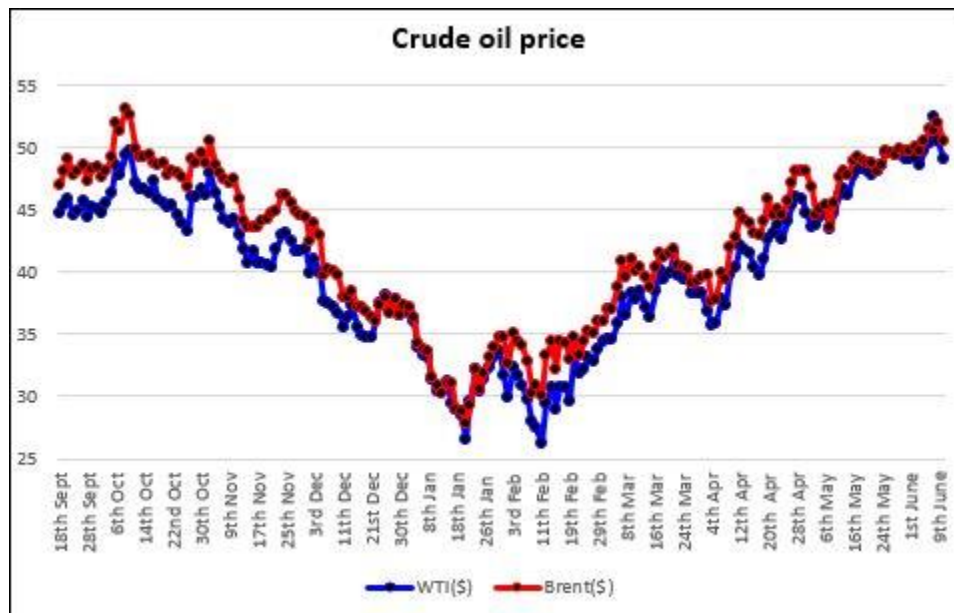


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Calgary, Canada

Some of the news items for this week are as follows:



- This week the price of the barrel fluctuated between \$49 and \$55.
- As the price of the barrel is gradually limping its way up, and especially as it is crossing the \$50 mark, some the shale drillers are scrambling to complete many of their unfinished oil wells. The latest company in the news for doing this is Continental Resources based in Oklahoma City. This is the first step. As the price of the barrel crosses the \$60 mark, it would become profitable for many oil companies to go ahead and drill fresh shale wells. The price increase will also help end the wave of bankruptcies among shale producers. The latest company to file for bankruptcy protection last week was the Oklahoma-based Seventy Seven Energy. The company has \$1 billion in debt.
- The US dollar also dropped to a 5-week low. The disruption in Nigeria due to militant groups blowing up pipelines has taken away 1 mb/d out of Nigerian supply to the market, bringing it to the country's 20-year low output. China's crude oil imports in May became the highest in six years and thus supported the oil prices.
- Last week Saudi Arabia unveiled the details of the first phase of their National Transformation Plan (NTP), which aims at reducing the country's reliance on oil exports and prepares for millions of young people who will be seeking jobs, and affordable housing in the future. The main focus of the plan is creation of 450,000 new jobs outside of the public sector by 2020, as well as reducing the expenditure on public sector by 40-45% of the state budget. At present 70% of the Saudis work in the public sector and \$120 billion goes to their wages, salaries and allowances. Saudi Arabia has an unemployment rate of 11.7%. The plan aims to reduce the unemployment rate to 7 % by 2030, and has also set a target of raising non-oil state revenue from \$43.7 billion

to \$530 billion by 2020. For achieving this, the non-oil exports will be increased by \$145 billion, the direct foreign investment in the country will be increased to reach \$17.7 billion, and energy and water subsidies will be reduced by \$53 billion.

Because of the recent circumstances, Saudi Arabia had to draw its foreign reserves from \$728 (at the end of 2014), which has now reduced to 572 billion (in April 2016).

- The low cost of gasoline at the pump has encouraged people to buy new cars, which in turn has led to increase in oil consumption. The US gasoline demand is set to average 9.3 mb/d this year. Such increased consumption growth is seen in China as well. Many analysts opine that such overall increase in consumption is setting a rebalance of the demand and supply a bit faster.
- Petrobras now produces 40% of its production from fields that produce from below the salt. The two important fields that account for this pre-salt production are in the Santos and Campos basins. The fields were discovered in 2006, and in July 2014 were producing 500,000 b/d. Petrobras has been able to achieve this production by drilling 52 production wells. Pre-salt production is now Petrobras' main focus of investment.

So much for the industry news this week.

For the lighter side this week

You are perhaps aware that the future of road transportation is in self-driving cars and autonomous vehicles. *Autonomous vehicles* is a general term which encompasses vehicles that are user-driven or driverless. Self-driving car refers to a car with features that allow it to accelerate, stop or manoeuvre with very little or no driver interaction. Cars that travel on roads from one place to another observing the travel norms with some interaction of a human driver may be termed as semi-autonomous. Fully-autonomous cars may be user-operated or driverless. The former are being tested these days by different automakers and other companies, but the latter may be long ways off. More and more vehicles are being fitted with capabilities that can make them take intelligent decisions aiding driving and safety. Apart from this nomenclature, self-driving cars are being tested in pilot programs undertaken by companies such as Volvo and Google. Uber, China's Baidu and Apple are working on self-driving technology. Automakers General Motors, Daimler, Ford, Jaguar, Audi, BMW, Mercedes and Tesla are also developing such technology. Self-driving cars require sensitive sensors around them and advanced computer vision systems that can process that information to quickly make driving decisions.

The sensors include Lidar (Light detection and ranging) – a rotating laser that is mounted on the roof of the vehicle and continuously scans the areas around it. Cameras, accelerometers, gyroscopes, GPS' and traditional radar for detecting distances to different objects are also used together to build a 3D picture around the moving vehicle. Besides requiring the software that quickly processes all this information, distinction between the objects in the surroundings of the moving car also has to be made, and appropriate driving decisions also need to be taken. At present four US states (Nevada, Florida, California and Michigan) and Washington DC have allowed testing of driverless cars. Similar efforts are underway in many European countries (UK, Belgium, France, Italy)

The cost of equipment being used in such cars could make such cars expensive and could be a discouraging factor initially. Such costs will need to come down to make them come on mainstream.

Regulations for allowing self-driven cars on roads will need to be clarified. The advantages of having self-driving cars include

1. Avoiding accidents caused by human error.
2. No constraint on age or impaired state of human drivers.
3. Reduction in the need of traffic police.
4. And more could be added to the list.

But before we get to that point there may be many obstacles that would have to be overcome, which will range from insurance of such vehicles, resistance of drivers to hand over control of their vehicles and many other unprecedented aspects which will need to be addressed as they come up.

Based on public opinion surveys, consumers are open to the idea of self-driving cars, but not ready to pay more; some individuals are not ready to give up control and the pleasure of driving of their cars; some are concerned about software misuse/hacking or malfunction of equipment that could result in legal and safety issues.

We may see self-driving cars on the roads in the next 5 years in many countries, and so let us get mentally prepared to receive them. Imagine a situation where you would be hiring a self-driving taxi to go to the airport, before you go on a vacation.

This is coming ...

Did you know?

A group of twelve or more cows is called a *flink*. We are aware of the term 'herd' that we use for cattle, but this word exists as I stumbled upon it recently. There were 1.3 billion cows in the world in 2014.

I hope you find these interesting.

So much for this week! Till the next post, stay safe and happy!