FIPI

September 2018

Policy & Economic Report - Oil & Gas Market

Federation of Indian Petroleum Industry (FIPI)

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Policy & Economic report – Oil & Gas market

Economy in Focus

IMF worries that the world economy is at the risk of another financial crash

The failure of governments and regulators to push through all the reforms that are essential to protect the system has put the world economy at risk of another financial meltdown. A global panic could very well be created due to pending risks in the unregulated parts of the financial system and global debt levels above those of the last crash of 2008.

IMF highlighted the major causes of this concern to the dramatic rise in lending by the "shadow banks" in China and the failure to impose tough restrictions on insurance companies and asset managers which handle trillions of dollars of funds.

The total value of global debt in both the public and private sectors has rocketed by 60% in the decade since the financial crisis to reach an all-time high of $182tn (£139tn). Essentially, the build-up of this debt comprised of developing economies and companies more susceptible to higher US interest rates which could trigger flight of funds and render the economies unstable.

What a $100 oil would mean for the global economy

Oil at $100 would mean less for global growth in 2018 than it did after the 2011 spike. This is mainly due to the fact that now economies are less reliant on energy and the shale revolution cushioning the US.

While higher oil prices would definitely impact household incomes and consumer spending, this would vary from region to region. With most of the region's countries being oil importers, Europe is vulnerable to the impact. Inflationary pressures can be expected in China with it being the world's largest oil importer.

With winter approaching in the northern hemisphere, seasonal effects also have to be considered. Consumers can switch energy sources to keep costs down just the way Indonesia has already introduced measures to push more use of biofuels and limit the country's dependence on imported fuel.

The biggest winners from higher oil prices are obviously the oil-producing nations which are emerging economies. With net oil production that's almost 21 percent of gross domestic product as of

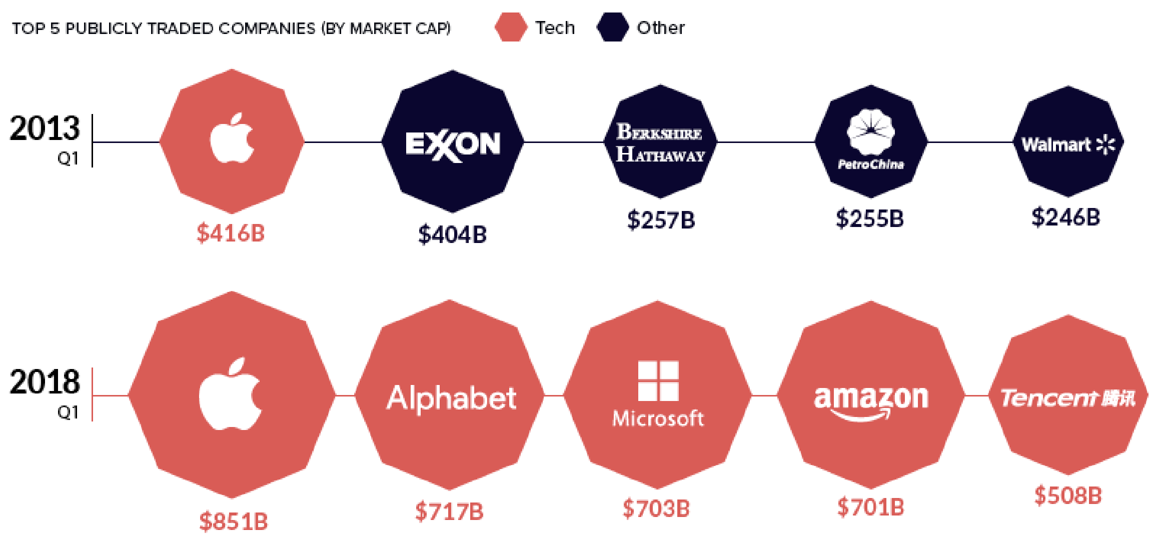
2016 – more than twice that of Russia, which is the next among 15 major emerging markets ranked by Bloomberg Economics, Saudi Arabia leads the way. The other winners include Nigeria and Colombia. With increasing revenues, budget and current account deficits will be repaired, allowing governments to increase spending that will spur investment.

Needless to say, that the losers of this game would be countries like India, China, Taiwan, Chile, Turkey, Egypt and Ukraine. Shelling out more for oil will put pressure on the current accounts and make economies vulnerable to rising US interest rates.

For the world's biggest economy, increasing oil price pose a lot less risk to the US than it used to, thanks to the shale oil production.

Forces shaping the future of the global economy

(a) The Tech Invasion

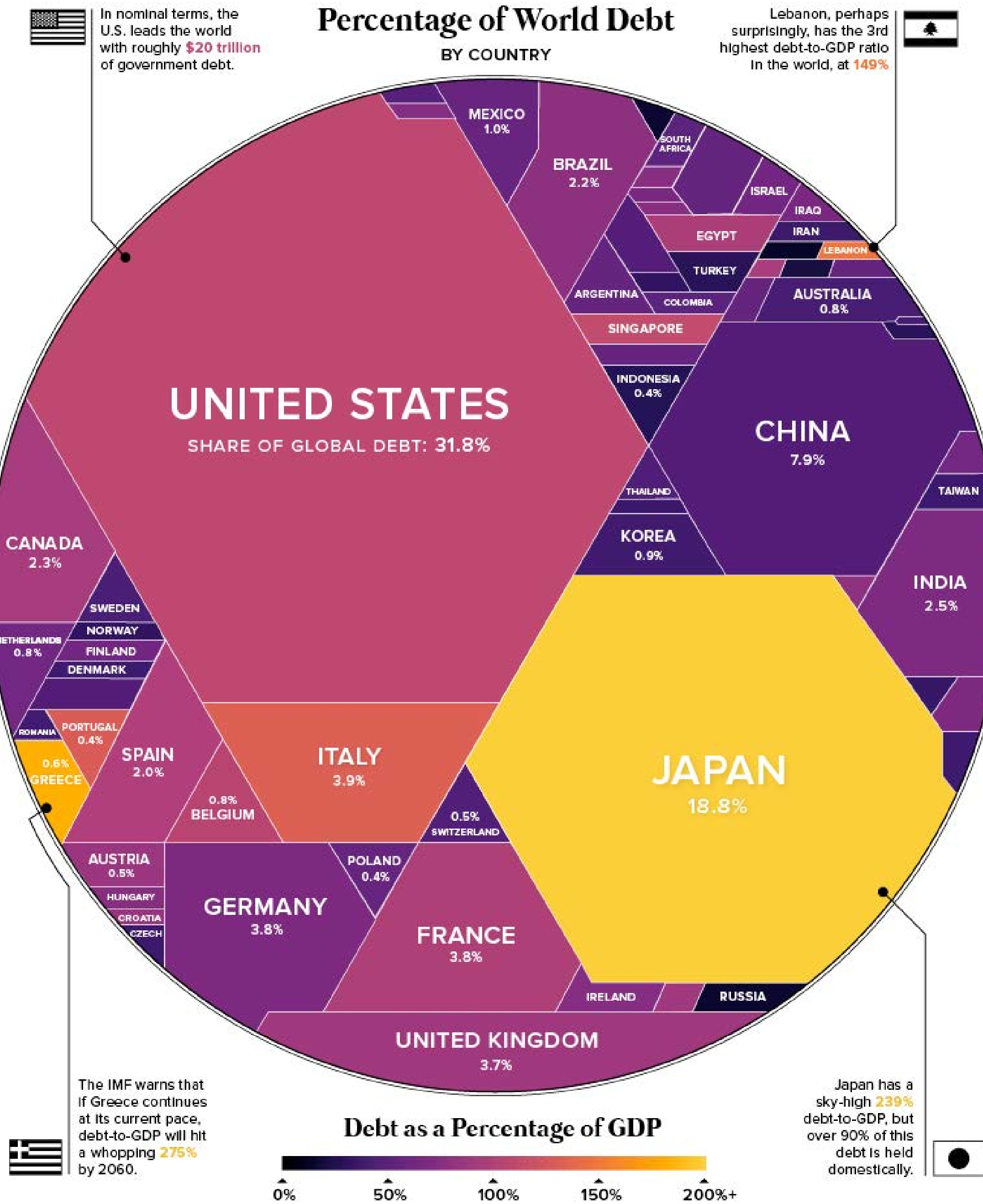


Source: Visual capitalist

Companies like Apple, Amazon and Microsoft have replaced traditional blue-chip companies that build physical things.

(b) Evolution of Money

The definition of money is murkier than ever. While on one hand, trillions of dollars currency are being created out of thin air since financial crisis, blockchain technology is being used to create competing cryptocurrency in a few clicks. Regardless of the nature, people are borrowing record amounts of it, with the world now amassing $247 trillion in debt, including $63 trillion borrowed by central governments.



Source: Visual capitalist

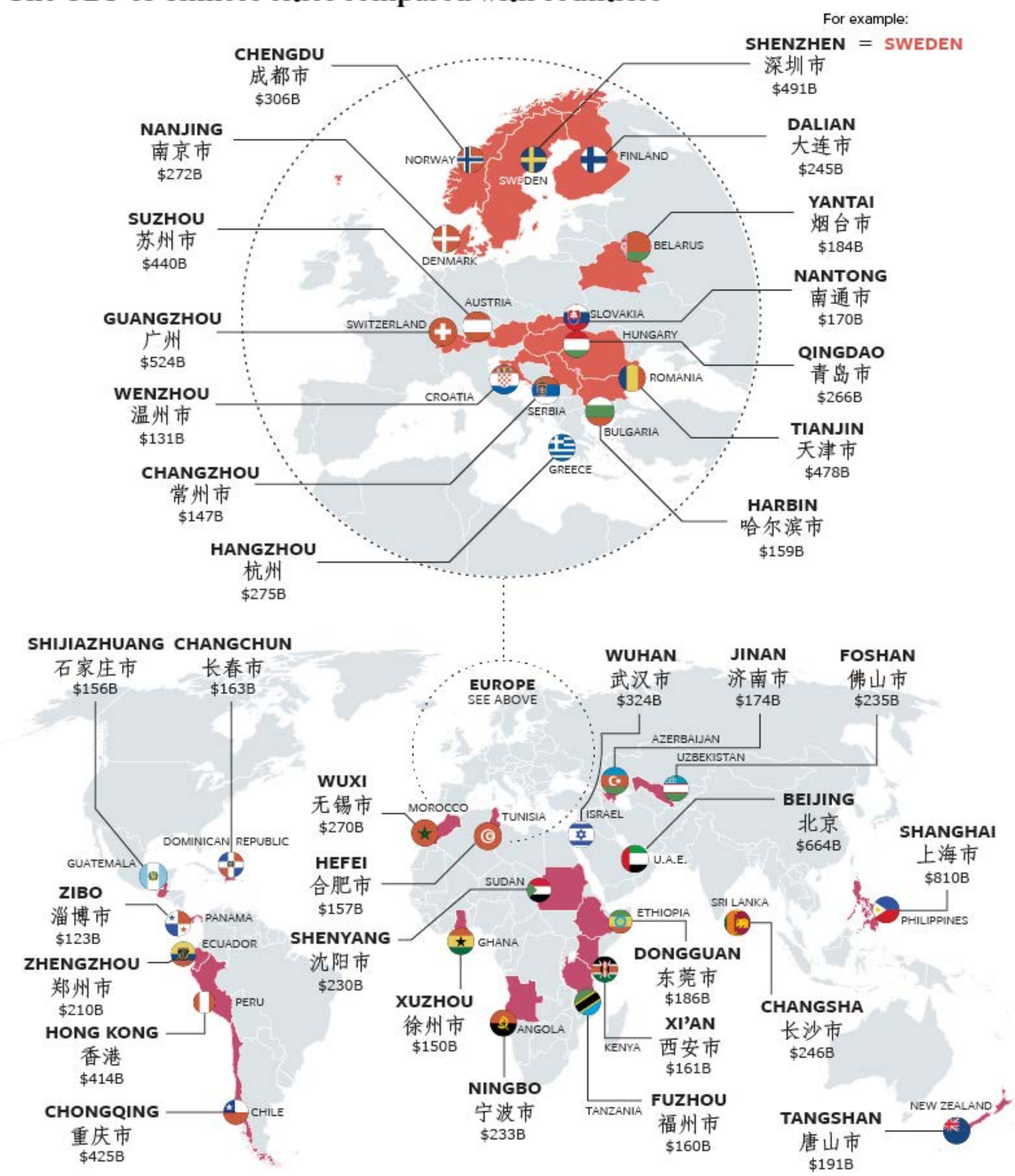
(c) Wealth Landscape

Source: World Bank

(d) Rise of the East

China has over 100 cities with more than 1,000,000 inhabitants. These cities, some of which do not even figure on the global radar have impressive economies.

The GDP of Chinese cities compared with countries



Source: Visual capitalist

India growth forecast for FY18 at 7.3% - Asian Development Bank

Improved domestic demand and a steady revival in industrial growth will foster the growth of the Indian economy at 7.3%. India's economy grew 8.2% in the first quarter of the current financial year. Private consumption grew 8.6% in the quarter, with rural demand recovering as the effects of demonetization waned and incomes increased. Investment grew by 10%, the second consecutive quarter of double-digit growth, spurred mainly by higher government capital expenditure on new infrastructure and an improved business environment.

Second quarter shows continued dip in fresh investments in India

New projects worth Rs. 1.49 lakh crore in the quarter which ended in September were announced by private and public-sector companies, 41% lower than the preceding quarter. On a year-on-year basis, the decline was less pronounced at 12%. Fresh investments showed a dip of 64% in the quarter ended September, on a sequential basis. This was the first time that the value of new projects announced by the private players during the quarter was lower than those announced by the public sector.

Tax relief for Indian economy

The net direct tax collection is up by 14% in the April-September period to Rs 4.44 lakh crore. The gross direct tax collection (including refunds) is up 16.7% to Rs 5.47 lakh crore. The tax refunds have also seen a surge of 30% on year. This would act as a much-needed relief to the economy from a budget deficit.

Artificial intelligence in transforming the Indian economy

With the capacity to generate $957 billion for the Indian economy by the year 2035, artificial intelligence powerful standing enables it to play a key role in settling socio-economic values in India. With the right amount of investment, artificial intelligence can empower people to develop a long-run economic and societal value. In the healthcare industry, technology can help in providing facilities like preventive healthcare and augmented diagnosis to the needy. Similarly, productivity can be increased by 20-30 percent using predictive technology in the agriculture sector.

Oil & Gas Market

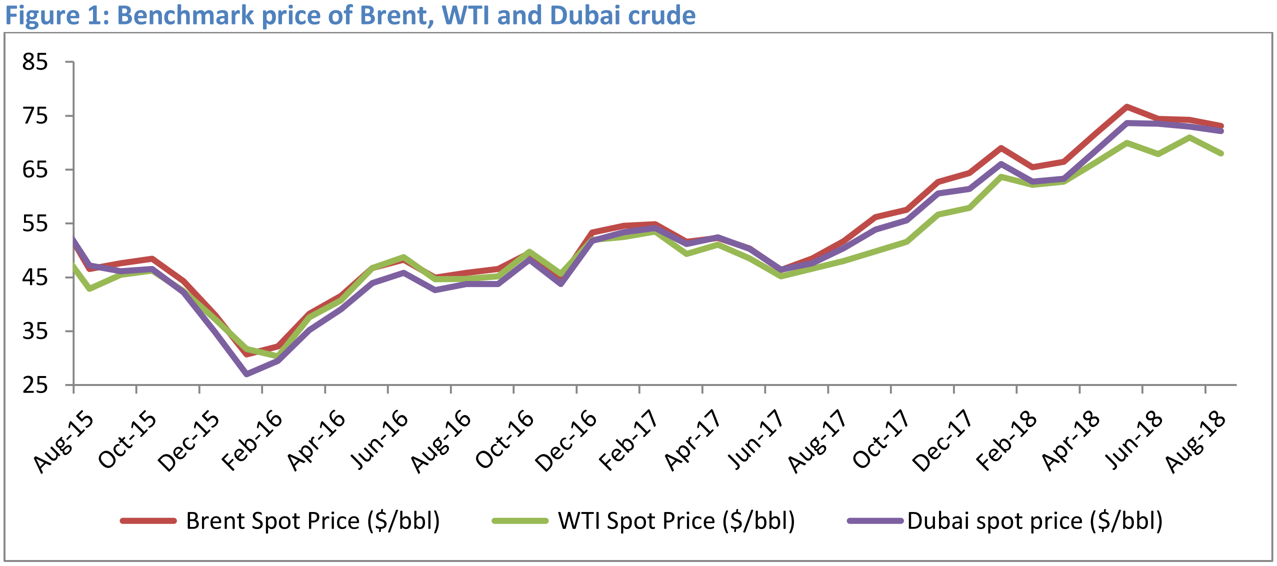
Crude oil price

Global crude oil prices remained volatile in August 2018. During later part of August, the US crude oil inventories fell by close to3.4 mbpd. Sanctions against Iran also contributed to the climb in oil prices. Analysts expect to see a 900,000-barrel to 1.6 million-barrel reduction in Iran exports, but they also said they "see capacity" for members of the Organization of the Petroleum Exporting Countries to lift production to offset at least the low end of the range. Unilateral U.S. sanctions on Iranian oil are expected to begin Nov. 4, and the U.S. has "announced a zero tolerance policy on Iran sanctions evasion, and promised 'unprecedented financial pressure' to ensure new sanctions are effective.

During the first half of August, oil prices slid on fears on economic crisis in Italy. The meltdown in Turkey's currency, the lira, has set off a different source of trouble. The turmoil spread to other emerging markets, dragging down a whole host of currencies. Weaker emerging market currencies threaten to seriously slow down demand – not just for oil, but for a range of commodities. The Bloomberg Commodities Index has declined by 3 percent this month and by more than 9 percent in the last three months.

The IEA is, for now, sticking with its forecast of oil demand growth at 1.4 million barrels per day (mb/d) for 2018. Brent oil prices are up 7 percent this year, but in local currencies the price increase is much bigger. In Turkey, oil is around 75 percent more expensive, and there has been a similar increase in Argentina. In Brazil, Russia and South Africa, oil feels about 20 to 25 percent more expensive this year, even though oil has only climbed by about 7 percent, according to ING. In Hungary, India, Poland, Chile, Indonesia and the Philippines, oil is 15 to 20 percent more expensive, so and so forth.

Figure 1: Benchmark price of Brent, WTI and Dubai crude



Source: WORLD BANK

- Brent crude price averaged $73.13 per bbl in August 2018, and was down 1.5% and up 41.5% on a month on month (MoM) and year on year (YoY) basis, respectively.
- WTI crude price averaged $67.99 per bbl in August 2018, and was down 4.2% and up 41.5% on a month on month (MoM) and year on year (YoY) basis, respectively.
- Dubai crude price averaged $72.13 per bbl in August 2018, and was down 1.1% and up 43.0% on a month on month (MoM) and year on year (YoY) basis, respectively.

Table 1: Crude oil price in August, 2018

Crude oil	Price ($/bbl) in August 2018	MoM (%) change	YoY (%) change
Brent	73.13	-1.5%	41.5%
WTI	67.99	-4.2%	41.5%
Dubai	72.13	-1.1%	43.0%

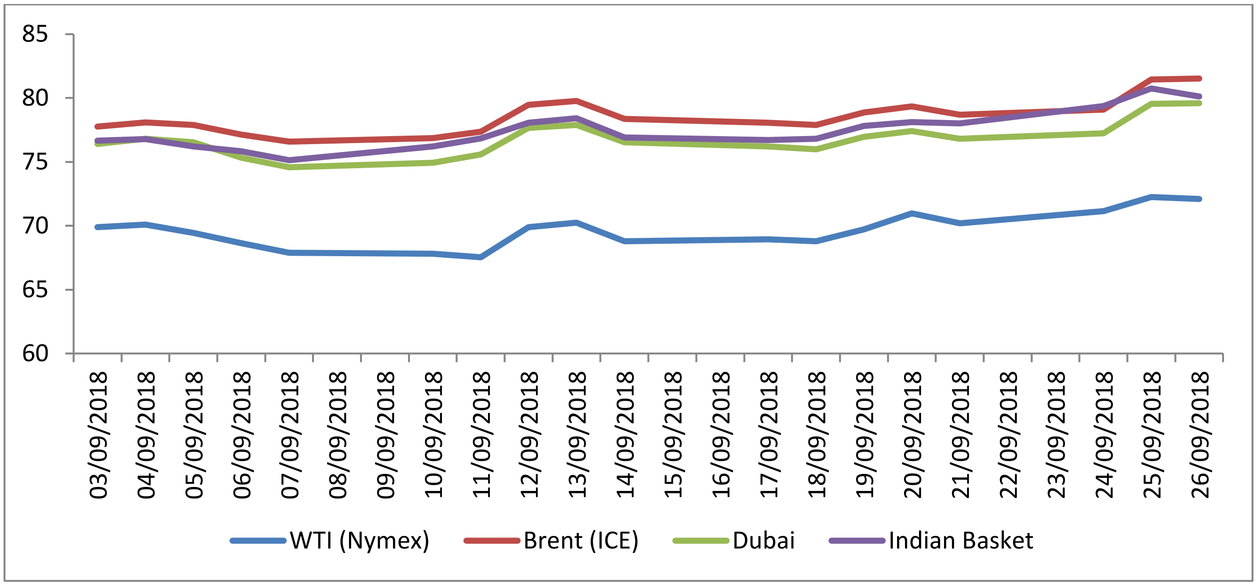
Source: WORLD BANK

Crude oil price hit a 4 year high on fear of sanctions on Iran in September

Oil prices hit a four-year high of $82.01 a barrel on Tuesday after Saudi Arabia and Russia appeared to reject calls from the US to increase production amid looming sanctions against Iranian oil. Notably, oil prices were fueled further by concerns over U.S. sanctions on Iran, supply bottlenecks in the United States and strong global demand. The International Energy Agency ("IEA") has issued a warning of a tight global oil market toward the end of the year. This is why the crude price is likely to remain robust in the near term.

At present, combined oil supply from Iran, Libya and Venezuela are at their lowest since January. Venezuela is plagued with economic instability and its oil production is not anticipated to reach normalcy till the end of 2018. Libya is yet to recover from civil war which drastically reduced its oil productions. For the last five consecutive weeks, the Energy Information Administration ("EIA") has been reporting decline in U.S. crude inventories. It is currently at its lowest level since early 2015.

Figure 2: Crude oil price in September 2018

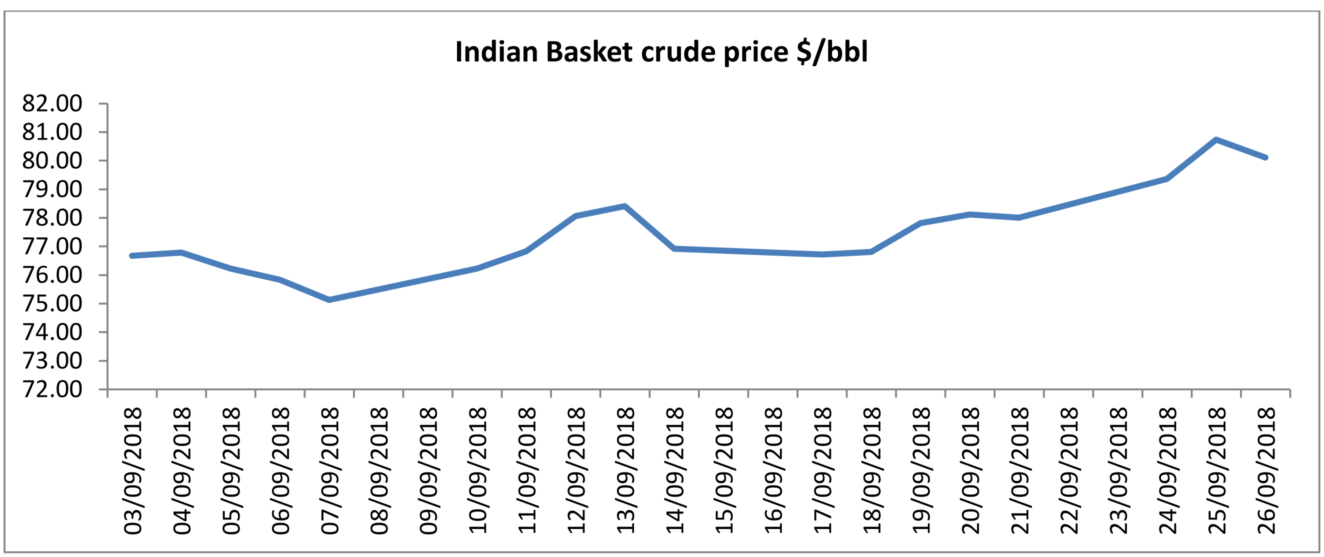


Source: EIA, PPAC

Indian Basket Crude oil price

- The Indian basket of Crude Oil represents a derived basket comprising of Sour grade (Oman & Dubai average) and Sweet grade (Brent Dated) of Crude oil processed in Indian refineries in the ratio of 72.38:27.62 during 2016-17.

Figure 3: Indian crude oil basket price in $ per bbl



Source: Petroleum Planning & Analysis Cell

- Indian crude basket price averaged $77.49 per barrel in September, up 6.8% Month on Month (MoM) basis and 42.1% on a year on year (YoY) basis, respectively.

Oil demand & supply

- According to OPEC, World oil demand is expected to grow by 1.68% in 2018* to 100.23 mbpd from 98.82 mbpd in 2017. India's demand for oil in 2017 was 4.53 mbpd and is projected to increase to 4.75 mbpd in 2018.

Table 2: World Oil demand in mbpd

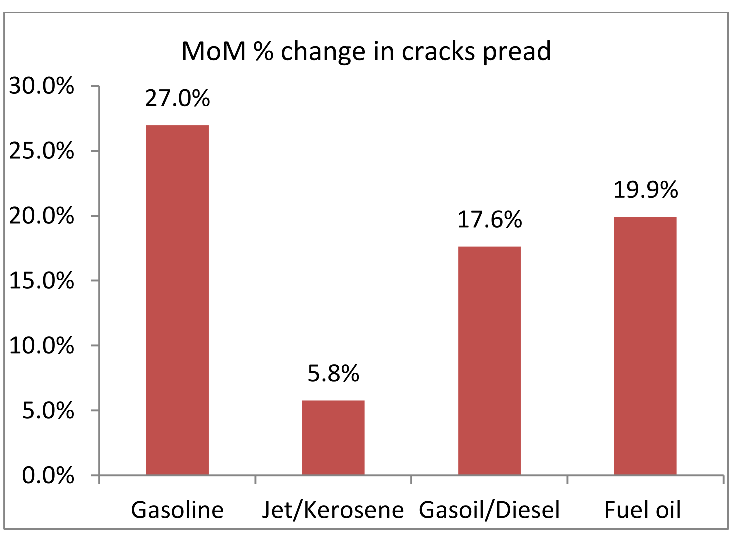
	2017	1Q18	2Q18	3Q18	4Q18	2018	Growth	%
Total OECD	**47.33**	**47.65**	**47.23**	**47.89**	**48.26**	**47.76**	**0.43**	**0.90**
Dev. Countries	**32.13**	**32.44**	**32.65**	**33.16**	**32.79**	**32.76**	**0.63**	**1.97**
~ of which India	*4.53*	*4.83*	*4.74*	*4.40*	*5.02*	*4.75*	*0.22*	*4.76*
Other regions	**18.30**	**18.12**	**18.49**	**18.79**	**19.64**	**18.77**	**0.47**	**2.54**
~ of which China	12.74	12.62	13.20	13.07	13.48	13.09	0.36	2.79
Total world	**98.82**	**99.17**	**99.27**	**100.82**	**101.63**	**100.23**	**1.41**	**1.43**

Source: OPEC monthly report, September 2018

*Note: *2018 = Forecast*

Global petroleum product prices

The Asian gasoline 92 market continued to perform positively, as strong gasoline demand from India and a gasoline shortage in the Middle East provided support. The Singapore light distillate naphtha crack spreads recovered last month's losses, underpinned by low regional refinery intakes due to high summer temperatures and water shortages.

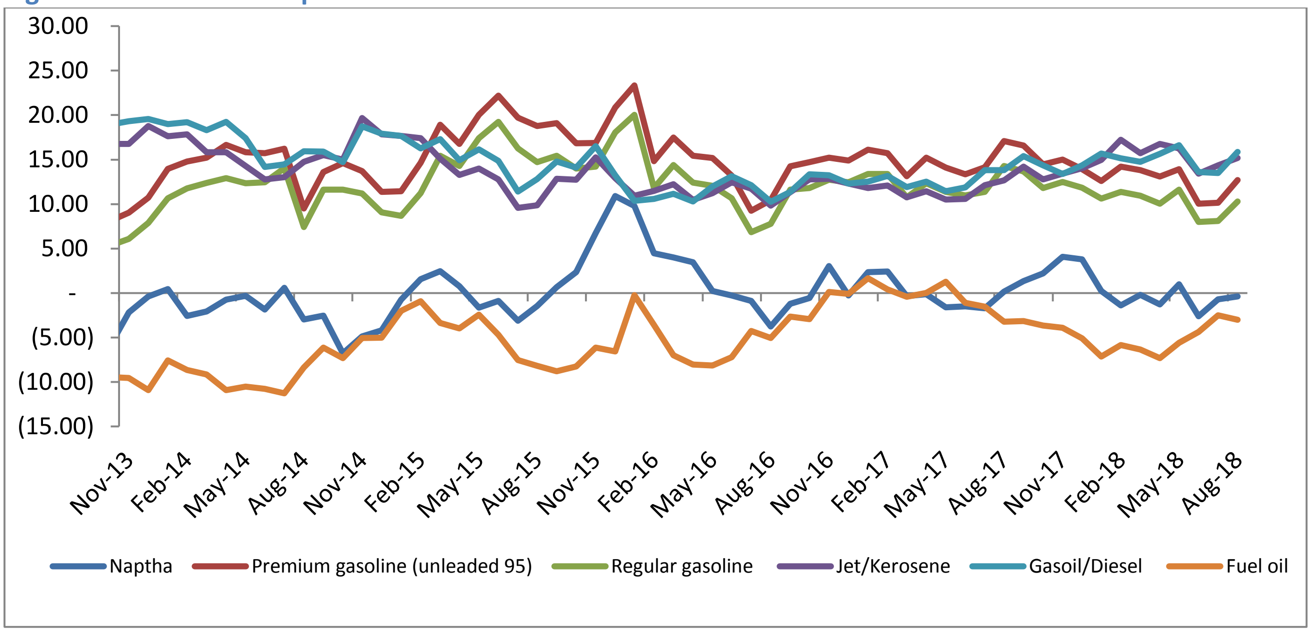


Source: OPEC monthly report

The jet/kerosene market gained some ground, supported by strong import requirements from Europe despite robust supply and higher regional imports from the US. Another supporting factor stemmed from the fact that the Asian jet fuel market was reported to have been tighter during the month compared to levels seen a year ago, despite a rise in kerosene stock levels. Asian gasoil crack spreads increased in response to strong regional demand and were further supported by lower refinery outputs due to outages. Moreover, the tightening European gasoil balance during the month due to limited refinery product output further incentivized gasoil demand from Europe.

The Singapore fuel oil crack spread against Oman weakened as lower Middle East demand and firm volume deliveries from the west exerted pressure on fuel oil cracks. As outlined in previous reports, this outcome was not surprising as the fuel oil market is expected to continue weakening and cooling demand from Middle East fade as summer season comes to an end.

Figure 4: Product crack spreads vs. Dubai crude



Source: OPEC, FIPI

Table 3: Singapore FOB, refined product prices ($/bbl)

Products	Price ($/b) in August 2018	MoM (%) change	YoY (%) change
Naptha	71.76	-0.7%	41.9%
Premium gasoline (unleaded 95)	84.83	2.1%	25.7%
Regular gasoline (unleaded 92)	82.44	1.7%	27.4%
Jet/Kerosene	87.31	0.0%	38.3%
Gasoil/Diesel (50 ppm)	88.01	1.8%	37.0%
Fuel oil (180 cst 2.0% S)	69.12	-1.9%	46.4%
Fuel oil (380 cst 3.5% S)	68.57	-2.0%	45.6%

Source: OPEC

Petroleum products consumption in India

- With the push by government on promotion of LPG, its Consumption has steadily increased in India. In August, LPG consumption increased 3.2% on MoM basis.
- Consumption of gasoline increased (7.9% YoY) driven by higher demand from transport segment.
- Demand for diesel also witnessed robust increase of 4.3% on YoY basis in the month of August.

Table 4: Petroleum products consumption in India, August 2018

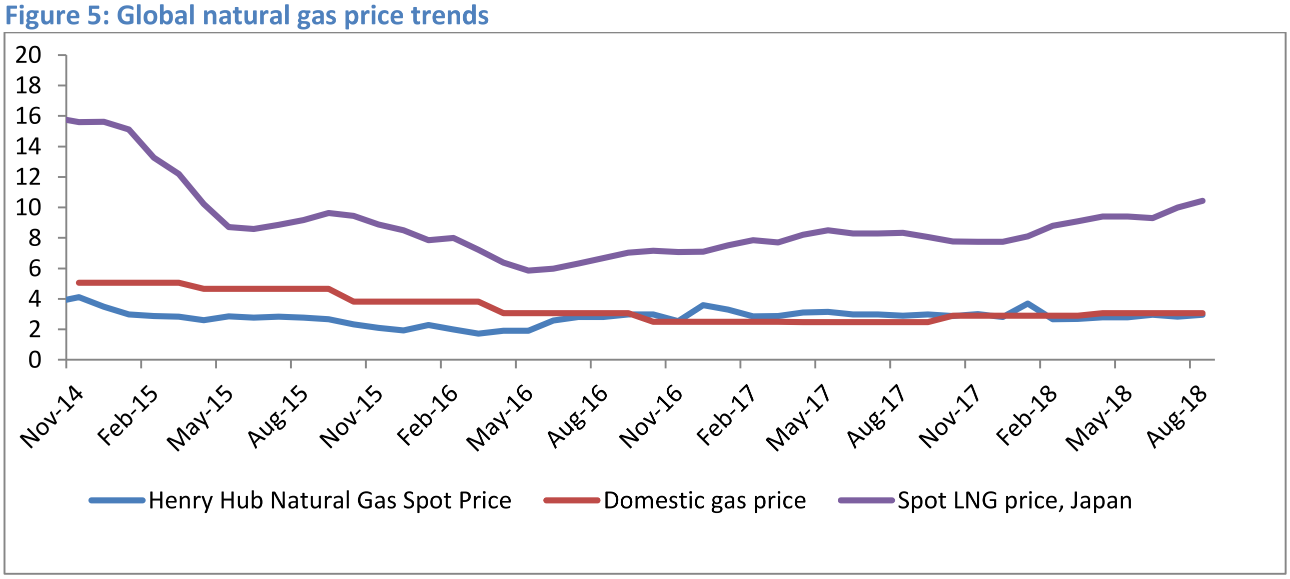
Petroleum products	Consumption in '000 MT August 2018	MoM (%) change	YoY (%) change
LPG	2,107	3.2%	2.9%
Naphtha	1,093	-4.1%	1.1%
MS	2,362	2.0%	7.9%
ATF	670	-0.2%	9.4%
HSD	6,171	-6.6%	4.3%
LDO	47	9.8%	26.0%
Lubricants & Greases	335	6.9%	0.5%
FO & LSHS	563	9.0%	8.5%
Bitumen	252	-20.3%	19.0%
Petroleum coke	2,114	-5.5%	-19.2%
Others	585	4.4%	-4.3%
TOTAL	**16,603**	**-2.7%**	**0.8%**

Source: PPAC

Natural Gas Price

Natural gas prices in US remained low due to higher US production. LNG prices saw an upswing over previous year due to higher natural gas demand.

Figure 5: Global natural gas price trends



Source: EIA, WORLD BANK

Table 5: Gas price

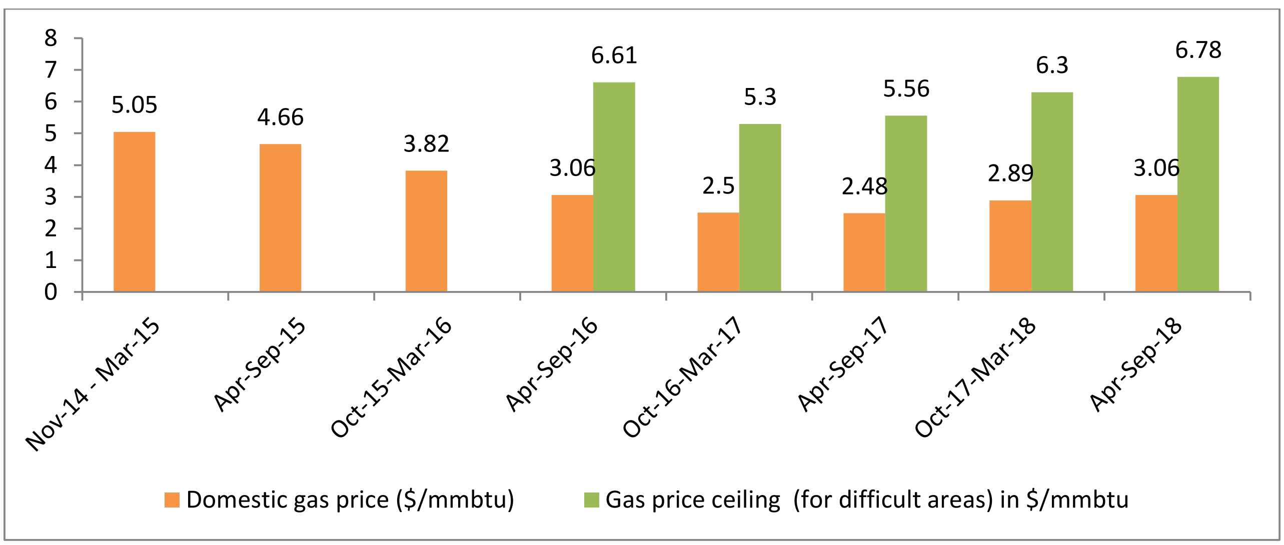
Natural Gas	Price ($/MMBTU) in August 2018	MoM (%) change	YoY (%) change
India, Domestic gas price	3.06	0.0%	23.4%
India, Gas price ceiling – difficult areas	6.78	0.0%	21.9%
Henry Hub	2.96	4.6%	2.1%
Liquefied Natural Gas, Japan	10.44	4.4%	25.2%

Source: EIA, PPAC,

Domestic natural gas price which takes into account international benchmarks including Henry Hub, Alberta hub, Russia and UK National Balancing Point, has increased around 22% as compared to a year before, thus capturing the international gas price trends.

A notification was issued by MoP&NG on 21st March 2016, for marketing including pricing freedom for gas to be produced from discoveries in deep water, ultra-deep water, and high pressure high temperature areas. For the Apr-Sep-18 period, the price of gas from such areas was notified at $6.78 per MMBTU.

Figure 6: Domestic natural gas price

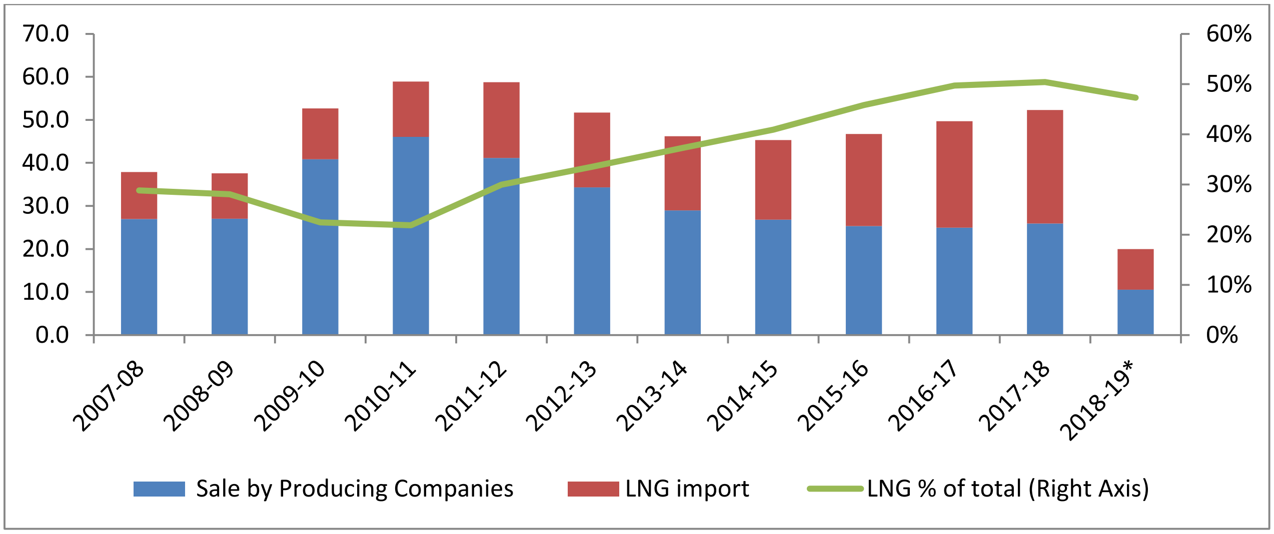


Source: PPAC

Natural gas production, consumption and import in India

- Natural gas constitutes for 6.5% of total energy primary mix of India
- Natural gas consumption in India has grown at a very slow pace in the past 3 – 4 years, with share of LNG imports increasing in the overall consumption mix

Figure 7: Domestic natural gas consumption, domestic production and LNG import in BCM



Source: PPAC

**Figures for 2018-19 are for the period of April – July only. Sale by producing companies includes internal consumption*

Key developments in Oil & Gas sector during the month

- **Cabinet approves Policy Framework to Promote and Incentivize Enhanced Recovery Methods for Oil and Gas**

  The Union Cabinet chaired by Prime Minister Shri Narendra Modi approved the Policy framework to promote and incentivize Enhanced Recovery (ER)/ Improved Recovery (IR)/ Unconventional Hydrocarbon (UHC) production Methods/techniques to improve recovery factor of existing hydrocarbons reserves for augmenting domestic production of oil and gas. The ER includes Enhanced Oil Recovery (EOR) and Enhanced Gas Recovery (EGR), Unconventional Hydrocarbon (UHC) production methods include Shale oil and gas production, tight oil and gas production, production from oil shale, gas hydrates and heavy oil. Enhanced Recovery, Improved Recovery and exploration and exploitation of unconventional hydrocarbons are capital intensive, technologically complex and challenging in nature. It calls for supporting infrastructure, logistic support, fiscal incentives and enabling environment.

  The strategic objective of the Policy is to build a supportive ecosystem through academic and research institutes, industry- academia collaboration and to support and encourage Exploration and Production (E&P) Contractors to deploy ER/IR/UHC Methods/ techniques. The Policy will be applicable to all contractual regimes and Nomination fields. This policy initiative is expected to spur new investment, provide impetus to economic activities and generate additional employment opportunities. The Policy is expected to facilitate induction of new, innovative and cutting-edge technology and forging technological collaboration to improve productivity of existing fields.

  The Policy envisages systemic assessment of every field for its ER potential, appraisal of appropriate ER techniques and fiscal incentives to de-risk the cost involved in ER Projects to make the investment financially viable. Mandatory Screening of fields through designated institutions, to be notified by Government, and conducting Pilot before actual implementation of ER Project on commercial level, are other prominent features of the Policy. An Enhanced Recovery (ER) Committee comprising of representatives of Ministry of Petroleum & Natural Gas, Directorate General of Hydrocarbons (DGH), experts from upstream sector, and academia would monitor and implement the Policy. The Policy, having a sunset clause, will be effective for 10 years from the date of its notification. However, the fiscal incentives will be available for a period of 120 months from the date of commencement of production in ER/UHC projects. In case of IR Projects, the incentives will be available from the date of achievement of the prescribed benchmark. Defined timelines have been prescribed to complete the various processes under the Policy. The fiscal incentives are extended in form of partial waiver of applicable Cess/Royalty on incremental production resulting from the adoption of ER methods on designated wells.

Technological interventions have significant potential in stimulating the recovery of hydrocarbon reserves from the matured/aging fields. An increase by 5% in recovery rate of original in-place volume in oil production is envisaged to produce 120 MMT additional oil in next 20 years. In case of gas, an increase of 3% recovery rate on original in- place volume is envisaged, leading to additional production of 52 BCM of gas in next 20 years.

- **Cabinet approves on Fixation/Revision of ethanol price derived from B heavy molasses / partial sugarcane juice and 100% sugarcane juice under Ethanol Blended Petrol Programme for Ethanol Supply Year 2018-19**

The Cabinet Committee on Economic Affairs, chaired by the Prime Minister Shri Narendra Modi has given its approval to revise / fix the price of ethanol derived from B heavy molasses / partial sugarcane juice and fix a higher price for 100% sugarcane juice based ethanol for the forthcoming sugar season 2018-19 during ethanol supply year from 1st December 2018 to 30thNovember 2019 as under:

To fix the ex-mill price of ethanol derived out of B heavy molasses / partial sugarcane juice to Rs.52.43 per litre (from prevailing price of Rs.47.13 per litre).

- To fix the ex-mill price of ethanol derived from 100% sugarcane juice at Rs.59.13 per litre (from prevailing price of Rs.47.13 per litre) for those mills who will divert 100% sugarcane juice for production of ethanol thereby not producing any sugar.
- Additionally, GST and transportation charges will also be payable. OMCs have been advised to fix realistic transportation charges so that long distance transportation of ethanol is not disincentivised.
- OMCs are advised to prioritize ethanol from 1) 100 % sugarcane juice, 2) B heavy molasses / partial sugarcane juice, 3) C heavy molasses and 4) Damaged Food grains/other sources, in that order.

- **Domestic natural gas price hiked by 10% to $3.36 per MMBTU**

The government has announced a 10% hike in price of domestic natural gas to $3.36 per million British thermal units (MMBTU) from October 1, according to Oil Ministry's Petroleum Planning and Analysis Cell.

The ministry also noted that the for marketing including pricing freedom for gas to be produced from discoveries in Deepwater, Ultra Deepwater and High Pressures-High Temperature areas, the gas price ceiling for the period October 2018-March 2019 is $7.67 per mmbtu on Gross Caloric Value (GCV) basis.

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