



BULLETIN | March 18, 2016

Rebalancing Oil Supply

Oil Facts:

- During 2015 global oil consumption approximated 94.4 million barrels of oil per day (b/day).
- World production of oil in 2015 was 96.4 million barrels of oil per day.
- For 2016 demand is expected to be 95.6 million barrels per day¹ while supply is estimated to be 96.5 million barrels per day.
- OECD (Organization for Economic Cooperation & Development) oil inventory grew by about 250 million barrels in 2015 taking inventory to 3 billion barrels.
- World oil demand has been growing at an annual rate of 1.2 million barrels per day in 2016².
- The decline in the price of oil has forced US oil industry investment down by 70% and is forcing production to decline sharply.
- World oil inventories grew in 2015 by 250 million barrels (around 0.7 million b/day) more than expected.

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What will it take to turn this oversupply around and bring world oil inventories back to normal levels?

Why the Over Supply?

US shale/fracking is the main cause of global oversupply. US onshore oil production peaked in November 1970 at just over 10 million barrels per day. Production declined steadily until September 2005 when it hit 2.9 million barrels per day. Since then, US onshore oil production rose to a new high of 7.65 million barrels per day in April 2015³. This increase is due to the fracking of shale oil. There are a lot of moving parts to the oil supply and demand equation, but if you distill everything down, this increase in US onshore oil production has led to the global imbalance.

¹ International Energy Agency (IEA) estimate.

² Source: IEA. Note that in 2015 this annual growth rate was 1.8 million barrels per day. Long term, the annual growth rate approximates 1 million barrels per day.

³ These figures are from the Energy Information Administration.



Saudi Arabia is cited as the prime mover in the collapse of the price of oil, as they announced in November 2014 that they were not going to cut production to defend the price. This may have been the catalyst to the decline, but the fundamental issue of oversupply was already in place.

Getting Production and Demand Back in Balance

As stated, world oil demand is growing at an annual rate of 1.2 million barrels per day, or a 100,000 barrels per day increase in demand per month. World oil inventories grew by 700,000 barrels per day in 2015. All things being equal, meaning no changes in global production, the oversupply would be eliminated in seven months as a result of demand growing. Not surprisingly, all things aren't equal.

The oil price decline is causing a sharp decrease in US onshore oil production. We estimate a monthly decline rate of 80,000 barrels per day, or an annual decline rate of about 1 million barrels of oil per day.

This may be an underestimate, as the November to December 2015 decline was nearly double this amount.⁴

What about other oil producing countries? Following the lifting of economic sanctions on Iran in 2015 the Iranian oil supply has been increasing and we believe will result in a net increase of 500,000 barrels of oil per day in increased production. We expect Iraq, which increased production in 2015, to have no growth in production in 2016. Libya is a bit of a wild card, as political strife has kept production below capacity. We believe Libya has the potential to increase production by about 400,000 barrels per day.

As for the rest of the world, let's assume OPEC (Organization of Petroleum Exporting Countries) and the rest of the world has no change in production, which is reasonable assuming OPEC is producing at near capacity. The rest of the world may actually see a decline in production as many older fields, e.g., the North Sea, are in long term decline.

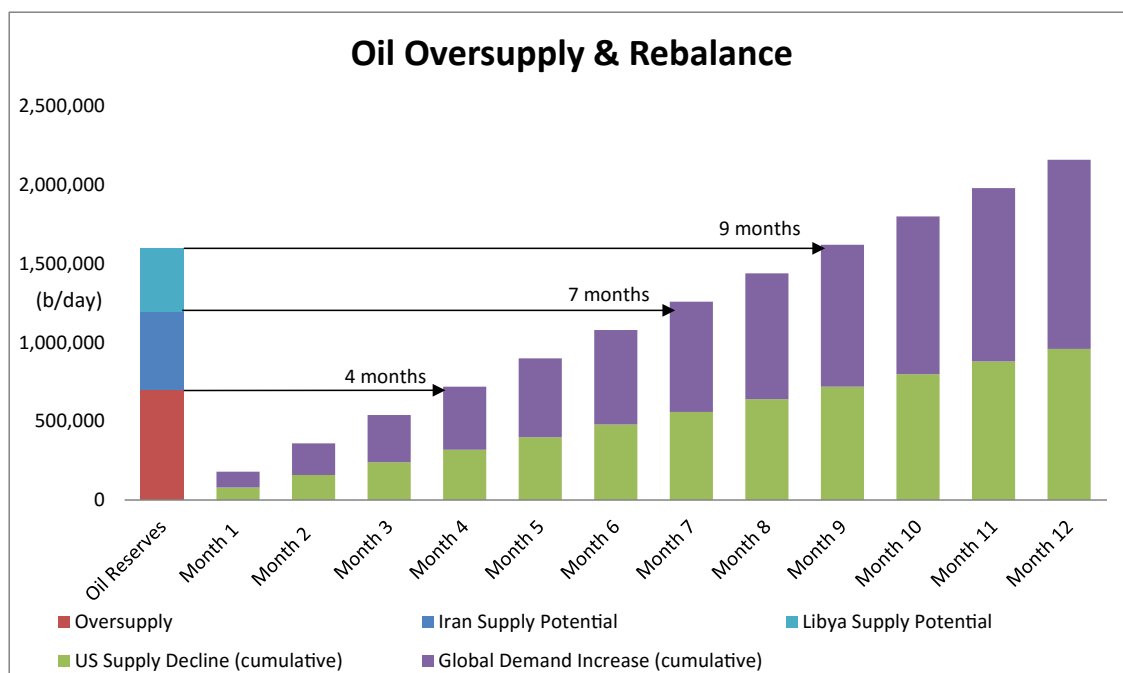
⁴ Source: EIA. Note that the most reliable EIA statistics are released at least two months in arrears



Adding It All Up

To summarize:

- The annual rate of oversupply is 700,000 b/day (*i.e.*, how much inventories have grown)
- Demand is growing at a monthly rate of 100,000 b/day.
- US oil supply is declining at a monthly rate of 80,000 b/day.
- Removing 180,000 b/day every month from the oversupply, means the imbalance will continue for approximately four months.
- Assuming that Iran increases production by an annual rate of 500,000 b/day, the 180,000 b/day oversupply would last for about an additional three months.
- If Libya were to reach its potential it would mean an additional 400,000 b/day which adds an additional three months or so to the imbalance.



Source: Guinness Atkinson Asset Management

The Storage Question

What about the three billion barrels in storage? As it turns out, three billion barrels in storage is not an excessive level of storage, at least when measured against the long term average of 2.7 billion barrels. It will take some time to normalize this surplus, but, historically the peak in inventories has coincided with the trough in oil prices.



US Shale/Fracking Response to Higher Prices

It is safe to assume that any oil price recovery will lead to increased oil production. For non-shale production, the lead times are measured in years. Shale wells are much quicker from drilling to production, and these wells tend to experience very high initial production declines and tend to be largely exhausted in a couple of years. Additionally, there are some logistics around the process including financing, permits, hiring workers, etc. Typically, changes in production lag changes in the rig count by about six months. When the rig count began declining in late 2014, it took over six months for there to be any impact on production. Our view is that as the oil price recovers, it will take six to 12 months for the US shale industry to begin to meaningfully increase production. A leading shale oil developer recently highlighted that it would take eighteen months for the US oil industry to increase production by 500,000 barrels per day, even allowing for a \$65 per barrel oil price.

Saudi Arabia

It can reasonably be asked why Saudi Arabia doesn't solve the oil imbalance by simply reducing their own production by, say, 10%. Such a move seems to be in their best interest, as the price of oil would move up more than 10% and they could significantly increase their total revenues by selling less. We believe the main reason they don't cut production is that they worry that such a move will be ineffectual, as US shale production will simply fill the gap. Further, their strategy likely is meant to send a very strong message to the US shale industry that unbridled growth won't be tolerated. US oil producers cannot act in concert, but oil entrepreneurs and those that finance them will likely be more cautious going forward and that would mean that Saudi Arabia will partially achieve their goal of getting a stronger handle on the supply.

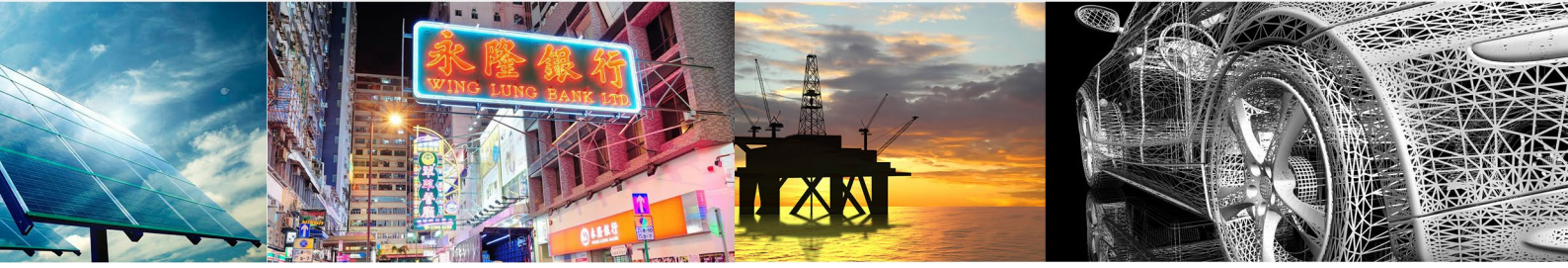
Summary

We expect the oil price to recover once the imbalance is eliminated. Depending upon the factors discussed here, we expect that the oil supply to be balanced sometime before the end of the year.

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