**Macro Observations**

In July, oil and energy equities were roiled by global growth concerns. The concern is twofold: a potential endogenous slowdown caused by the peaking of the global economic cycle and the US / China trade war. In response, seventeen central banks have cut rates since May, including nine G20 countries (USA, Brazil, South Korea, Saudi Arabia, Russia, Turkey, South Africa, Indonesia, and India.) The ECB is expected to lower rates in September. In July, the IMF lowered its global growth forecast by 10 basis points for 2019 and 2020 to 3.2% and 3.5%, respectively. Importantly, the IMF still sees an acceleration into 2020, although this was before the escalation of the trade war in early August which could somewhat mute the recovery and potentially shave another 10-15 basis points off of 2020 growth. In response to the latest Trump trade tweets, fed futures now forecast a 100% probability of an incremental 25 bps cut from the US central bank in September. Central banks globally have been coordinated and proactive in their attempt to keep the expansion going. If the trade conflict is successfully resolved, there could be excess liquidity in the system. If the trade conflict continues, the increase in liquidity could inhibit a potential slowdown.

Concerns over a high dollar have also hurt sentiment around oil. The dollar has strengthened on the back of strong US economic growth and interest rate differentials. The correlation of oil with the dollar, however, is not stable through time and has a low R-Squared. From 1990 to 2003, the dollar and oil had a positive or neutral correlation. From 2003 to 2017, the dollar and oil had a negative correlation, which peaked around 2010 and then diminished. In 2018, the correlation became positive again, likely driven by the large fall in US crude imports and the US becoming the largest crude producer. While a strong dollar adds to negative sentiment, the supply and demand fundamentals are the ultimate drivers of the oil price.

The IEA's 2020 outlook for the oil market has had a very negative impact on sentiment. In 2020, the IEA sees 2.1mmb/d of supply growth and 1.4mmb/d of demand growth, suggesting that OPEC will need to lower production or, at the very least, continue their cuts. The IEA's forecast is very much skewed by an extremely high 'miscellaneous to balance' plug, which is currently 1.6mmb/d. The IEA claims that the market was oversupplied by 1.2mmb/d in 2018 ***and yet OECD inventories did not build***. This lack of accuracy in their forecast causes a calibration error which has carried over into 2019 and 2020 forecasts. The current situation is similar to what happened in 1998 when the IEA's high 'miscellaneous to balance' plug caused the General Accounting Office of the US Congress to investigate whether the IEA's forecasting artificially depressed the oil price. Moreover, the IEA's current forecast likely overstates global supply growth in 2020 by a factor of two. If this skeptical assessment of the IEA's forecast is correct, falling inventories and lower supply growth will ultimately force the IEA to lower their numbers. Current readings of both inventories and supply have begun to show a much tighter market than the general sentiment and what the IEA would suggest.

Leading edge readings of inventories show large drainage relative to consensus***. In the last six weeks, US crude inventories have fallen by 46mm barrels which is the biggest draw in a history of data going***

***back to 1982.*** When normalizing for hurricane Barry, crude inventories fell 36mm barrels in the last 6 weeks which would be the third highest draw in 1,914 readings (there are 1,914 six-week periods in the data) despite many hurricanes affecting the data over this long timeframe. The combined inventory draws for crude, gasoline and distillate ("the Big Three") in the last six weeks would registrar in the top 1% of draws in any 6-week period. Only when NGLs are added to the picture do the draws become more muted, as the natural gas companies have been producing a lot of liquids. NGL pricing has its own dynamic, which is why the Big Three are the most relevant for the oil market. It is still early to conclude definitively that we have a new positive trend, but the data is certainly encouraging. The current data suggests that the Saudi Oil Minister is correct in that we will see a substantial drainage of inventories over the coming months. The hypothesis that the Iranian export surge from the waivers obscured a tightening market could indeed prove to be correct.

US oil production growth has slowed dramatically in the last few months when looking at the numbers on a sequential basis. According to the EIA's weekly numbers, there has been no oil production growth in the last three months and only 400,000 b/d growth in the last six months, or 800,000 b/d annualized. According to the EIA's Drilling Productivity Report, tight oil will grow 49,737 b/d m/m into August which annualizes to 596,000 b/d. According to the same report, YTD shale oil has grown 356,000 b/d (through August) or annualized at 534,000 b/d. According to the EIA's monthly report (which is considered to be the most accurate report), US oil production fell from April to May by 26,000 b/d. From December to May it only grew by 71,000 b/d. Over the same December to May period last year, it grew by 487,000 b/d. When looking at 2018, the growth surge happened in Q3 and Q4 so the current production level still shows large y/y growth. When we get to Q4, the y/y comparisons become much more difficult. By Q4, growth looks set to fall from 2.0 mmb/d y/y last year to 0.5-0.8 mmb/d y/y this year. By the end of 2019, the market will likely show acute concern over the slow US production profile. Moreover, it will be difficult to show strong 2020 growth from such a decelerated position.

US production growth has slowed considerably thus far, but it looks set to decelerate even more. The oil field services companies anticipate an incremental slowdown of activity into 2H. According to the land drillers, oil rigs will likely fall 5%-7% into Q3 and then more in Q4. According to Schlumberger and Halliburton, frac spreads should fall an incremental 5% into Q3 and then more in Q4. It is very difficult for tight oil production to increase without an increase in fracking, so this dramatic slowdown is set to continue. In the Gulf of Mexico, the last large project sanctioned under high oil prices came on in late May (Appomattox operated by Shell and to add 175,000 b/d.) Next year, the Gulf of Mexico will move from a 125,000 b/d growth tailwind to a 75,000 b/d decline headwind according to Rystad Energy. Looking forward, we are unlikely to see the significant productivity improvements we have seen before for shale drillers as lateral lengths and sand loadings have been optimized. Without productivity improvements, an acceleration in the rig count and frac spreads is needed to support strong growth. However, low equity valuations are forcing the shale companies to give up on growth and focus on FCF and the return of capital to share / debt holders. Because of the FCF focus, IHS Energy now sees only 800,000 b/d of US oil growth for each of the next four years. ***This is about half of the current consensus outlook.***

Conventional oil production is set to decline once the last large projects sanctioned in the $100 oil world ramp over the next nine months. In particular, the Johan Severdrup field in Norway is set to add 440,000 b/d and a number of FPSOs in Brazil could add 300,000 b/d in a relatively short time frame. These additions, however, are on top of a base that keeps falling faster than expected. Both Norwegian and Brazilian production have fallen more than expected YTD before the coming project additions. In July, Petrobras trimmed its growth forecast by 200,000 b/d because of accelerating declines. This material change in outlook has not yet been incorporated by the IEA in their 2019 and 2020 numbers. Appomattox in the Gulf of Mexico just added 175,000 b/d and its impact is not being seen in the US production figures because of declines and slowing growth elsewhere. Furthermore, the OPEC+ cuts are likely masking declines in capacity for OPEC countries such as Angola, Algeria, and others. Schlumberger and Wood Mackenzie believe the underlying decline rate for world oil is accelerating, and despite the IEA's forecast, it is by no means clear that the last large projects will make conventional oil production grow in 2020. Beyond 2020, the outlook for conventional oil growth is dire. ***At some point in the next nine months, it is highly likely that the market transitions from a glut mentality to a scarcity mentality.***

While oil demand is notoriously difficult to forecast, it is unclear if it is about to accelerate or decelerate. The only place where the market sees real time oil demand data is in the US. For the month of March, US oil demand fell by 250,000 b/d y/y compared with the month of July when it was up 250,000 b/d y/y. This change alone leads to a decent global demand acceleration. US GDP is likely to accelerate into Q3 given the drag that inventory destocking had on Q2 GDP. Chinese oil demand is also likely to accelerate materially into Q3 and Q4 given that China holds the majority of underutilized refinery capacity globally and IMO 2020 will cause refinery runs to pick up. Basically, most of the global impact from IMO 2020 will show up as greater Chinese demand, likely more than offsetting weakness in China from the trade war and the economic cycle. The Asian currency crisis caused a global slowdown in demand of about 400,000 b/d. The IEA has already revised annual demand growth for 2019 down by 200,000 b/d, and more revisions will come automatically given the IMF's updated global GDP forecast. Whether the current demand slowdown is greater than that of the Asian currency crisis remains to be seen. Moreover, the demand pickup from IMO 2020 could ultimately overwhelm any economically driven demand weakness. Most importantly, downward supply revisions are likely to be much greater than downward demand revisions. The current hysteria concerning weak oil demand is exaggerated.

The energy stocks have been pummeled in a manner that defies all rational explanation. Cyclicals and small cap stocks are out of favor and have negative momentum but the current situation with energy stocks is beyond extreme. The XOP is at the same level it was at the bottom of the Great Financial Crisis and in February 2016 when Brent was $27. Smaller cap companies are even lower. Given that the majors are trading close to historical multiples, the weakness in the E&P sector cannot be explained by global warming concerns. The most similar comparison to today is during the Asian financial crisis when the OSX dropped 60%, only to make a complete recovery in a year after reaching bottom. In this cycle, the low stock valuations are forcing the E&P companies to curtail growth in the only region that has seen a material production increase in the last decade. Without US tight oil growth, it is hard to dispute that a severe oil supply crisis would have already materialized. Today, it makes much more sense for the E&P companies to produce FCF and pursue buybacks than it does for them to drill wells. An E&P

company could make 400% or more from buying back their stock versus 35% from drilling. The focus on FCF is one of the main causes of the slowdown in US production growth, along with the peaking of productivity improvements. This new focus on FCF will also cause the companies to be slow to return to growth when the oil price eventually increases. Valuations will need to go up by multiples before the growth spigot is turned back on in earnest. The only good news in the devastation is that the seeds of a recovery are being sown.

Fear of President Trump is the dominant influence on oil and energy equities. The main fears are that his trade war could tip the global economy into recession or that he could return Iranian barrels to the market. The consequences of both of these would be enormously negative, and the equities are already discounting something close to the worst. The recent inventory draws have been extreme, but the oil market has largely ignored them. Similarly, the slowdown in US production growth is now fairly obvious, but it is also being ignored by the oil market. The fear of Trump is having consequences. Oil inventories will likely drain to levels lower than expected. US production will likely slow more than expected. E&P companies will be slow to react to higher oil prices because their stock prices are too low. Equity valuations no longer represent the current oil price because that oil price is seen as unsustainable. For company multiples to expand, the oil price needs to go higher and stay higher. Ultimately, the market will conclude that US supply growth needs to accelerate and, when that happens, the E&P stocks will be multi-baggers. In the meantime, the likelihood that the oil market ultimately resolves itself with a price spike is increasing as the market overtightens.