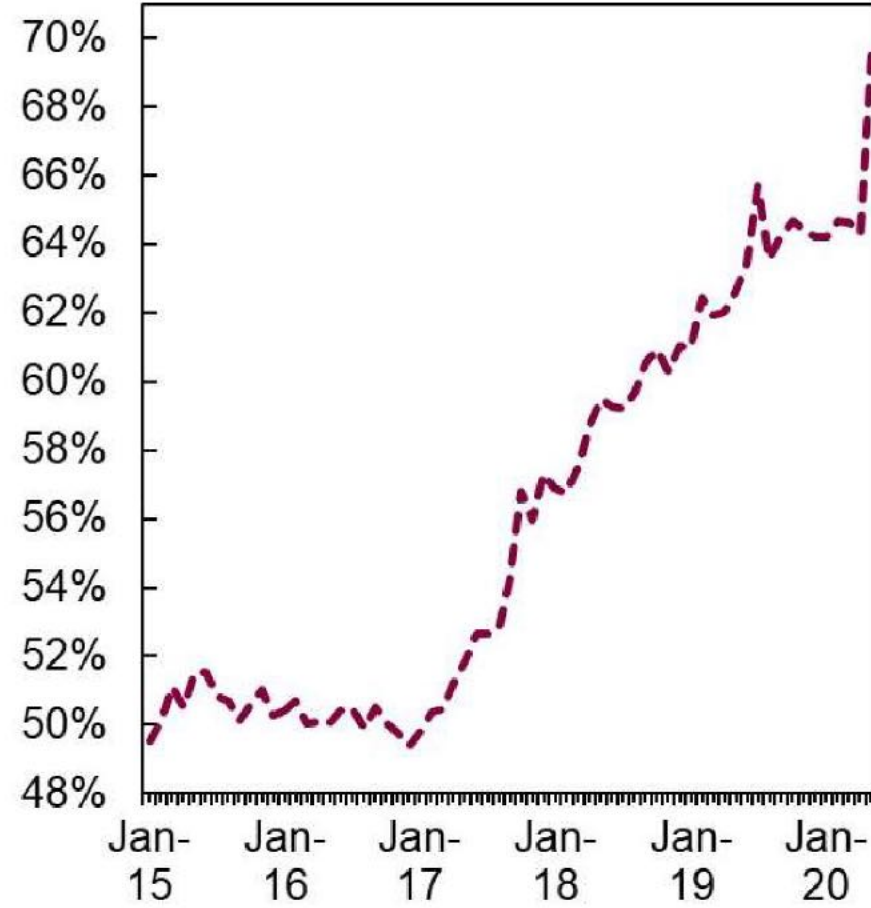
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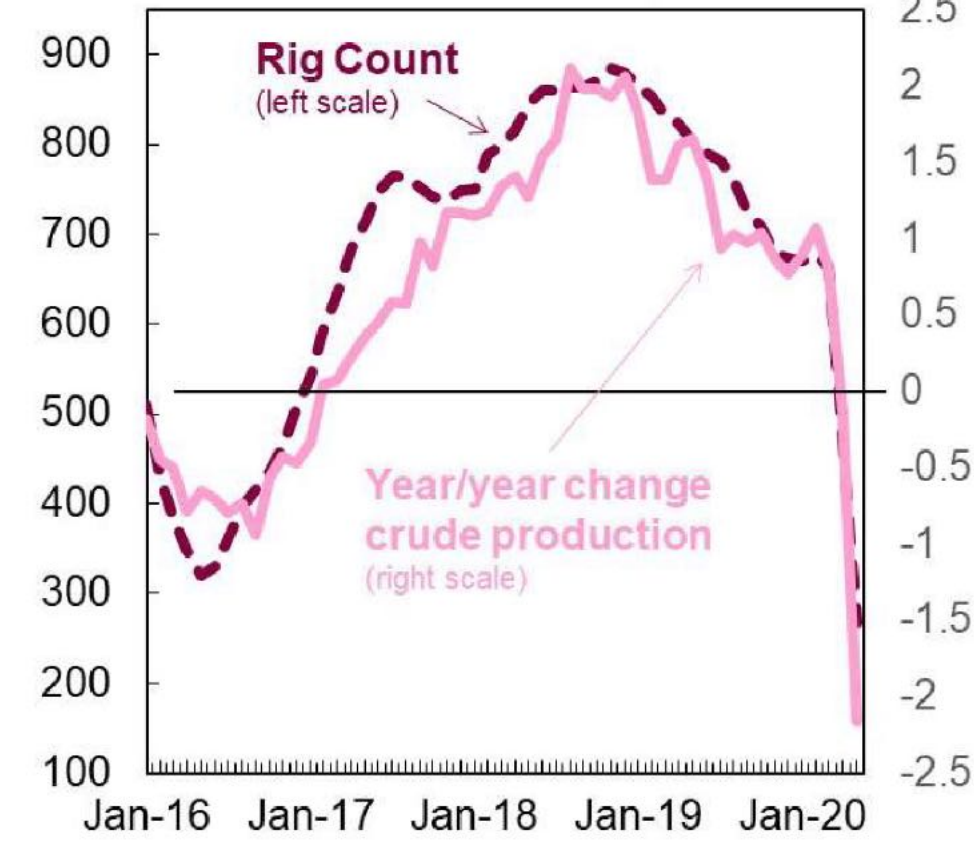
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**Shale Oil's Share of US Output**  
 Percent of total crude production



Our view stemmed from analyses last year that revealed a clear pattern showing a pronounced negative 2<sup>nd</sup> derivative in US production – i.e. output growing but at a slower and slower and slower rate. Basically, the timeline of our forecast has been accelerated. The collapse in oil demand from COVID produced a shock that traveled *back up* the supply chain. This caused involuntary production cuts and a dramatic reduction in upstream activity per the rig count drop. Because of shale's dominant role in the supply picture (it accounts for 70% of total crude output), the inherently high decline rate and the comparatively short life of a shale oil well means that the collapse in upstream work portends more of a decline than what we have heretofore been expecting. We built a bounce in US output for the 2<sup>nd</sup> half of '20 into our non-OPEC forecast based on a presumed restart of wells shut in from the price collapse, but we're not feeling confident such a rebound occurs. The concern stems from a more severe fall-off in upstream work as seen left. Basically, the drop in the rig count translates into a drop in new wells being spudded and completed. This makes it difficult to have confidence about US crude production being able to sustain gains after any short term effect from restarting shut-in wells.

**US Crude Output vs. Rig Count**  
 Year/year output change, Million b/d



It will likely take 3-4 more 914 reports before we see a good pattern in the data, but even so the "twilight of shale" is one fundamental that we see as bullish for oil prices for the medium term.





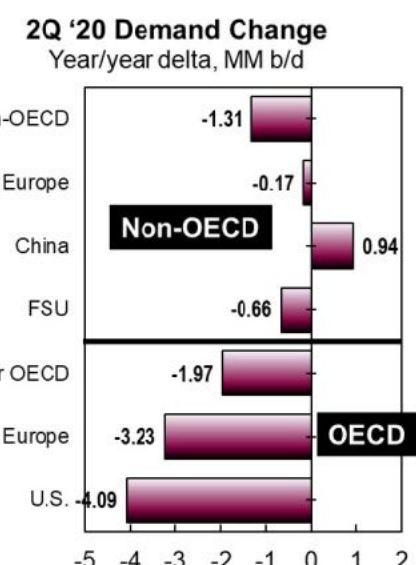
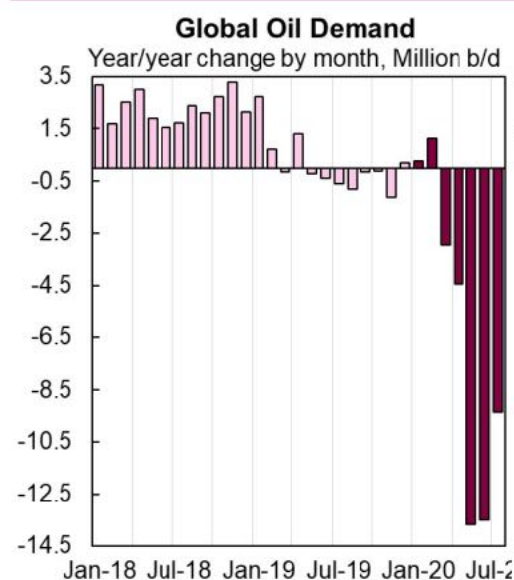
### CORNERSTONE ANALYTICS

#### THE MORNING ENERGY UPDATE

SEPTEMBER 8, 2020

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### CHARTS OF THE MONTH



Our analyses suggests global oil demand contracted by 10.51 million b/d (year/year) in 2Q. Historic as it is, the drop pales in comparison to 20-30 million b/d figure many still assert. As to July, our preliminary estimate suggests demand ran at 90.2 million b/d, or 4.2 million b/d higher than May and June's level. This jibes with our forecast for demand to be "less horrible" in 3Q versus 2Q. The demand pattern suggests to us there was a lagged response on the way down compared with close-to-real-time readings (like air traffic). It seems reasonable to consider the prospect that we'll see a lag in the demand recovery on the way up.

Our analysis of Customs data showed China's oil demand to have remained robust in August, coming in 1.2 million b/d higher than the respective year-ago level. The growth came atop a record high in July and a first-half '20 growth rate that we estimate at 7% (920,000 b/d) above the year-ago level. The readings are dramatically at odds with what the consensus believes to be a sizeable contraction. Like 2009, gains in China lifted the figure for total non-OECD demand contrasting with declines in OECD demand (led by the US as shown above).

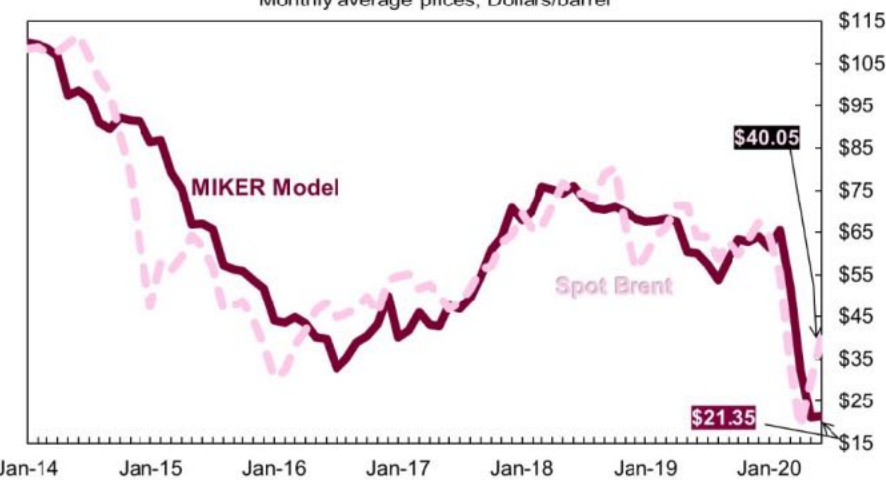
**Our "Quick & Dirty" Apparent Demand Math for China**  
Million barrels per day

	July '20	July '19	Yr/Yr % Chg	MM B/D	Yr/Yr Chg
Net Crude Imports	12.08	9.66	25.0%	2.41	
Net product imports	-0.29	-0.86	-66.3%	0.57	
Domestic Oil Production	3.90	3.89	0.3%	0.01	
<b>Apparent Demand</b>	<b>15.69</b>	<b>12.70</b>	<b>23.6%</b>	<b>2.99</b>	

**Our "Quick & Dirty" Apparent Demand Math for China**  
Million barrels per day

	Aug '20	Aug '19	Yr/Yr % Chg	MM B/D	Yr/Yr Chg
Net Crude Imports	11.18	9.93	12.6%	1.25	
Net product imports	-0.52	-0.44	16.6%	-0.07	
Domestic Oil Production	3.89	3.87	0.5%	0.02	
<b>Apparent Demand</b>	<b>14.55</b>	<b>13.36</b>	<b>9.0%</b>	<b>1.20</b>	

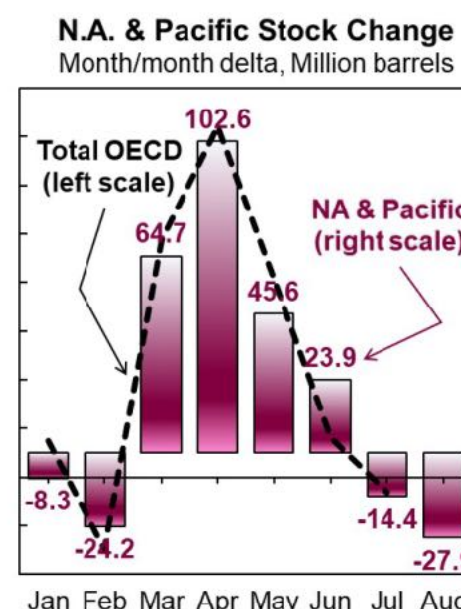
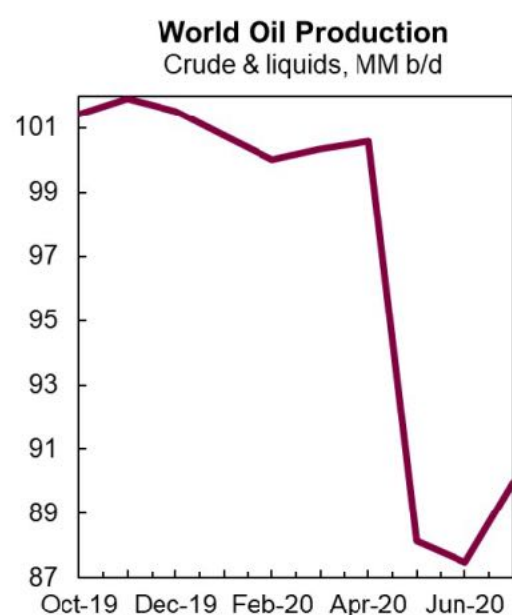
#### Monthly Brent Crude Prices – Spot versus MIKER Model



The market does not appear to believe the consensus supply/demand model, nor the consensus estimate of oil inventories. Our proprietary MIKER Model was run with our estimate for end-June inventories in the OECD (the proxy for global storage). MIKER kicked out a "fair value" for Brent crude of about \$21/barrel which compares with levels that have been north of \$40. Were crude prices trading off of the consensus figure for global storage, the price of Brent would be down somewhere in the -\$250/barrel range -- no joke.

### CORNERSTONE ANALYTICS

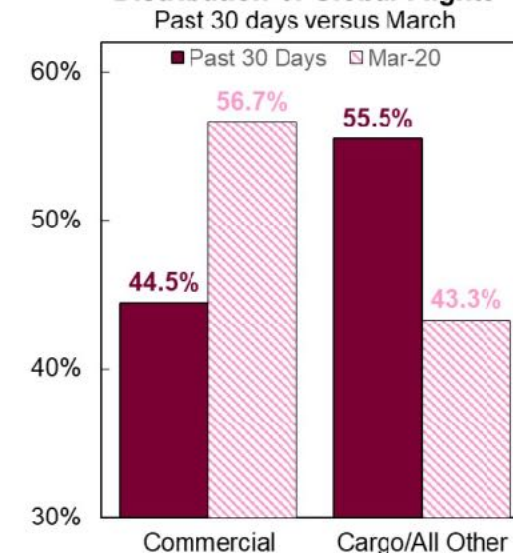
PAGE 2



While preliminary, we estimate oil stocks (crude, refined products, biofuels and pet-chems) drew 28 million barrels in North America and the Pacific during August. The regions account for 70% of global oil inventories. Combined stock changes in the N. America and the Pacific tend to be highly positively correlated with global stock changes. Notably, a draw on global stocks in July and August (likely) occurred while a global oil supply rose which suggests to us that the contraction in global demand shrank further -- i.e. less horrible demand than 2Q.

Wide interest in our analyses of global air traffic and related jet fuel usage (which accounts for 7.5% of global oil demand) warranted additional work last month. The bottom line is that the mystery about a rebound in total flying relates to the composition of traffic and, specifically, gains in cargo transport. To be fair, "cargo" also includes private flights and the military (which are actually small compared with the other segments). We don't have a data history to examine past episodes like the credit crisis or 9/11, but with regard to the economy normalizing (and with it oil demand), the overall gain in total flight traffic (and jet fuel consumption) intuitively makes sense, and it does support our forecast for global oil demand to be less horrible in the current quarter than what we saw in 2Q.

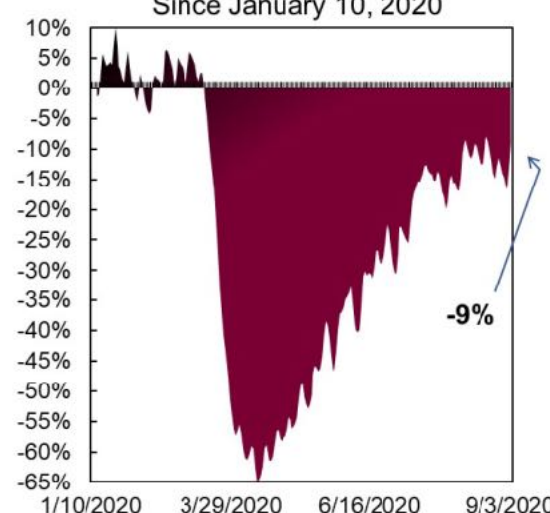
#### Distribution of Global Flights



#### Daily Global Air Traffic



#### Accumulated Air Traffic Change

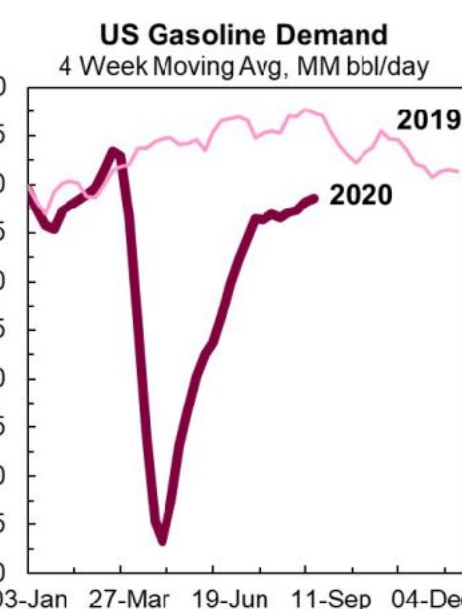
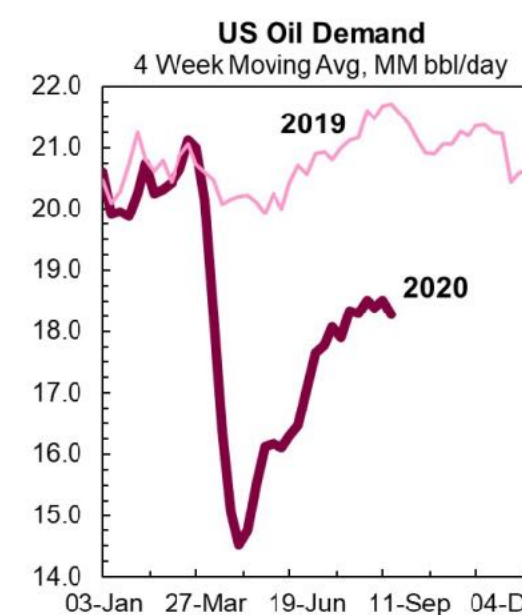


SEPTEMBER 8, 2020



### CORNERSTONE ANALYTICS

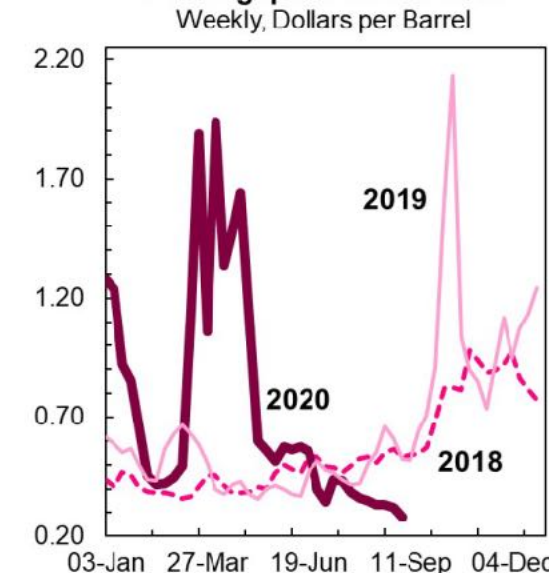
PAGE 3



US oil demand over the recent 4 week period ran about 15% under the respective year-ago level which is materially improved from the -35% readings we saw in 2Q. We note again that the US is a terrible barometer for gauging oil demand changes in the rest of the world particularly for the emerging markets. Even so, seeing improvements in the US demand reading merits some attention since it was the US that took the hardest hit from the effects of COVID.

While the IEA has made upward revisions in its demand series in its latest monthly update, the changes were relatively minor in scope. Accordingly, the volume of "missing barrels" remains absurdly high, totaling north of 2.1 billion barrels. "Missing oil" is something of a misnomer in that the root cause is demand under-estimation (almost totally a function of too low a set of figures for the non-OECD). When the IEA finally bites the bullet and upwardly revises its series is anyone's guess. Until then, the consensus is still working with an oil balance model that has too low a set of demand readings and too low a number for the "call on OPEC crude." One observation we remain compelled to share is that the oil market doesn't believe the consensus' oil balance model as noted earlier in this report. Were the opposite true and the market traded as if inventories were actually north of 5 billion barrels, the price of crude would be deep in negative territory based on the MIKER model. Examining this from another perspective, the notion asserted by many that this oil is "on the water" is a no go. The volume of missing oil about equals the size of the global tanker fleet which doesn't at all jibe with rates as seen right.

#### PG-Singapore Tanker Rate



#### Accumulated "Missing Barrels"



SEPTEMBER 8, 2020



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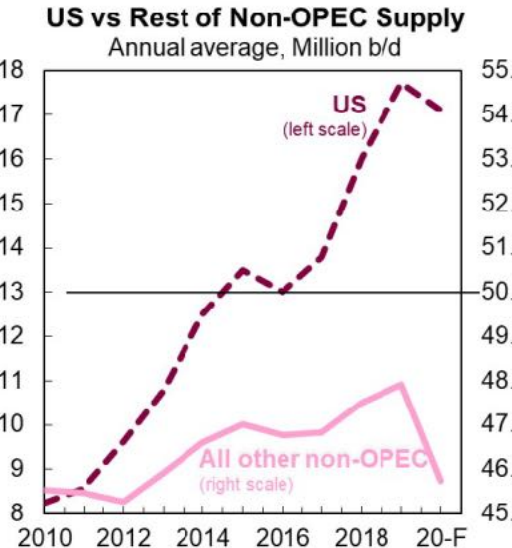
OPEC Production and Quotas, Million barrels/day

	----- July Crude Production -----			
	May-Jul Quota	IEA	Secondary Data Sources	OPEC's Direct Communication
Saudi Arabia	8.470	8.440	8.406	8.479
Iraq	3.580	3.750	3.752	3.697
UAE	2.440	3.000	2.430	2.406
Kuwait	2.160	2.180	2.158	2.158
Nigeria	1.340	1.410	1.488	1.373
Algeria	0.810	0.810	0.808	0.809
Angola	1.180	1.250	1.173	1.275
Gabon	0.140	0.170	0.189	0.207
E. Guinea	0.100	0.100	0.110	0.116
Congo	0.250	0.290	0.284	0.303
<b>OPEC 10</b>	<b>20.470</b>	<b>21.400</b>	<b>20.798</b>	<b>20.823</b>
Iran	Exempt	1.900	1.936	--
Libya	Exempt	0.100	0.100	--
Venezuela	Exempt	0.350	0.339	0.392
<b>Total OPEC Crude</b>	<b>23.750</b>	<b>23.173</b>		

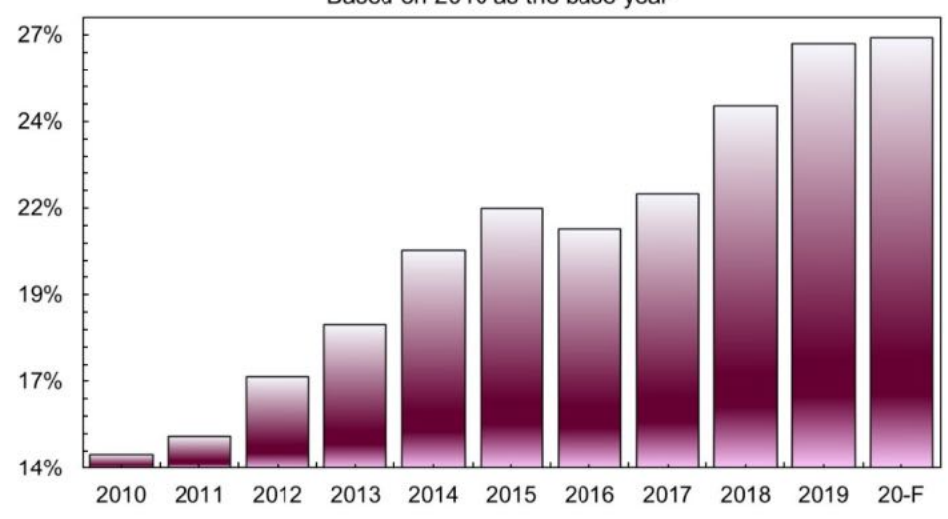
OPEC's production data for July is detailed left. The 1.2 million b/d gain (month/month) from June was largely a function of higher Saudi and UAE output – the former was expected the latter, not so much. Iran's output slipped further and continues to be besieged by US sanctions. Libya's output remains sharply lower than most expected; Venezuela's production inched higher but it is literally just above a multi-decade low. Overall OPEC compliance has been high and we expect it will stay that way. One key point we feel compelled to revisit is the prospect that global oil demand will eventually normalize (i.e. recover and resume growing) but we don't see the same specter of gains for non-OPEC output. This will eventually make OPEC capacity an issue.

\* - Neutral Zone output included in SA and Kuwait

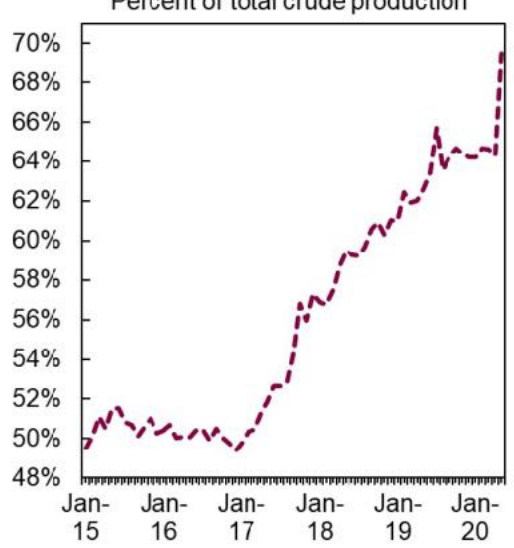
Over the past 10 years, non-OPEC supply growth has been almost totally a function of gains in the US with most all of that being from shale. In point of fact, the US will account for nearly 100% of all non-OPEC gains since 2010. The increase is why US output (crude, NGLs and biofuels) now accounts for 27% of total non-OPEC supply, up from a 14% share ten years ago. The pattern is also why most market watchers and pundits poo-pooed OPEC's output deal back in November 2016 (the consensus believed US output would more than offset any OPEC curtailment – which was dead wrong). Contrary to a widely held view that shale's growth would result in a perpetual over-supply (and low prices), the "twilight of shale" tagline we've used in our research relates to a view we developed late in 2019 about prospects for US production to decline after 2020, about 5 years sooner than most believed possible.



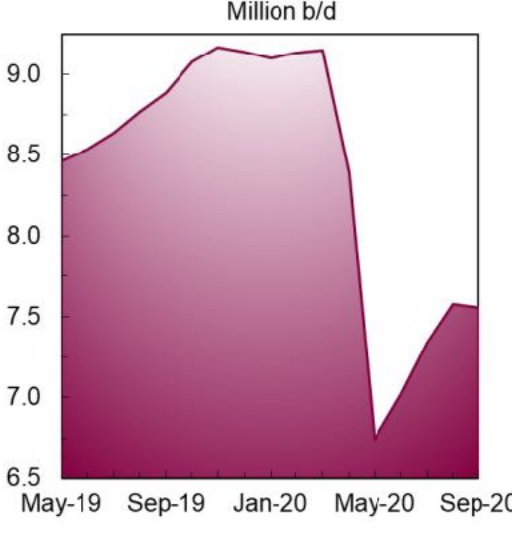
US Oil Output as a Percentage of Total Non-OPEC



Shale Oil's Share of US Output

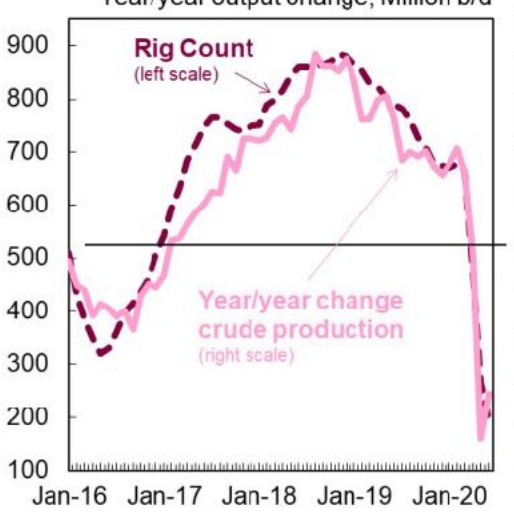


US Shale Oil Production

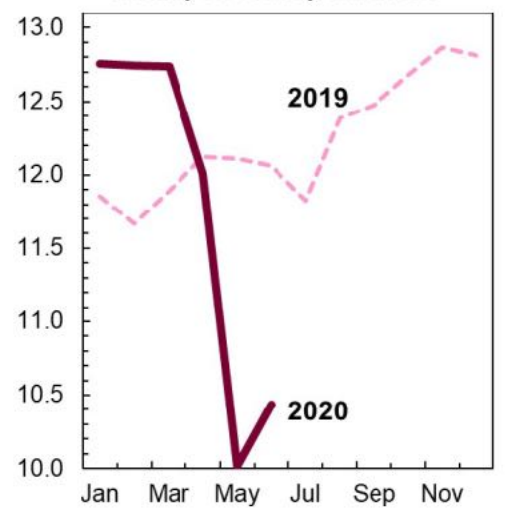


Our analyses of US production have revealed a clear pattern showing a pronounced negative 2nd derivative – i.e. output growing but at a slower and slower rate. The collapse in oil demand from COVID produced a shock that traveled back up the supply chain which brought forward a US production decline that we expected would start in 2021. Most of the drop has been involuntary cuts from a dramatic reduction in upstream activity per the rig count. Because of shale's dominant role in the supply picture (it accounts for 70% of total crude output), its inherently high decline rate and the comparatively short life of a shale oil well, the collapse in upstream work portends more of a decline than what we have been expecting. We built a bounce in US output for the 2nd half of '20 into our non-OPEC forecast based on a presumed restart of wells shut in from the price collapse. The bounce in output will not mark a turnaround in the US oil story as the collapse in upstream works suggest output will likely stagnate and erode.

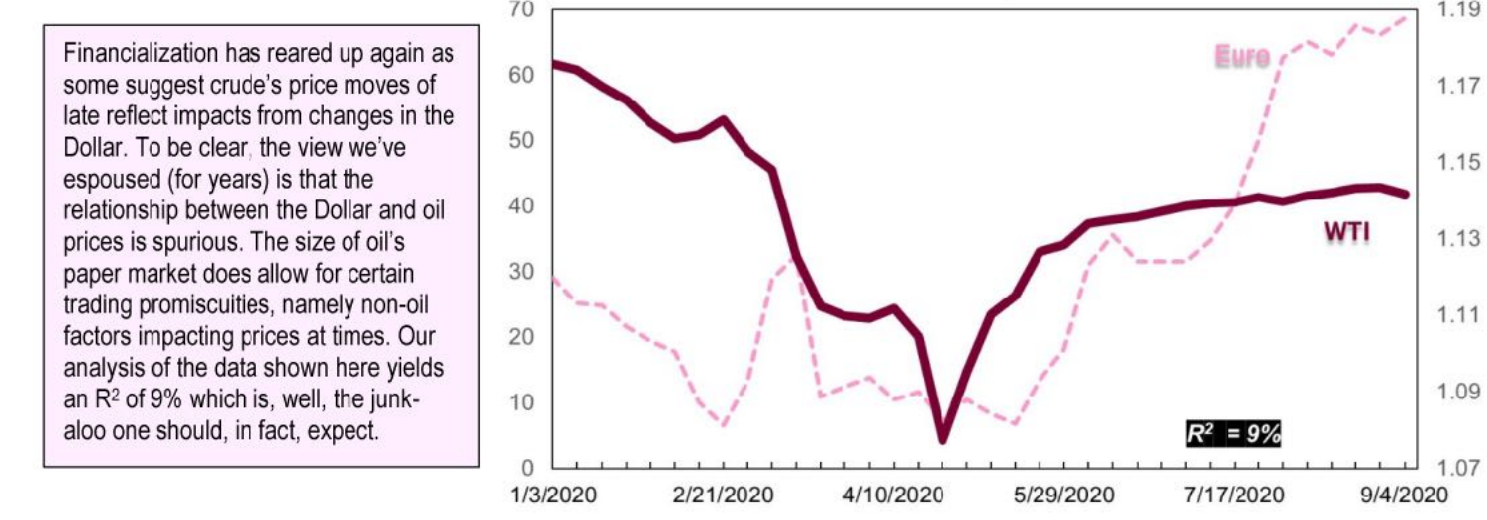
US Crude Output vs. Rig Count



US Crude Production



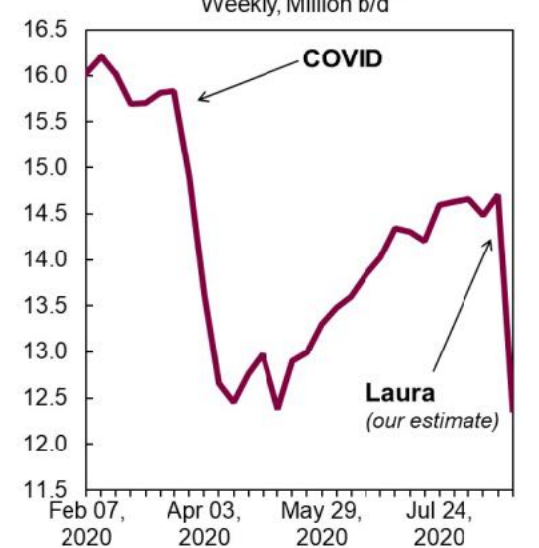
Crude Prices versus the Euro



Financialization has reared up again as some suggest crude's price moves of late reflect impacts from changes in the Dollar. To be clear the view we've espoused (for years) is that the relationship between the Dollar and oil prices is spurious. The size of oil's paper market does allow for certain trading promiscuities, namely non-oil factors impacting prices at times. Our analysis of the data shown here yields an R<sup>2</sup> of 9% which is, well, the junk-aloo one should, in fact, expect.

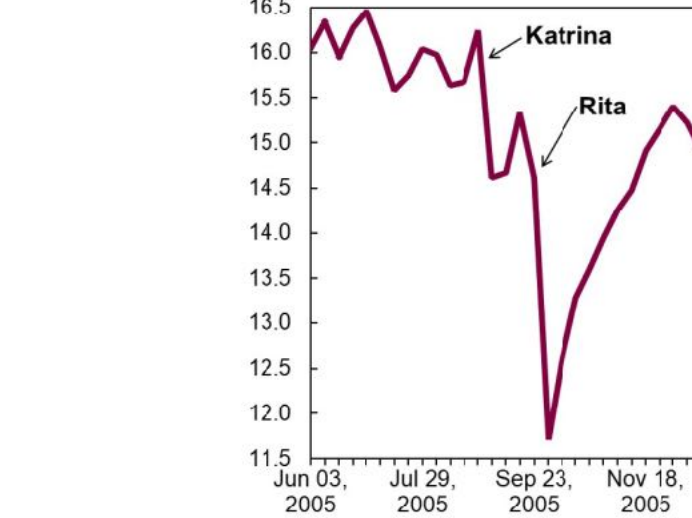


US Crude Runs - 2020

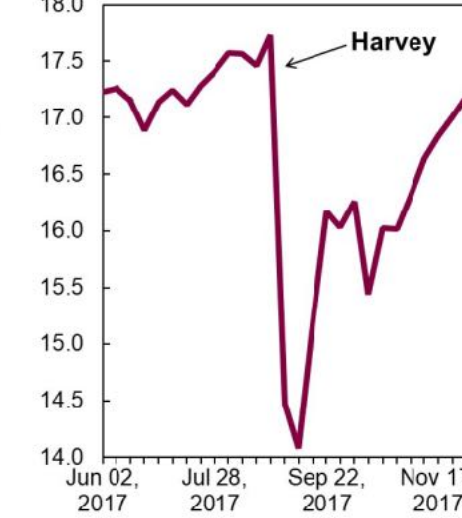


This past month saw two named storms trek through the heart of the US oil and gas industry. Disruptions to production, refining and petro-chemical operations rivaled those witnessed in 2005 and 2017. The volume of refining capacity shut-in from Laura was estimated as being about 2.4 million b/d. On-shore flooding from the storm was our primary concern. Offshore oil production already began the process of restarting. As a general rule, we've found that hurricane related outages tend to be shorter term affairs.

US Crude Runs - 2005

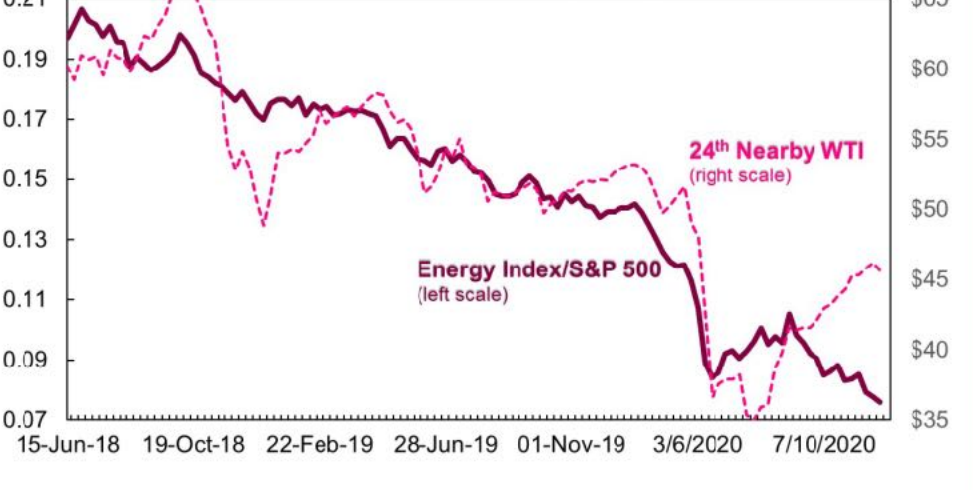


US Crude Runs - 2017



Energy equities basically trade as a proxy for the commodity. As we detail here, the correlation between changes in share prices (relative to the S&P 500) and crude prices (the 24th nearby) is 0.92, which is impressively high. Since Saudi Arabia's declared price war in March (which was the shortest one on record) energy equities lost ground relative to the broad market and oil prices. The sector is actually trading at the lowest level on record. While it's difficult for most to see through many present day concerns, the fact is energy shares look very "cheap" given our medium term market outlook.

S&P Energy Index Performance





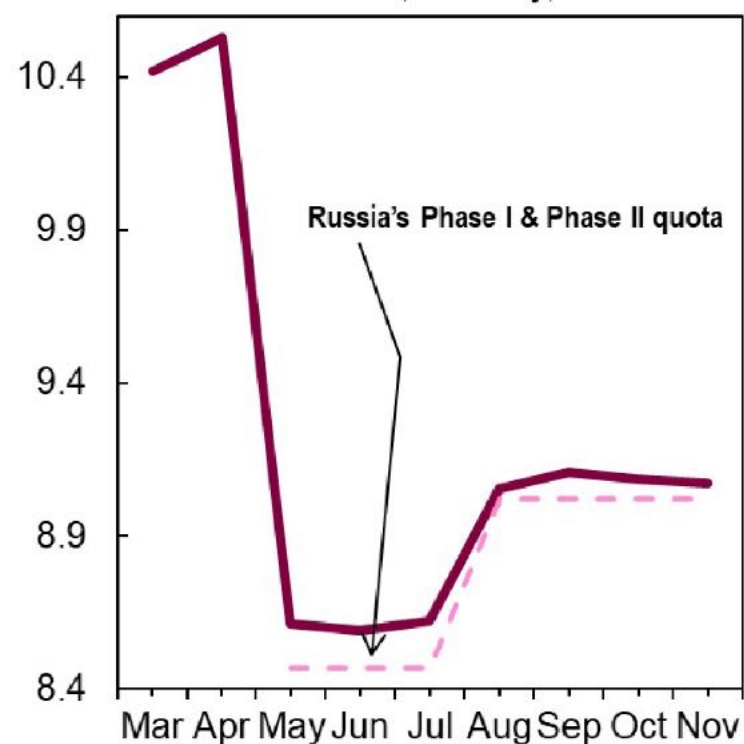
**CORNERSTONE ANALYTICS**  
**OPEC UPDATE**

JANUARY 5, 2021

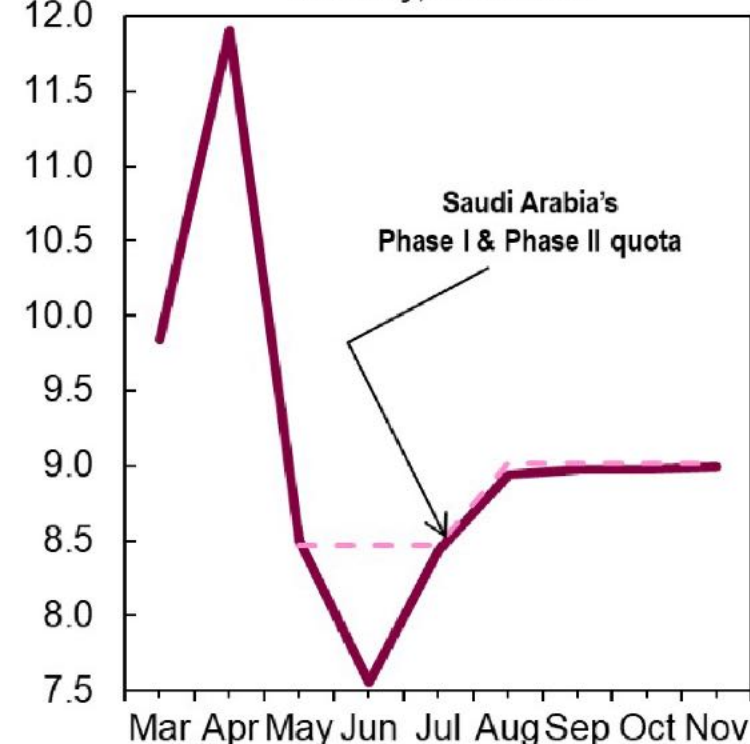
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**YOU CAN TAKE THE BOY OUT OF THE COUNTRY...  
...BUT YOU CAN'T TAKE THE DINGBAT OUT OF THE DINGBAT**

**Russia Crude Production**  
Ex-condensate, Monthly, Million b/d



**Saudi Arabia Crude Production**  
Monthly, Million b/d

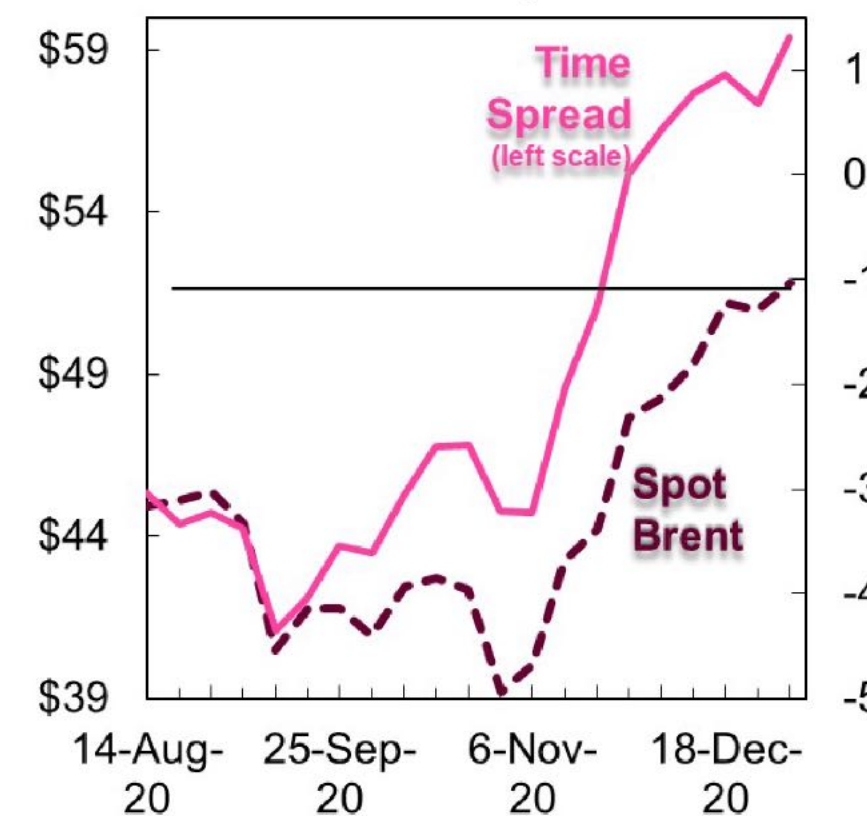


Saudi Arabia's effort to co-opt Russia into OPEC supply deals effectively afforded the Kremlin a *veto* on quota arrangements, a point highlighted in our work for a wee more than 4 years. Russia doesn't want to join the cartel and, importantly, it doesn't want to subjugate itself to the organization. As such, Russia has made a habit of being the proverbial "fly in the ointment" at every single OPEC meeting since the November '16 gathering. The video-meet yesterday is another case in point, and because of the added day of meetings and new lockdowns in Europe tied to COVID, oil prices slipped. Energy equities, interestingly enough, advanced in the face of weakness in the broad market. The case made yesterday by Saudi Arabia about being "wary" on the oil balance and risks to demand until a global vaccination program is well along (which is hardly the case of as now) was the right message and the one we expected to be communicated by the KSA. A decision to keep quotas unchanged should have been locked up yesterday, but Russia's delegation simply couldn't minister the wherewithal to curb its "ointment" effect. The drama aside, we are not expecting OPEC+ to enact a decision that tanks the oil market...we all just have to wait the extra day for it.

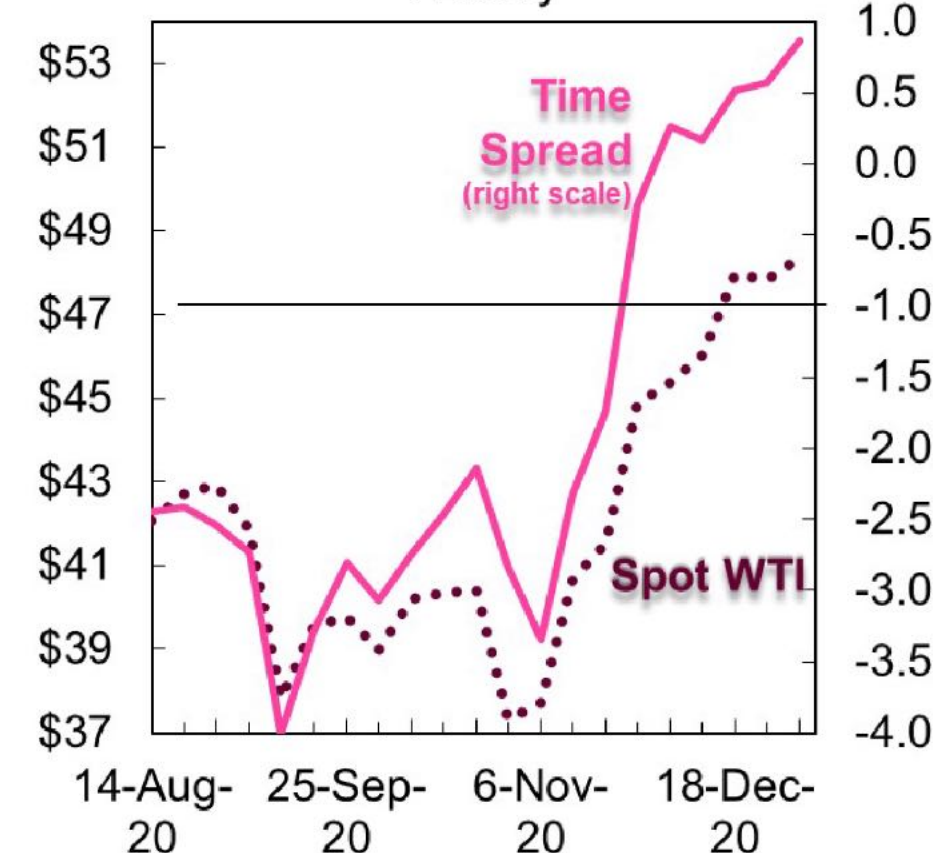
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**Spot Brent vs Brent Time Spread**  
Weekly



**Spot WTI vs WTI Time Spread**  
Weekly



While there is appropriate concern about the health of oil demand and the current global economy, there is clearly optimism building in the oil market about the outlook, based on the crude time spreads. Analyses of the term structure we've published for the past few months identified and highlighted a bullish divergence. Such a pattern historically indicates an interim price bottom is being put in place, but the divergence is still expanding which suggests to us that bullish sentiment and momentum is still building.

JANUARY 5, 2021





**CORNERSTONE ANALYTICS**  
THE MORNING ENERGY UPDATE

JANUARY 6, 2021

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**INTENT...**

**January 5, 2021 OPEC+ Deal -- Million b/d**

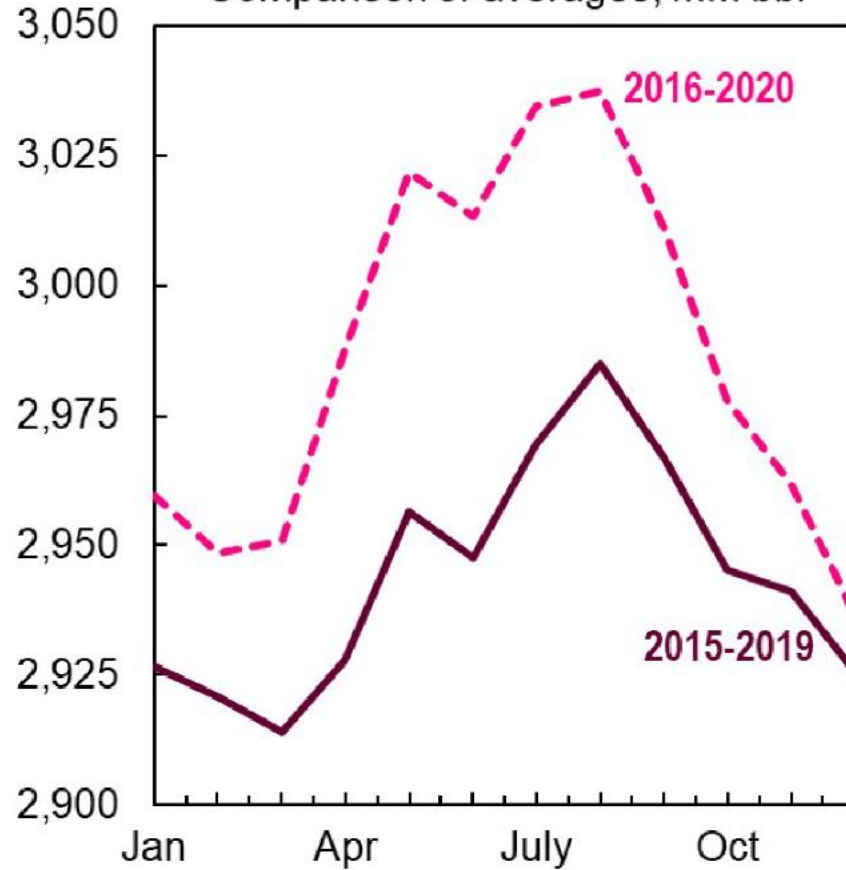
	Output	Jan '21		Feb '21		Mar '21	
		Base	Cut	Quota	Cut	Quota	Cut
<b>OPEC 10</b>							
Algeria	1.057	-0.181	0.876	-0.181	0.876	-0.181	0.876
Angola	1.528	-0.261	1.267	-0.261	1.267	-0.261	1.267
Congo	0.325	-0.056	0.269	-0.056	0.269	-0.056	0.269
E. Guinea	0.127	-0.022	0.105	-0.022	0.105	-0.022	0.105
Gabon	0.187	-0.032	0.155	-0.032	0.155	-0.032	0.155
Iraq	4.653	-0.796	3.857	-0.796	3.857	-0.796	3.857
Kuwait	2.809	-0.480	2.329	-0.480	2.329	-0.480	2.329
Nigeria	1.829	-0.313	1.516	-0.313	1.516	-0.313	1.516
Saudia Arabia	11.000	-1.881	9.119	-1.881	9.119	-1.881	9.119
UAE	3.168	-0.542	2.626	-0.542	2.626	-0.542	2.626
<b>OPEC 10</b>	<b>26.683</b>	<b>-4.564</b>	<b>22.119</b>	<b>-4.564</b>	<b>22.119</b>	<b>-4.564</b>	<b>22.119</b>
<b>Non-OPEC'ers</b>							
Azerbaijan	0.718	-0.123	0.595	-0.123	0.595	-0.123	0.595
Bahrain	0.205	-0.035	0.170	-0.035	0.170	-0.035	0.170
Brunei	0.102	-0.017	0.085	-0.017	0.085	-0.017	0.085
Kazakhstan	1.709	-0.292	1.417	-0.282	1.427	-0.272	1.437
Malaysia	0.595	-0.102	0.493	-0.102	0.493	-0.102	0.493
Mexico	1.753	0.000	1.753	0.000	1.753	0.000	1.753
Oman	0.883	-0.151	0.732	-0.151	0.732	-0.151	0.732
Russia	11.000	-1.881	9.119	-1.816	9.184	-1.751	9.249
Sudan	0.075	-0.013	0.062	-0.013	0.062	-0.013	0.062
South Sudan	0.130	-0.022	0.108	-0.022	0.108	-0.022	0.108
<b>Non-OPEC'ers</b>	<b>17.170</b>	<b>-2.636</b>	<b>14.534</b>	<b>-2.561</b>	<b>14.609</b>	<b>-2.486</b>	<b>14.684</b>
<b>TOTAL</b>	<b>43.853</b>	<b>-7.200</b>	<b>36.653</b>	<b>-7.125</b>	<b>36.728</b>	<b>-7.050</b>	<b>36.803</b>

This table lays out the deal agreed to yesterday. Saudi Arabia's voluntary cut will, however, reduce the total output figure for February and March by a million b/d.

Rather than leave quotas unchanged, the OPEC meeting yesterday ended with a more bullish message: an output cut of about a million b/d. The outcome was tied to a voluntary reduction offered up by Saudi Arabia. The table we detail to the left lays out the ratified figures and our oil balance model on P3 was updated to account for lower Saudi output in the next two months and very modest output increases afforded to Russia and Kazakhstan. The explicit goal of the modified quota scheme is to draw down oil inventories materially (which, in turn, is aimed at lifting crude prices and income levels). The cut was done as a "surprise" to make a point about the intent of OPEC's focus on managing oil storage to manage oil prices – a tactic applied since year 2000 when the goal then was to elevate average oil prices to the mid-\$20s (a goal most viewed as impossible). The consideration shown to Russia about its output levels for February/March seemed tied to winter demand needs more than anything else. We don't see the outcome portending an eventual quota share war, as some may be inclined to suggest.

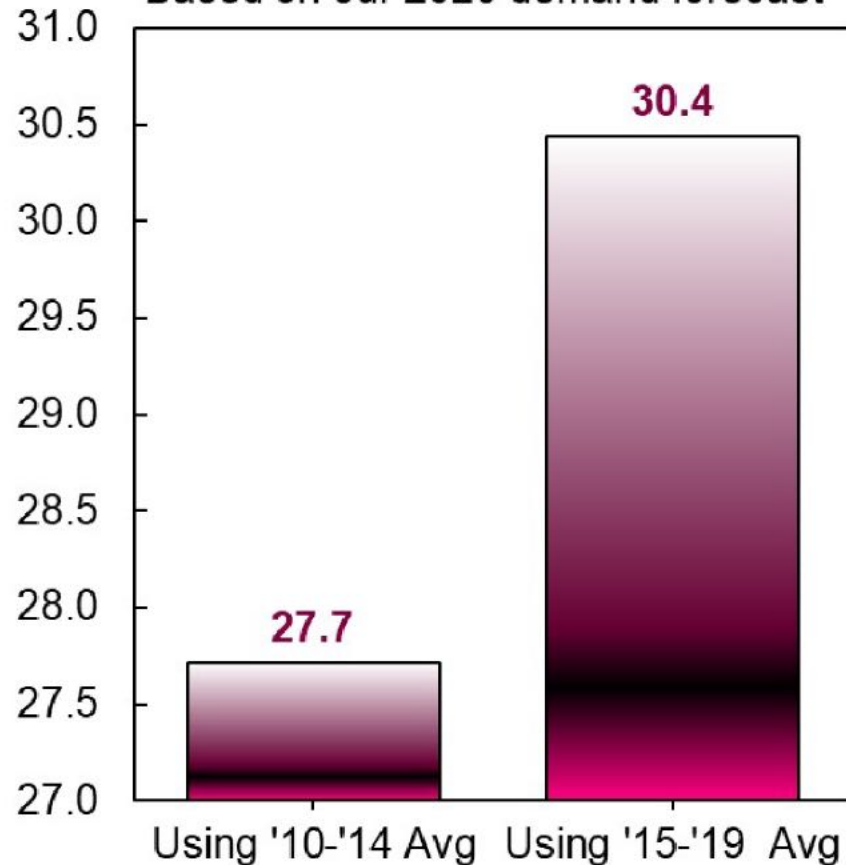
High conformity to quotas in the face of still lackluster oil demand portends significant draws on global storage given the less than robust response we see coming from non-OPEC supply – a view we think will end up being a critical storyline for the medium-term outlook. For the next quarter or two, the key uncertainty will continue to be the pace of the global economy normalizing.

**OECD Stocks**  
Comparison of averages, MM bbl



One of the discussion points in yesterday's post-meeting briefing centered on stocks. Specifically, Saudi Arabia's oil minister noted the 2016-2020 oil inventory average is not the right benchmark for oil storage comparisons. Rather, the 2015-2019 levels represent a more fitting range to assess pressures. He went on to make note in the Q&A that the previously identified 2010-2014 average is "too low" given how much demand had generally grown since that time. The point was lost on most as what the minister spoke to is really about storage on a "days of supply" basis – i.e. stocks relative to demand. The analyses we generated to the left focus on this point and, to be frank, the minister's remarks are fair. The bigger issue related to the point has to do with storage and its inverse relationship to oil prices -- the basis for our proprietary MIKER and MIKER2 models. The separate indications on this subject, though, suggest that the storage discussion did not signal a change in the goal of sharply elevating oil prices, a point that is buttressed by the math embedded in the recently released Saudi national budget for 2021.

**Stocks on a Days Supply Basis**  
Based on our 2020 demand forecast



**2021 Saudi Arabia's National Budget**

Disclosed Planned Expenditures.....	263.91	Bln \$
Legacy Welfare programs.....	65.00	Bln \$
<b>Total Actual Budget</b>	<b>328.91</b>	Bln \$
Projected Non-Oil Income (presumed).....	81.33	Bln \$
<b>Oil Income Level</b>	<b>247.58</b>	Bln \$
Projected Oil Exports.....	2.56	Bln bbl
<b>Implied Per Barrel Revenue</b>	<b>96.64</b>	\$/bbl

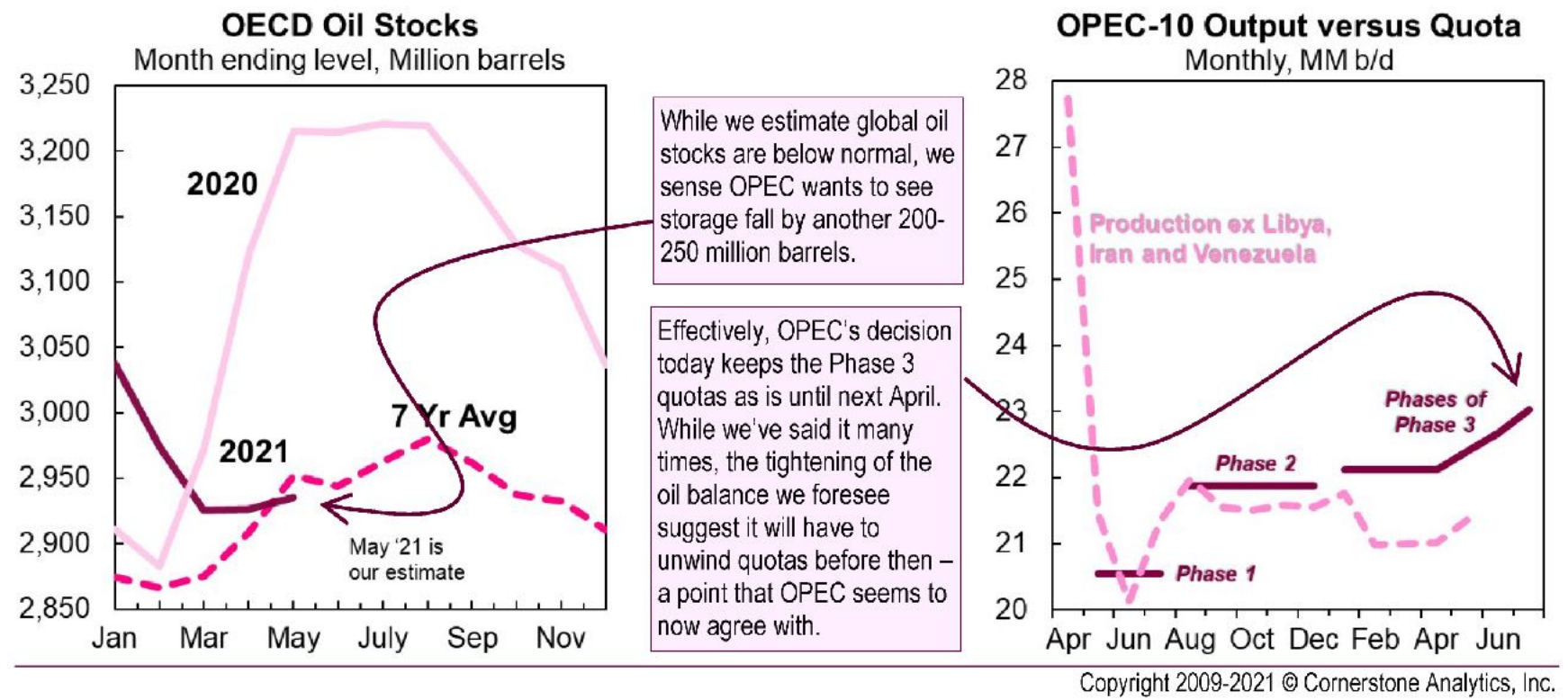






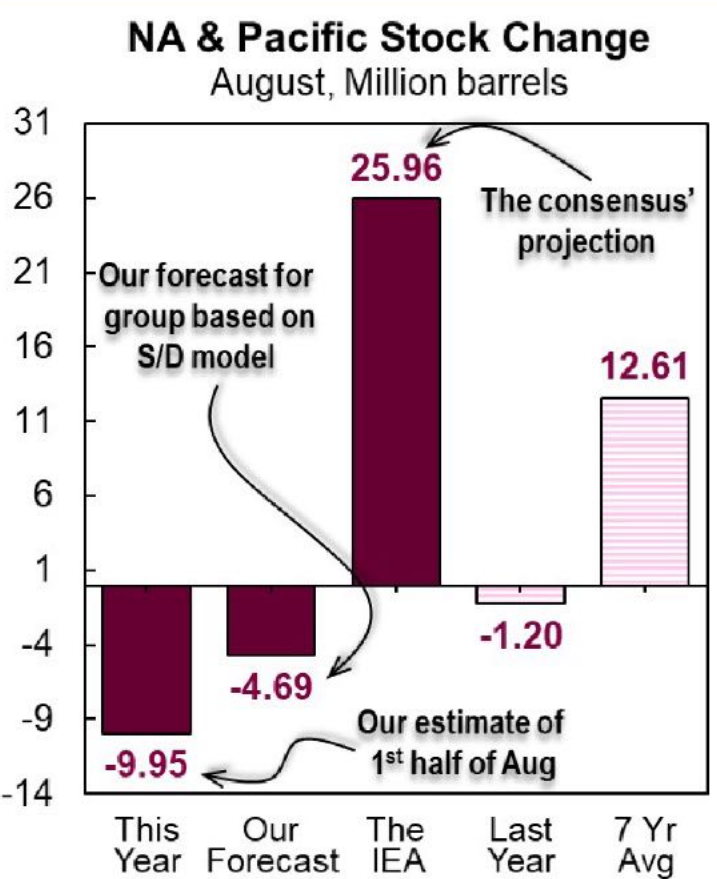
**STATUS QUO WITH SOME FLAVORING**

OPEC ended its meeting with a decision to maintain quotas as is and defer a decision about adjusting the production ceiling beyond what is already in place. While we rarely think of these meetings in terms of winners and losers, the *de facto* punt (which is supportive of higher oil prices) is a clear win for Saudi Arabia who was in no hurry to push any extra supply into the market too soon. The United Arab Emirates jockeying to have its ceiling raised was not made clear to market watchers regarding the underlying issue which had to do with an *anticipated* increase in market requirements for OPEC oil. More specifically, while there's a shared view about prospects for OPEC to need to unwind quotas further before next April, the UAE wanted to be able to eventually raise its output without its figure being considered a "cheat" – a topic that is more sensitive than most realize given the chastisement doled out previously by Saudi Arabia. If we were to put even more of a fine point on it, the UAE believes the oil market will in 2022 require OPEC to raise output to its collective production capacity – which would require an abandonment of output ceilings. In such a scenario, the Emirates feel that they should be afforded room to raise its production (when the time comes) above the baseline output figure used in the original April 2020 deal. In our view, it was a goofy move on the UAE's part to try and have that issue dealt with now which is why deferring any such decision is a "win" for Saudi Arabia. We cannot stress enough that the Kingdom is laser focused on seeing inventories drawn down further with the expressed intent of lifting oil prices (and income levels). As of our writing, a date has not yet been set for the next OPEC+ meeting – something we are not worried about. In a related sense, we are also not worried that the OPEC's production deal falls apart. There is a shared interest among participants in managing output to manage inventories to manage prices. Lastly, we will note that while there was plenty of optimism afoot about the outlook for the global economy to normalize (and with it oil demand to recover), Saudi Arabia is still hell bent about not pushing extra crude into the market until a further tightening of the physical oil balance takes place. It remains one thing for OPEC to "push" extra barrels into the market and quite another for OPEC to have demand "pull" extra supply from it.

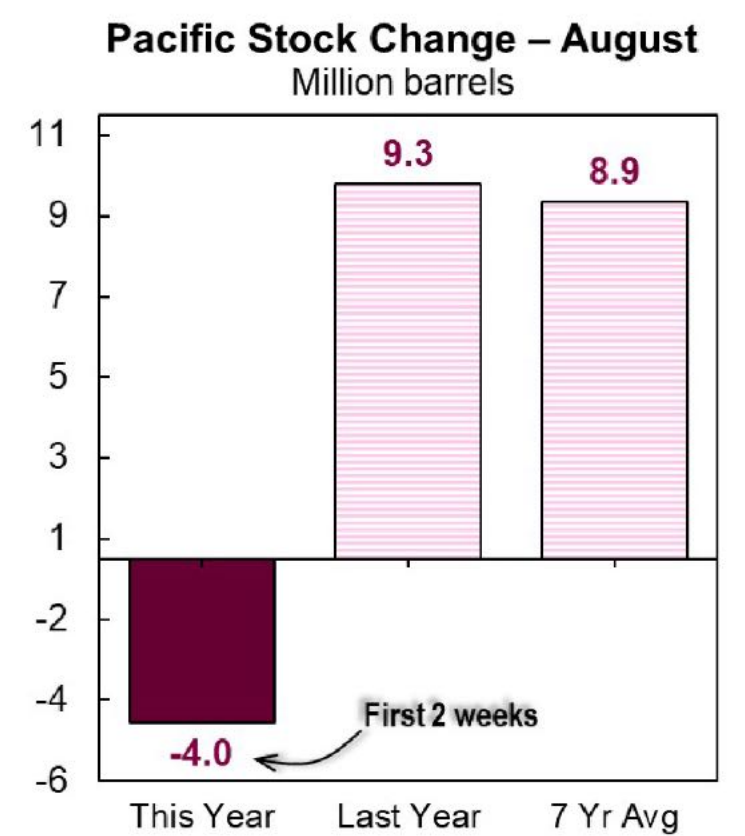
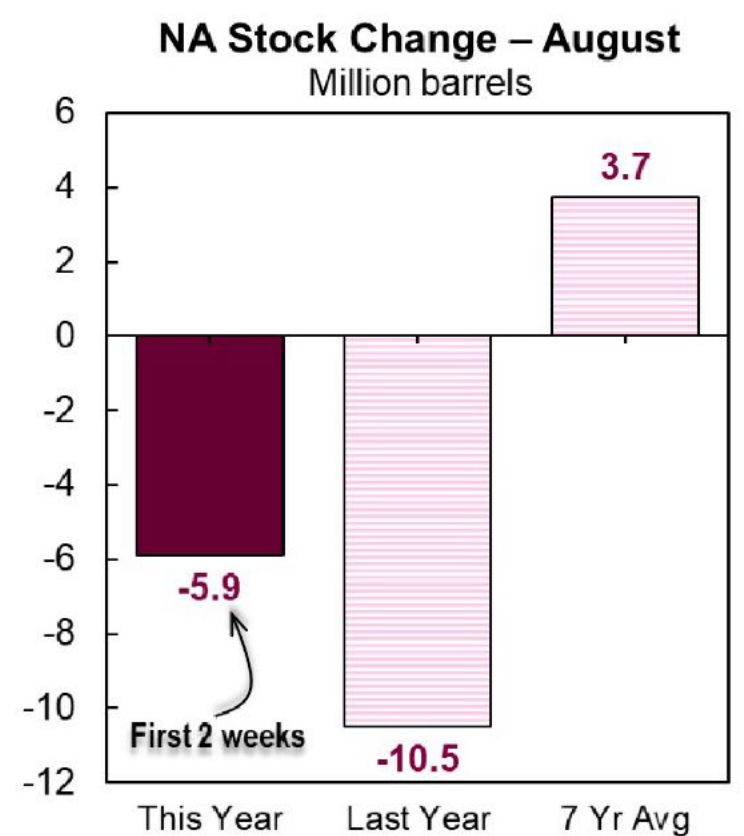




**AT SOME POINT, THE CONSENSUS NEEDS TO QUESTION ITS PARADIGM**



While preliminary, we estimate that the first half of August saw inventories in the OECD Pacific and North America regions collectively draw down by about 10 million barrels. The two regions account for 2/3<sup>rd</sup>s of the world's inventories and combined changes have a near-perfect correlation with changes in total OECD stocks (the proxy for global storage). Our estimated draw for the first two weeks of the month is larger than what our oil balance model forecasts for all of August, and it is sharply at odds with the consensus model that is projecting a 26 million barrel *build* for the two regions. We note that August typically sees a stock *build* of 12.6 million barrels, all of which is detailed to the left. While the oil market is still in the throes of concern about the 3<sup>rd</sup> wave of COVID derailing the global economic recovery, the data suggests that global oil demand is actually running stronger than our forecast – which we also saw during July.

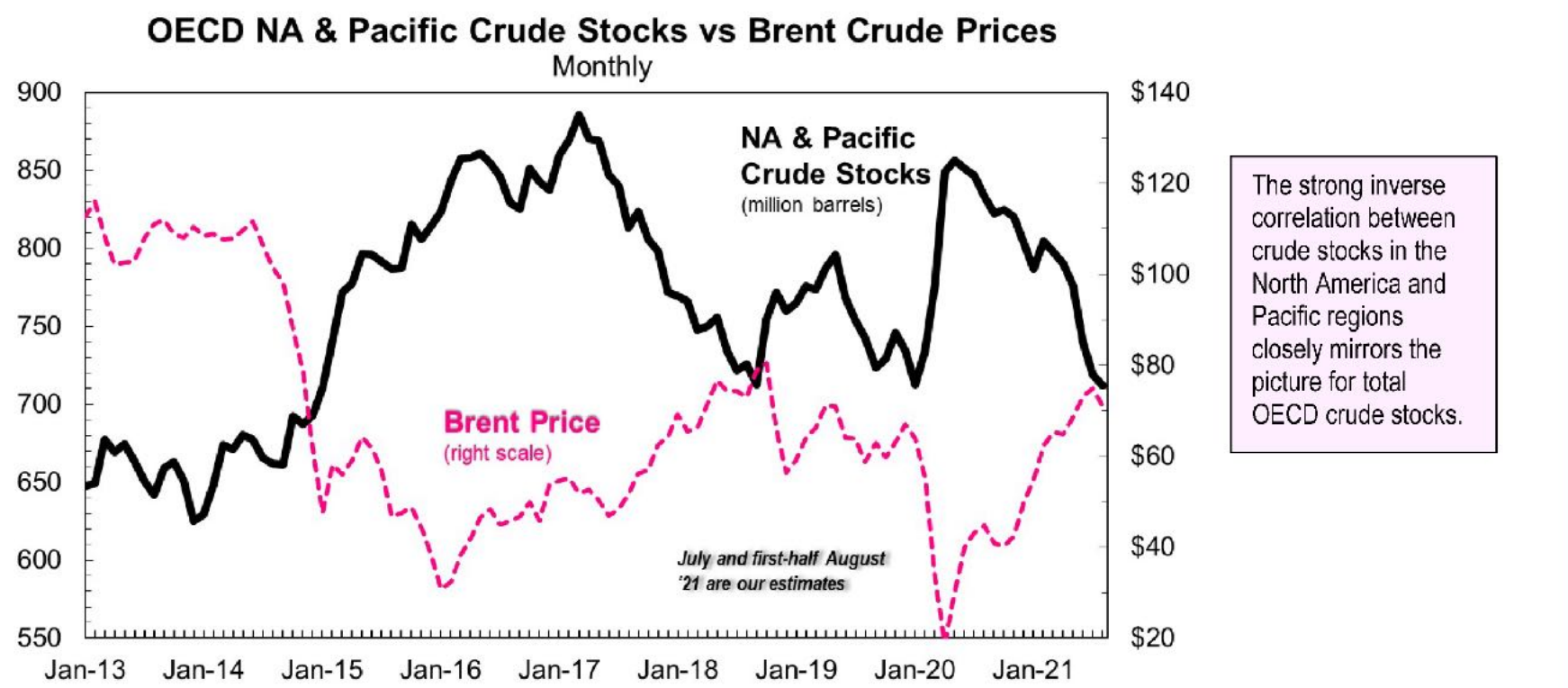


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**THE GAP BETWEEN PERCEPTION AND REALITY**

Oil prices at any given time reflect the collective perception of reality. At the same time, all supply and demand factors intersect at storage, specifically stocks in the OECD. This is the basis of the MIKER Model which has an R<sup>2</sup> of 80% (it regresses Brent crude prices as a function of total petroleum stocks in the OECD). Our MIKER2 model regresses Brent crude prices as a function of OECD crude stocks. The R<sup>2</sup> of 81.4% is higher than MIKER's and it's a simpler equation to work with – only one category (crude) without any refined products, pet-chems or bio-fuels. Today we introduce MIKER3 which regresses monthly average Brent crude prices as a function of crude stocks in the OECD Pacific and North America region. Not unexpectedly, the R<sup>2</sup> of 79.9% is notably high. Based on the end-July inventory estimate we generated, MIKER3 kicked out a "fair value" for Brent of \$81.73/barrel. Based on our estimate for mid-August (which is a subset of the estimate on the preceding page), MIKER3 kicks out a "fair value of \$83.78/barrel which is \$18/barrel above this morning's price.



The strong inverse correlation between crude stocks in the North America and Pacific regions closely mirrors the picture for total OECD crude stocks.

MIKER3 kicks out "fair values" for Brent crude that are very similar to that of MIKER2. Because we are able to get readings almost weekly (instead of monthly) there is some advantage to its use. The R<sup>2</sup> is impressively high for a one-variable explanatory model and in both cases (MIKER2 and MIKER3), the most recent "fair value" is substantially higher than the current Brent price reinforcing our view that the situation presents itself as another buying opportunity (which also applies to energy equities).

