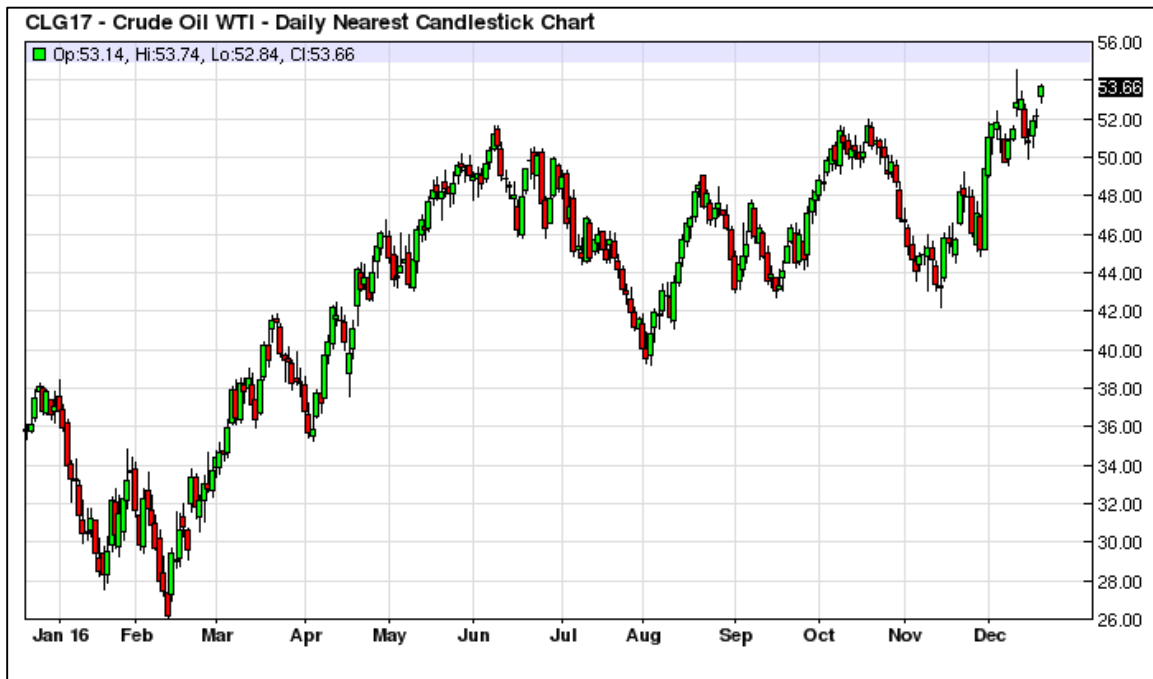


December 30, 2016

The Market

Oil prices have broken above their \$44 to \$52 per barrel trading range in the wake of the recent OPEC output agreement.



(Source: Barchart.com)

OPEC

In a reversal of recent policy, Saudi Arabia spearheaded an agreement to cut oil production. OPEC has agreed to cut production by about 1.3 mbpd and select non-OPEC producers have chipped in additional reductions of 0.53 mbpd as well. The total OPEC output quota is 32.7 mbpd.

The table below shows the projected cuts relative to what OPEC said it was producing (the reference column) and what Bloomberg estimated for October's actual production. We have calculated the differences relative to quota from the two production estimates. The areas in yellow represent nations that were not awarded a quota. Indonesia is no longer an oil exporter, while Nigeria and Libya were not given a quota due to persistent production interruptions.

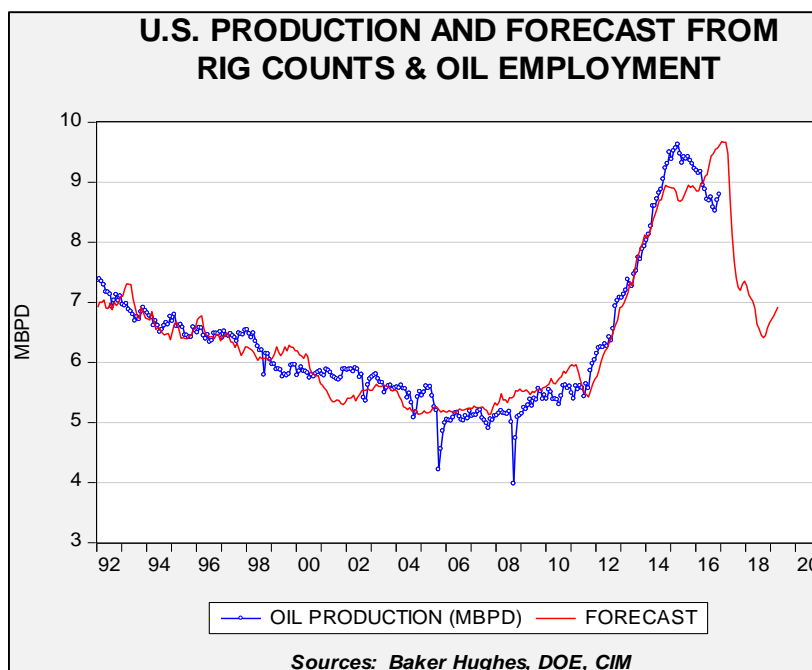
	Oct/Bloom	Reference	Quota	Chg/Bloom	Chg/Ref
Algeria	1.110	1.089	1.039	0.071	0.050
Angola	1.500	1.751	1.673	-0.173	0.078
Ecuador	0.560	0.548	0.522	0.038	0.026
Gabon	0.200	0.202	0.193	0.007	0.009
Indonesia	0.740	0.740	0.740		
Iran	3.680	3.975	3.797	-0.117	0.178
Iraq	4.590	4.561	4.351	0.239	0.210
Kuwait	2.960	2.838	2.707	0.253	0.131
Libya	0.520	0.520	0.520		
Nigeria	1.670	1.670	1.670		
Qatar	0.620	0.648	0.618	0.002	0.030
Saudi Arabia	10.580	10.544	10.058	0.522	0.486
UAE	3.110	3.013	2.874	0.236	0.139
Venezuela	2.180	2.067	1.972	0.208	0.095
sum	34.020		32.734	1.286	1.432

(Sources: OPEC, Bloomberg, CIM)

Complete compliance is never part of OPEC agreements. However, the Gulf States usually comply which means that 1.0 mbpd of production, at a minimum, will come off the market compared to October production. That, by itself, would balance the market, assuming the IEA's 97.5 mbpd of total demand next year. If there is even modest compliance from the other OPEC nations and non-OPEC participants, the world will have a net deficit and begin to draw down the considerable inventory overhang.

Slowing U.S. Production

U.S. production has been affected by the drop in oil prices that began in 2014.

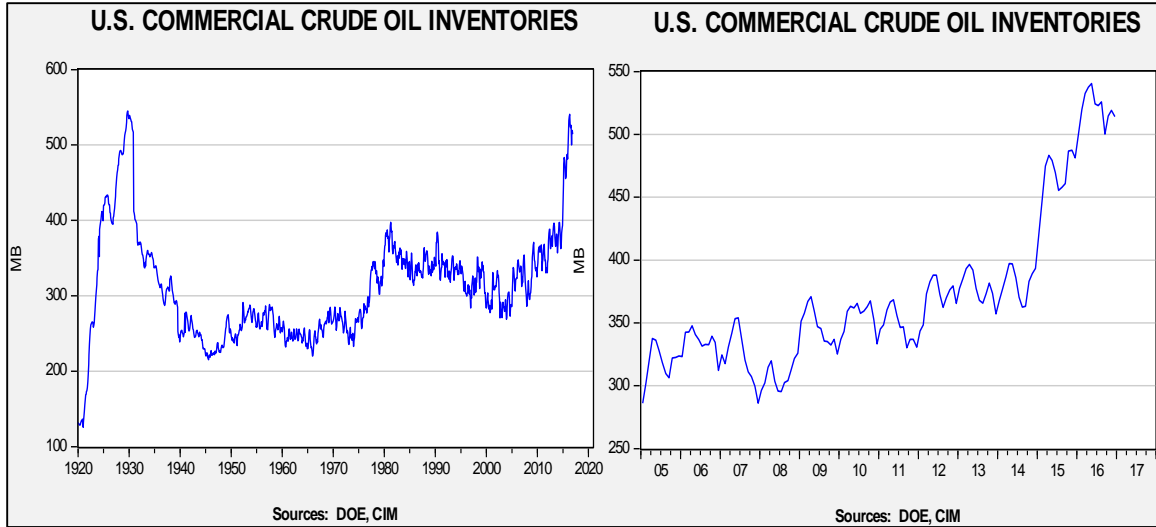


The above chart shows U.S. oil production along with a model forecast that uses oil rig counts and oil industry employment as independent variables. In the past, oil production has tended to work with rather long lags and, based on the traditional relationship, production should decline sharply in 2018. We have our doubts about the reliability of this model. Shale production seems to have shortened the lags between price changes and production. Note that production has already started to rise. The traditional model suggested that production should not have declined already. Thus, we may have already seen the worst of the declines and output could rise to fill part of the gap OPEC has created, especially in a supportive regulatory environment.

The model does suggest there could be some lingering supply pressure in the U.S. and perhaps that is what OPEC is counting on to protect market share. However, we have doubts that production will decline next year and may continue to recover. This recovery probably isn't enough to drive prices lower in the short run, but it may prevent oil from moving above \$60 per barrel.

Prices and Inventories

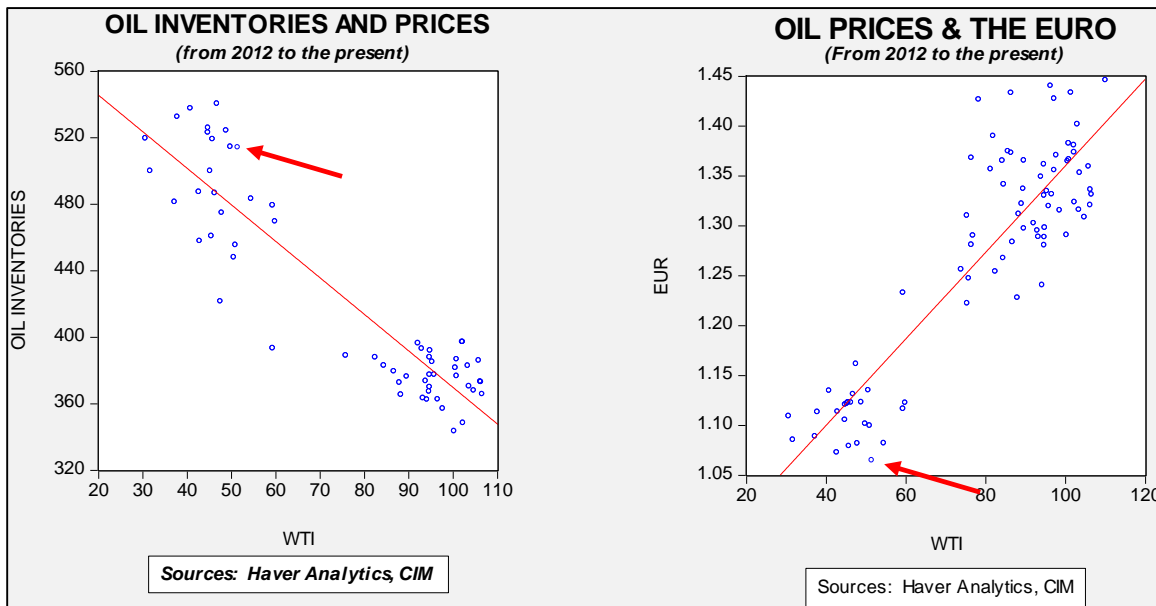
Inventory levels remain elevated but are off their historic highs.



The chart on the left shows the long-term inventory situation, while the right chart shows a 12-year history. Normal inventories would be below 400 mb, so stockpiles remain elevated.

Oil Prices

Since 2012, oil prices have closely tracked the dollar and U.S. commercial crude oil inventories. In fact, they are tracking closely enough to be nearly collinear.



Both in terms of inventory and the dollar, oil prices are overvalued. Essentially, fair value is in the low \$40s or high \$50s. Clearly, the current market price is forecasting a major decline in inventories; our euro/inventory model, assuming a €/ \$ rate of 1.0437, means the current price has discounted oil inventories of 360 mb, a decline of 154 mb. That would take about three million barrels per week to reach this level over a year.

Oil Summary

In the past, OPEC usually manages a price range. The breakout as shown in the price chart on the first page suggests a new range is being established. For the next few months, a range of \$45 to \$55 per barrel is reasonable. If OPEC does manage to cut output, the range will likely hold. However, given the strong dollar and high stockpiles, any evidence of inadequate compliance leaves the market vulnerable to a decline to the low end of the range, at a minimum.

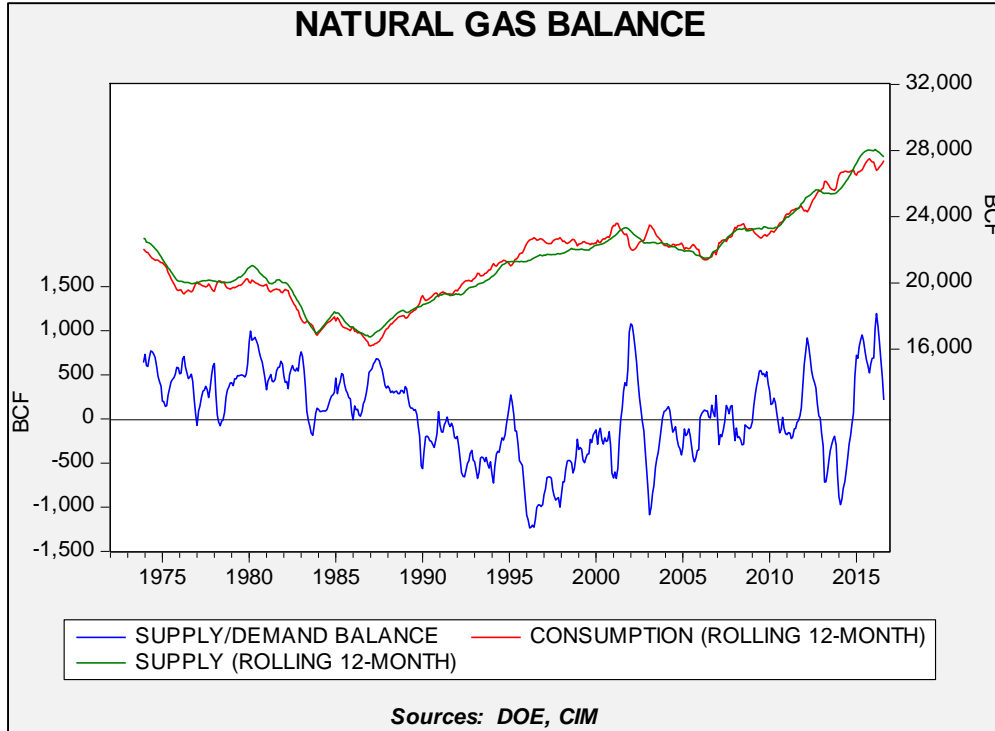
Natural Gas

Since bottoming last March, natural gas prices have been rising, supported by a hot summer. Price volatility has been elevated over the past two months due to rather wide temperature swings. November was rather mild but December has been cold. We are in the time of year when prices can move violently due to temperature changes.

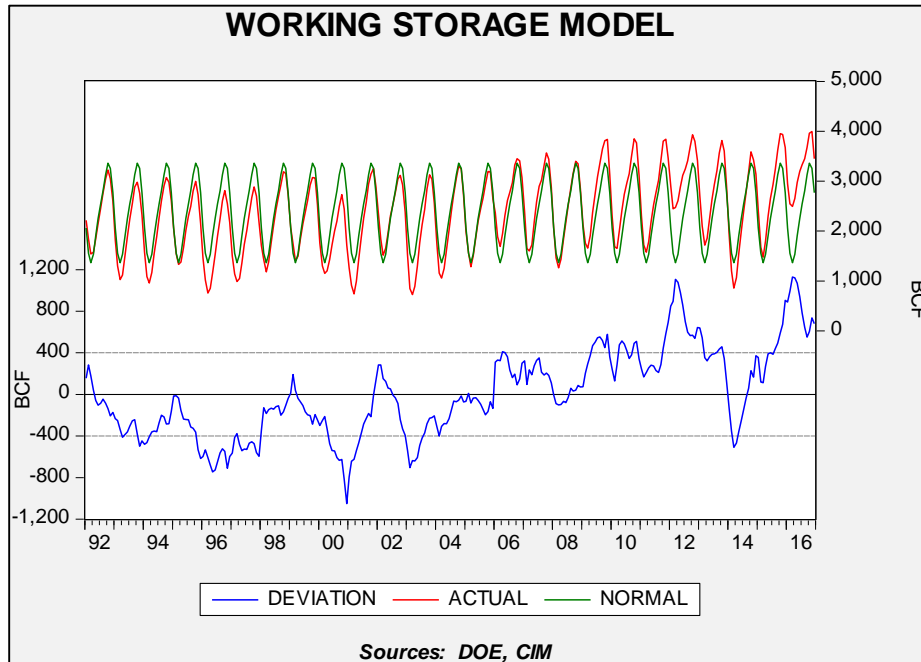


(Source: Barchart.com)

The balance of natural gas supply and consumption is improving.



This chart shows the rolling 12-month supply (production + net imports) and consumption with the balance on the lower part of the graph. Supply has exceeded consumption for most of the past two years but is steadily coming back into balance. A deficit balance would help reduce the current supply overhang.



Inventory levels remain quite elevated. The above chart shows seasonally adjusted working natural gas storage. We are currently on pace for a normal storage withdrawal this winter. If that is the case, we will still have an overhang by the start of the inventory injection season, which begins in March. However, it should be significantly less than last year's overhang and should support prices around \$3.000 per MMBTU in the spring. The current spring futures prices are about 20 cents higher, suggesting the market is still expecting (hoping?) that cold weather will lead to a larger inventory decline. However, longer term weather forecasts don't support that notion. Thus, we may have seen the strongest prices of the winter.

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