Impact of Soft Global Crude Oil Prices on Indian Oil & Gas Industry

ICRA PETROFED

ICRA-Petrofed Study

2016

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1 EXECUTIVE SUMMARY

Petroleum Federation of India (Petrofed) has mandated ICRA to carry out a comprehensive analysis of the impact of the meltdown of the global oil prices on the Indian Oil and Gas industry. The study is aimed to enable Petrofed members and policy makers to assess the macro and micro level impact of the material fall in oil and gas prices on the Indian economy, oil and gas industry participants and downstream consuming sectors.

Global crude oil prices have declined by ~60% from US$ 112/bbl (Brent) in June 2014 to US$ ~45-50/bbl now (as in May 2016 end) primarily due to the significant increase in supply due to the shale oil boom in the US, demand slowdown in Europe, Japan and China and, the decision of Saudi Arabia to protect market share rather than act as a swing producer of oil. Additionally with the lifting of western sanctions on Iran, the latter has been increasing its crude oil sales aggressively in a bid to capture its lost market share. Accordingly, crude oil prices are expected to remain at moderate levels in the near term because of high supplies, modest global demand and lack of consensus within the Organisation of the Petroleum Exporting Countries (OPEC) to cut production of oil. With the precipitous decline in international crude oil prices, the economics of gas vis-à-vis alternate fuels such as fuel oil have been adversely impacted. Accordingly, prices of gas at various international hubs and spot prices of LNG have also declined leading to the material fall in domestic gas prices. Going forward ICRA research expects the prices of gas at various international hubs to remain muted in the near term, owing to the weak outlook for crude oil prices and accordingly crude derived alternate fuels.

With regard to the impact of the fall in oil prices on the Indian economy, the fall in the average price of the Indian crude oil basket from US$ 105/barrel in FY2014 to US$ 84/barrel in FY2015 and further to US$ 46/barrel in FY2016 had a significant impact on the overall macroeconomic scenario, particularly since India is a large net importer of fuels. While imports came down sharply, the impact on other external balances was less pronounced, on account of a multitude of factors. Moreover, lower prices of crude and mineral oils contributed to a sizeable decline in WPI inflation, whereas the impact on CPI inflation was relatively muted. Whilst the decline in fuel prices has both reduced the fuel subsidy outgo and boosted excise duty collections, the fiscal balances of the Central Government on an absolute basis have not shown a commensurate improvement on account of a variety of other factors - including a rise in food subsidies, interest and pension payments, other revenue expenditure as well as capital expenditure. Sales tax/VAT on petroleum products is a sizeable contributor to the revenues of the State Governments. The volume of inflows from this source depends on the following factors: the domestic price of fuel (which in turn depends on global crude oil prices, exchange rate dynamics, taxes and cesses levied by the GoI and the rate of sales tax/VAT levied by the State Government) and the consumption of such products. After the recent fall in the retail prices of fuels, the pace of growth of sales tax/VAT collections on petroleum products has eased significantly, as such levies are typically on *ad valorem* basis.

About the upstream sector, lower crude oil and gas prices would materially impact profits of upstream producers. However, the impact on Oil and Natural Gas Corporation Limited (ONGC) and Oil India Limited (OIL) has been limited so far as their crude oil realisations were earlier dampened by large under recovery sharing burden. The impact of the decline in international prices of crude oil has been higher on private upstream players who did not have subsidy-sharing burden and overseas ventures of ONGC, OIL and RIL etc. Nevertheless with a decline in the cash-generating ability (due to lower realisations on sale of oil and gas) of their E&P blocks, upstream companies such as ONGC, OIL, Cairn and RIL have recognised an impairment loss (Rs 183.3 billion during FY2016) in their book of accounts.

In August 2015, the GoI announced that it would share an under-recovery of up to Rs. 12/litre on SKO (PDS), and on LPG (domestic) up to Rs. 18/kg under (which translates to Rs. 255.6 per cylinder) and the balance subsidy would be borne by upstream companies. However, there is a lack of clarity on whether the PSU oil companies will bear the entire balance subsidy or whether some of the burden will be passed on to end-consumers in case global crude oil and LPG prices increase significantly from the current levels. As the GoI has capped its subsidy share, any significant rise in crude oil prices could lead to disproportionate increase in the burden on upstream companies, thereby limiting any upside from an increase in crude oil prices. Assuming all the incremental burden over the caps of the GoI would be shared by the PSU upstream companies, ICRA projects the net realisations (post subsidy burden) of upstream companies to vary from US$44/bbl to US$52/bbl (excluding the impact of rise in cess burden) for global crude oil prices of US$45/bbl to US$70/bbl.

With the low oil price scenario upstream companies have undertaken various cost optimisation measures including re-negotiations with existing contractors for lowering the rental/unit rates/services cost. Additionally, private upstream players are scaling down their capital expenditure (capex) programme even though the PSU companies are maintaining their exploration and production programme, though the capex in value terms has reduced, owing to the lower cost of oil field services prevailing.

The demand for oil field services is determined by upstream capital spending, with the latter influenced by prevailing and expected oil and gas prices. In response to decline in crude oil and gas prices, most global E&P companies have cut their budgets related to capex and accordingly drilling activity has shown a slowing trend, leading to a decline in the rates for drilling and other oil field services with day rates for rigs across various categories declining by 30-40% globally.

In the midstream segment, tariffs of natural gas transmission companies are independent of crude oil or natural gas prices and are regulated by PNGRB. In line with low crude oil and *LNG prices*, the growth in LNG imports and thus RLNG transmission volumes is expected to be healthy in the near to medium term, even as domestic gas volumes would increase only over the medium to long-term. With overall moderate growth in gas transmission volumes, there could be moderate positive impact of the same on profits of gas transmission players in FY2017. Further, the players may also benefit from expected increase in tariffs of under-utilised pipelines as per notification of PNGRB in January 2016.

The margins for natural gas marketing got adversely impacted in FY2015 due to lower margins on RLNG and inventory loss on long-term LNG; however, the same recovered in FY2016 with an improvement in margins on spot RLNG due to their lower prices. The outlook on marketing margins on spot LNG is positive for the next one to two years as the prices of spot LNG are expected to be low, making it more affordable. Further, while any recovery in crude oil prices would lead to higher prices of competing fuels, spot LNG may continue to see favourable economics as the increase in spot LNG prices could be lower than those in liquid fuels due to a discount on its prices (relatively lower slope than the past average) due to the oversupplied global market and the declining demand from Japan as they gradually restart their nuclear reactors.

LNG import has been on an increasing trend in India over the last few years as R-LNG consumption replaced a part of domestic gas, which has seen a consistent decline in production levels. In the past, the growth in R-LNG volumes have been moderate due to several factors, including constrained regasification capacity in the country, affordability of R-LNG in various sectors (especially at high LNG prices), etc. The price sensitivity of R-LNG demand against liquid fuels would be critical for RLNG demand, which is expected to grow due to shortage of domestic gas. ICRA believes that if the regasification terminals, as planned, come on stream over the next four to five years, the new entrants would face significant pressure on volumes and margins as they will have to compete with the existing terminals and the brownfield expansion, which are more cost efficient because of lower capital intensity.

The decline in global gas prices has resulted in a decrease in domestic gas prices, leading to higher competitive advantage over liquid automotive fuels, which have not witnesses a material fall in prices due to excise duty hikes. The domestic gas allocation for the entire demand of CNG & PNG(d) and lower domestic gas prices continue to boost demand growth and margins of incumbents in the city gas distribution sector. Going forward, the margins on CNG and PNG(d) are anticipated to be healthy with an upward bias over the medium term. However, the PNG(i) segment continues to face stiff competition from liquid fuels like furnace oil, LSHS and naphtha. Nonetheless, considering the fall in long-term and spot LNG prices, the demand and margins are expected to marginally increase in the near to medium term. ICRA believes that the price economics of spot LNG or long-term RasGas would be favourable against the liquid fuels over the near to medium term, unless crude oil prices again decline significantly from the current level of US$50/bbl (in the beginning of June-2015).

The downstream sector in the country has benefited from the fall in crude oil prices, among other reasons, providing a push to the demand of petroleum products. India's petroleum products' demand increased to 183.5 MMT in FY2016 from 165.5 MMT in FY2015 registering a growth of 10.9% (YoY), the highest level since 2000. This kind of demand growth was the highest in the last two decades and was on a much larger base, primarily driven by economic recovery and acceleration in demand on the back of lower crude oil prices. The impact of lower crude oil prices is reflected by the fact that demand of products like naphtha and FO, with overall decline in consumption by 2.3% pa and 7.9% pa during FY2005-FY2015, reported an increase of 20.9% (YoY) and 11.9% (YoY) during FY2016. The marketers have been able to improve the marketing margins on most of petroleum products due to lower crude oil prices and robust domestic demand growth.

With the sharp fall in crude oil prices during H2 FY2015, high inventory losses made a significant impact on GRMs, which were at extremely low levels in FY2015 for most of the refineries. In FY2016, the lower prices of crude oil and petroleum products led to an increase in global demand of petroleum products and liquid fuels replaced a part of the consumption of other competing fuels like LNG. The improved demand, along with limited supply addition, led to an improved supply-demand balance for the global refining industry, which got reflected in higher crack spreads for almost entire product slate of the refineries. Driven by healthy global crack spreads, most of the domestic refineries reported materially high GRMs in FY2016, the highest level in the last five years for most of the companies. The medium term outlook for GRMs is healthy and in line with healthy demand levels and expectation of demand growth exceeding supply addition globally. Low crude oil prices could continue to support the demand growth despite modest global economic prospects. In India, the demand growth would be healthy in line with improving economic activity. Overall, despite certain moderation from high levels reported in FY2016, the crack spreads of most of petroleum products are expected to be healthy leading to high GRMs in the near to medium term. Besides, any recovery in crude oil prices may also lead to inventory gains for the refiners.

The GURs of OMCs declined by 64% (YoY) to ~Rs. 274 billion (including cash reimbursement under DBTL) in FY2016 from Rs. 763 billion in FY2015 in line with lower Indian Basket crude prices at US$46/bbl in FY2016 against US$84/bbl in FY2015. ICRA projects GURs of OMCs to increase to ~Rs. 355 billion for FY2017 (estimated at average Indian basket crude oil price of US$50/bbl and INR/US$ of 68.5 for FY2017). The borrowings and interest burden of OMCs could increase with higher GURs, driven by a recovery in crude oil prices.

Most Indian industrial segment users have benefited from the decline in crude prices in terms of reduction in their raw material and/or energy costs. The same has translated to a significant improvement in their EBITDA margins in FY2016. The benefit from lower input prices has allowed industries facing significant demand side/competitive pressures (like aviation, shipping) to earn higher margins on their operations, thereby providing significant relief to their cash flows. In certain industries like Paints and Adhesives, due to the presence of few strong organised players, the companies have retained the benefits of lower input costs and earned significantly high margins. Overall, the transmission of benefits from lower costs has been different across sectors, nevertheless, lower price and higher disposable income have resulted in higher demand growth for Indian industries.

Retail consumers have not benefitted to the extent possible in terms of retail price of auto-fuels – MS and HSD as the Central and State Governments have retained a significant proportion of the reduction in costs by way of higher excise duty and VAT respectively. In case of the regulated prices of SKO and LPG, while the prices have remained unchanged, the overall subsidy burden to the government has reduced significantly. Thus, overall, higher revenue collections and lower subsidy payouts would indirectly benefit consumers in the longer run through increased GoI spending on infrastructure, if the oil prices remain at the current level.

About the impact on lenders, banks' loan book towards the Petroleum, Coal Products and Nuclear Fuels sector registered a decline of 19% from Rs 635 billion as on March 2014 to Rs 512 billion as on March 2016

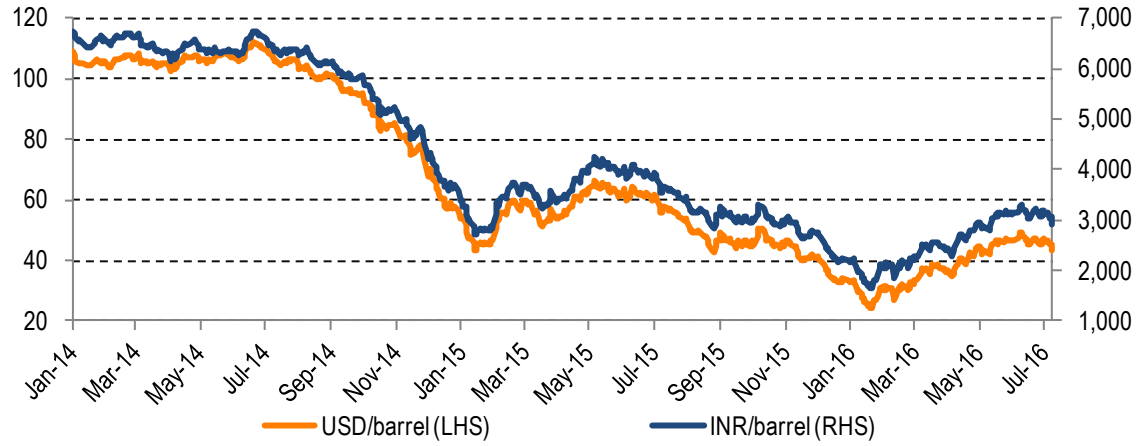
as against banks' total loan book annual growth of around 8% during the same period. The decline was on account of the meltdown in oil prices which lowered the working capital requirement of oil marketing companies (OMCs) considerably. The debt market issuances for major oil companies have also dried up and the proportion of issuances by these companies has remained below 0.5% (of total issuances during the quarter) for four out of the last five quarters (Q4 FY2015 to Q4 FY2016). In ICRA's estimate, most of the banks' exposure to the sector was towards OMCs. Nonetheless, despite the significant volatility in oil prices, vulnerability of the banks' exposure to the sector remain low as credit the profile of OMCs remain strong (rated at highest level) on the back of majority sovereign ownership, strong financial flexibility and their dominant and strategically important position in the Indian energy sector.

Overall, the fall in crude oil prices has been negative for the upstream sector, especially the private sector companies whereas PSU upstream companies were relatively less impacted due to fall in the subsidy burden. Post adverse impact of inventory loss in FY2015, the downstream segment entities benefited materially from the fall in crude oil prices as is reflected in their performance in FY2016. The impact on midstream companies was moderately positive due to higher demand and margins on spot LNG due to lower prices of the same.

2 IMPACT ON MACRO-ECONOMIC INDICATORS

Lower crude oil prices impact Indian macroeconomic fundamentals: Changes in global prices of crude and mineral oils as well as trends in domestic consumption of such items impact various aspects of Indian macroeconomic fundamentals, with India being a price taker in the crude oil market. The fall in the average price of the Indian crude oil basket from US$ 105/barrel in FY2014 to US$ 84/barrel in FY2015 and further to US$ 46/barrel in FY2016 had a significant impact on the oil import bill, since India is a large net importer of fuels. However, the impact on other external balances was less pronounced, on account of a multitude of factors. Moreover, lower prices of crude and mineral oils contributed to a sizeable decline in WPI inflation, whereas the impact on the CPI inflation was relatively muted.

Chart 1: Movement in Price of Crude Oil (Indian Basket) per Barrel



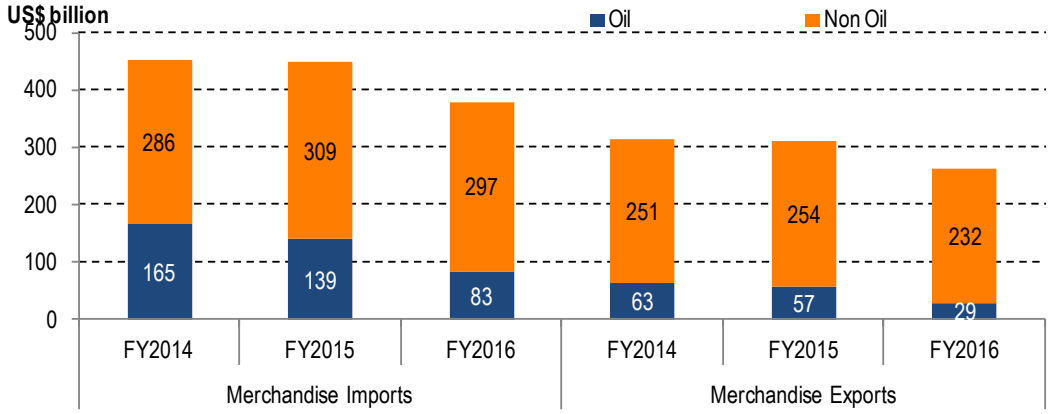
Source: PPAC, GoI; ICRA research

Lower crude oil prices squeeze oil imports and exports: The fall in crude oil prices had a significant impact on curtailing India's oil and overall merchandise imports, with fuels forming a large part of the Indian imports basket.

Indian crude oil imports moderated from U$ 165 billion in FY2014 to US$ 139 billion in FY2015 (16% YoY decline) and further to US$ 83 billion in FY2016 (40% YoY decline). However, merchandise imports eased only marginally from U$ 451 billion in FY2014 to US$ 448 billion in FY2015, as non-oil imports rose by a sizable 8% from US$ 286 billion to US$ 309 billion in the same years (led by gold, agricultural commodities particularly vegetable oils, electronic goods and iron and steel). Subsequently, merchandise imports recorded a sharp decline to US$ 380 billion in FY2016, with the aforesaid fall in oil as well as a 4% contraction in non-oil imports. The latter was led by coal, minerals and metals, including iron and steel, reflecting a combination of lower prices (on a YoY basis); high domestic production and inventories; and measures taken by the GoI such as the Minimum Import Price and safeguard duties on various steel products. While oil imports accounted for 82% of the decline in merchandise imports in FY2016, coal, minerals and metals including iron and steel accounted for 14% of the same. In contrast, imports of agricultural commodities (boosted by high imports of pulses) and electronic goods recorded a rise in

FY2016. As a result of these trends, the share of oil in total merchandise imports fell from 37% in FY2014 to 31% in FY2015 and further to 22% in FY2016.

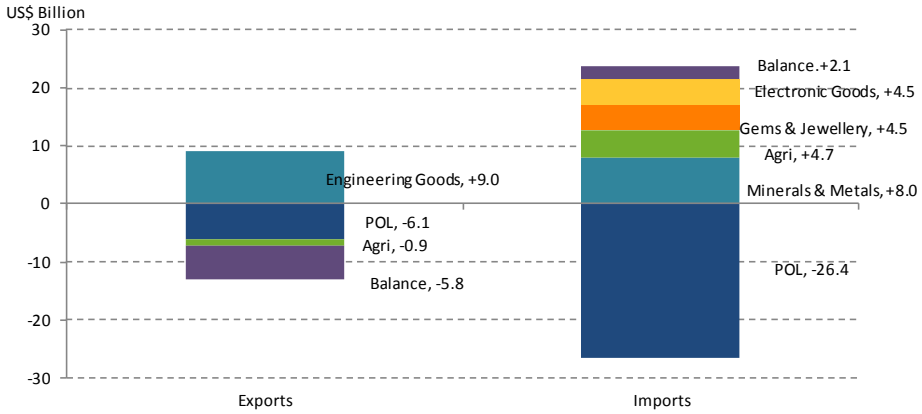
Chart 2: Trend in Oil and Non-Oil Merchandise Trade



Source: Ministry of Commerce & Industry, GoI; ICRA research

At the same time, exports of Petroleum, Oil and Lubricants products (POL) contracted by 10% from U$ 63 billion in FY2014 to US$ 57 billion in FY2015, before nearly halving to US$ 29 billion in FY2016. Aggregate merchandise exports eased mildly from U$ 314 billion in FY2014 to US$ 311 billion in FY2015, as non-oil exports rose by a marginal 1% during that year (led by engineering goods). Subsequently, merchandise exports recorded a sharp decline to US$ 261 billion in FY2016, with the halving in POL exports as well as a 9% contraction in other exports (led by engineering goods, agricultural items and gems& jewellery), dampened by poor demand from major export destinations, lower prices of commodity exports, and a relative strengthening of the INR during CY2015. The share of POL in total merchandise exports fell from 20% in FY2014 to 18% in FY2015 and further to 11% in FY2016.

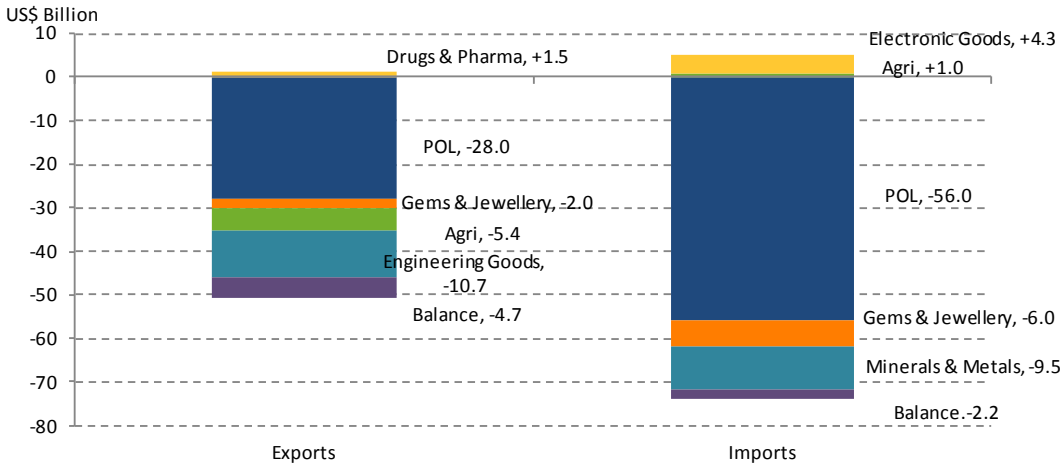
Chart 3: Sources of YoY Variation in Merchandise Imports and Exports in FY2015



Note: Within imports, gems & jewellery refers to the aggregate of gold, silver, precious & semi-precious stones.
Source: Ministry of Commerce & Industry, GoI; ICRA research

Notably, the fall in merchandise imports in FY2016 was concentrated in the oil sector, which accounted for 82% of the former. However, the fall in merchandise exports in FY2016 was relatively more widespread, with 56% of the decline in US$ terms on account of POL products.

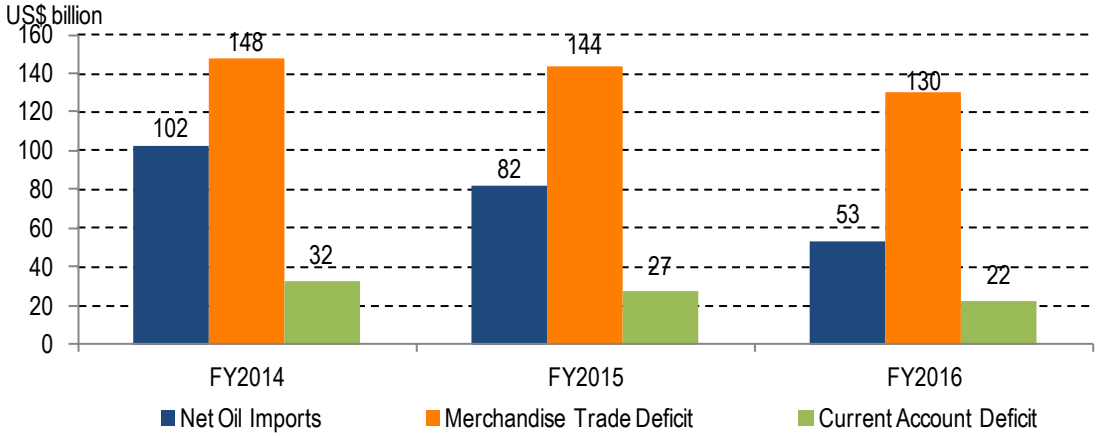
Chart 4: Sources of YoY Variation in Merchandise Imports and Exports in FY2016



Note: Within imports, gems & jewellery refers to the aggregate of gold, silver, precious & semi-precious stones.
Source: Ministry of Commerce & Industry, GoI; ICRA research

Improvement in merchandise trade deficit smaller than savings in oil import bill: On a net basis, oil imports declined from U$ 102 billion in FY2014 to US$ 82 billion in FY2015, and further to US$ 53 billion in FY2016, halving over the course of two years. As compared to the savings of US$ 20 billion in FY2015, the merchandise trade deficit on a BOP basis fell by only US$ 4 billion from US$ 148 billion in FY2014 to US$ 144 billion in FY2015, with much of the savings on the oil account lost to the aforesaid rise in other imports.

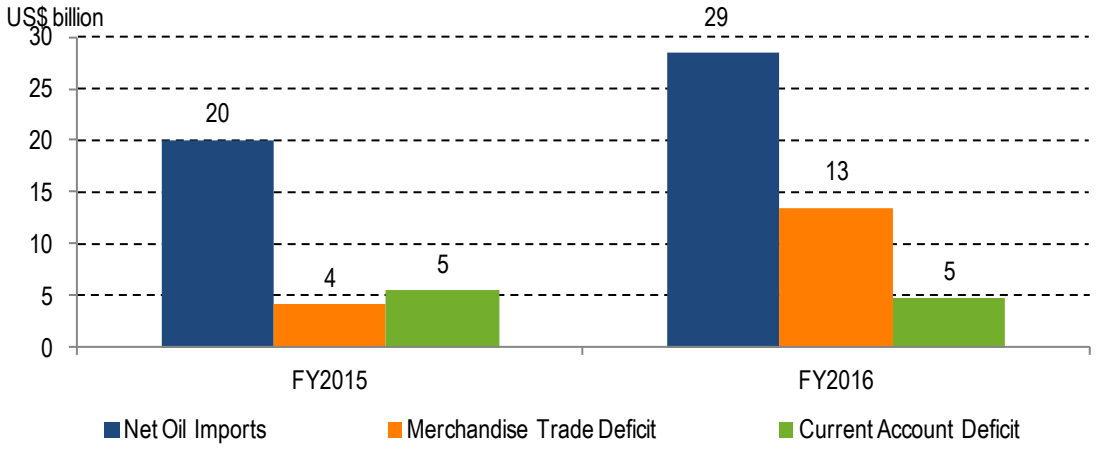
Chart 5: Net Oil Imports, Merchandise Trade Deficit and Current Account Deficit



Merchandise Trade Deficit and Current Account Deficit for FY2016 refers to ICRA's estimates
Source: Ministry of Commerce & Industry, GoI; ICRA research

While the net savings on the oil account rose to US$ 29 billion in FY2016, the correction in the merchandise trade deficit was relatively subdued at US$ 13 billion (from US$ 144 billion in FY2015 to US$ 130 billion in FY2016), following from the contraction in non-POL exports. As a result of these trends, the share of net oil imports in the merchandise trade deficit fell from 69% in FY2014 to 57% in FY2015 and further to 41% in FY2016.

Chart 6: Savings in Net Oil Imports, Merchandise Trade Deficit and Current Account Deficit



Merchandise Trade Deficit and Current Account Deficit for FY2016 refers to ICRA's estimates
Source: Ministry of Commerce & Industry, GoI; ICRA research

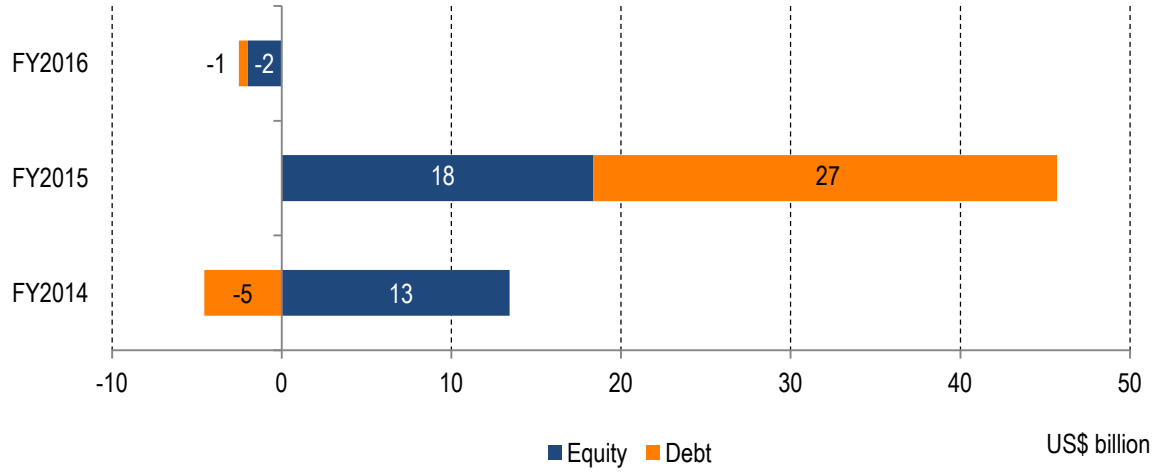
Improvement in current account deficit muted relative to savings in oil import bill: As compared to the net oil import savings of US$ 20 billion in FY2015 and US$ 29 billion in FY2016, the current account deficit recorded a muted improvement in these years. The current account deficit declined from US$ 32 billion (1.7% of GDP) in FY2014 to US$ 27 billion in FY2015 (1.3% of GDP) to US$ 22 billion in FY2016 (1.1% of GDP). The correction in the current account deficit in FY2015 was largely in line with the extent of the fall in the merchandise trade deficit. However, the compression in the current account deficit in FY2016 was substantially smaller than the decline in the merchandise trade deficit, on account of a fall in the net services surplus (from US$ 76 billion in FY2015 to US$ 70 billion in FY2016) and lower secondary income (from US$ 66 billion in FY2015 to US$ 63 billion in FY2016), with the latter reflecting the smaller remittances. Worker's remittances rose from US$ 30 billion in FY2013 to US$ 34 billion in FY2014 to US$ 41 billion in FY2015, before declining to US$ 36 billion in FY2016. This decline in remittances is likely to have been led by lower inflows from Indian workers in oil producing countries, partly on account of a loss of jobs in the POL sector.

Trend in FII inflows reflects combination of factors: FII inflows rose from US$ 9 billion in FY2014 to an all-time high US$ 46 billion in FY2015. This was a result of the improvement in investor sentiments towards the country following the formation of a stable government with a majority in the *Lok Sabha* after the parliamentary elections and the anticipation of a recovery in Indian GDP growth (which materialised) as well as the corporate earnings (which didn't materialise) in FY2015. Interest in debt was also boosted by the moderation in inflation and the expectation of rate cuts (which would dampen yields and boost bond prices), that eventually began in January 2015. Moreover, concerns regarding the vulnerability of India's external

account remained muted. With the fall in commodity prices, sentiment improved towards countries like India, which is a net commodity importer as compared to other emerging markets that are large commodity exporters. Notably, the magnitude of flows improved despite the continued QE-tapering by the US Federal Reserve that had commenced in January 2014.

FY2016 witnessed net FII outflows from India to the tune of US$ 3 billion, in a sharp reversal from the record US$ 46 billion in FY2015. This was partly on account of the concerns regarding the impact of a second consecutive unfavourable monsoon on growth and disappointment in corporate earnings. Global factors also impacted the volume of FII flows, such as the increased sell-off from sovereign wealth funds of oil-producing nations, a risk which is expected to persist in FY2017. Moreover, the rate hike by the US Federal Reserve, bouts of risk aversion on account of the crisis in Greece and the slowdown of the Chinese economy curtailed the flows into the Indian debt and equity markets in FY2016.

Chart 7: Magnitude of FII Inflows



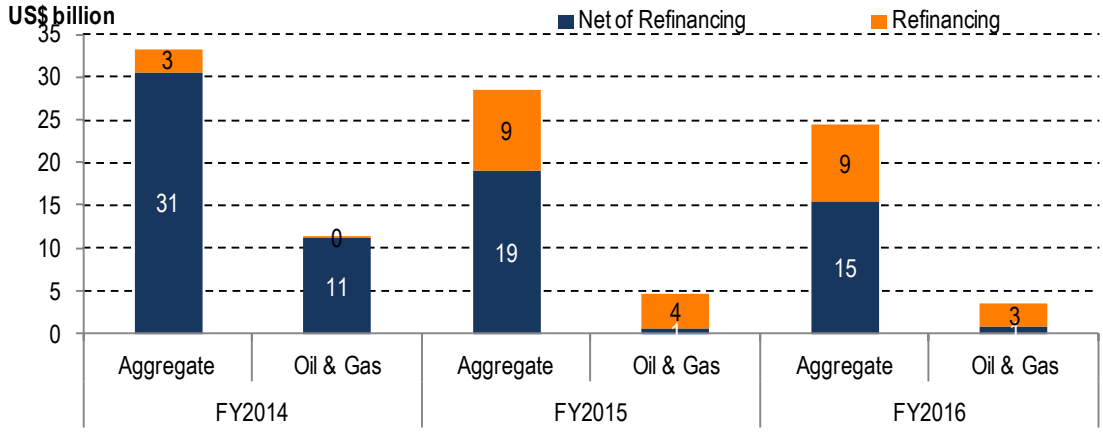
Source: SEBI; NSDL; ICRA research

Trend in ECB inflows reflects combination of factors: The volume of ECB inflows has recorded a step-down for two consecutive years, both in aggregate terms (from U$ 33 billion in FY2014 to US$ 28 billion in FY2015 and further to US$ 24 billion in FY2016) as well as net of refinancing (from US$ 31 billion in FY2014 to US$ 19 billion in FY2015 and further to US$ 15 billion in FY2016).

The decline in ECB inflows in FY2015 with respect to FY2014 primarily reflected low participation by PSUs in the oil and gas sector. On an aggregate, the ECB inflows for the oil and gas sector PSUs declined sharply from US$ 11 billion in FY2014 to US$ 5 billion in FY2015, which was followed by a modest step-down to US$ 4 billion in FY2016. Funding availed of for overseas acquisitions reduced to nil in FY2015 and FY2016 from a substantial US$ 6.1 billion in FY2014, as the attractiveness of investments declined with the fall in crude oil prices. Moreover, the Oil Marketing Companies' (OMCs) working capital requirements moderated, following the suppressed oil prices in the international markets as well as the de-regulation of diesel pricing

during FY2015. The bulk of the ECB inflows for oil and gas PSUs in FY2015 and FY2016 were on account of refinancing.

Chart 8: Magnitude of ECB Inflows



Source: RBI; ICRA research

Table 1: ECB inflows for Oil & Gas PSUs

US$ billion	FY2014	FY2015	FY2016
Import of Capital Goods	0.1	0.0	0.0
Mining, Exploration and Refining	0.3	0.3	0.0
Modernisation	0.0	0.3	0.3
New Project	0.4	0.0	0.0
Others	1.0	0.0	0.0
Overseas Acquisition	6.1	0.0	0.0
Refinancing of Earlier ECB	0.3	4.1	2.8
Replacing the Bridge Finance	0.8	0.0	0.0
Rupee Expenditure Loc.CG	0.5	0.0	0.5
Working Capital	2.0	0.0	0.0
Total	**11.4**	**4.7**	**3.6**
Net of Refinancing	**11.1**	**0.6**	**0.8**

Source: RBI; ICRA research

Other commodity importers too saw a decline in their working capital financing needs. Moreover, sluggish capacity expansion curtailed funding requirements of Indian corporates. Other factors restricting ECB inflows included bouts of currency volatility, the commencement of rate hikes by the US Federal Reserve and a decline in the domestic cost of funding.

Projections for FY2017: Assuming an average crude oil price of US$ 50/barrel as the base case scenario for FY2017 (US$ 46/barrel in FY2016), INR at 68.5/US$ and a moderate growth in the volume of imports (following a step-down in irrigation-related demand for diesel in the backdrop of a favourable monsoon), ICRA anticipates India's net oil imports to rise to ~US$ 61 billion in FY2017 from ~US$ 53.5 billion in

FY2016. Moreover, the current account deficit is forecast to widen to US$ 30 billion in FY2017 from US$ 22 billion in FY2016.

Table 2: Forecast of Net Oil Imports in FY2017

Average Crude Oil Price	US$/bb	40	45	50	55	60	65
Average INR/US$		68.5	68.5	**68.5**	68.5	68.5	68.5
Net Oil Imports	US$ billion	49	55	**61**	67	73	79

Source: Ministry of Commerce & Industry, GoI; ICRA research

Higher production of domestic coal by Coal India Limited as well as the boost to hydroelectricity generation, post recharging of reservoirs, would limit coal imports by 8-10% in FY2017. Moreover, a fall in prices and high inventory levels are likely to lead to a 15% decline in imports of fertilisers and related raw materials resulting in savings of over US$ 1 billion in FY2017. At present, we expect import of agricultural items other than pulses to ease, given the forecast of a favourable monsoon. These savings would, however, be offset by higher gold imports, reflecting an anticipated hardening of prices. Some spillover in gold demand to FY2017 from FY2016 following the calling off of the jewellers' strike is also expected to drive gold imports during the ongoing fiscal. Based on these factors, ICRA expects the gold import bill to rise to ~US$ 38 billion in FY2017 from US$ 32 billion in FY2016.

Despite the Government's drive for the Make In India programme and the focus on improving the ease of doing business, sluggish global demand would continue to thwart a meaningful recovery in export-oriented sectors. Global economic growth is forecast by the IMF to improve marginally to 3.2% in 2016 from 3.1% in 2015. The trend is mixed for India's major trading partners, with growth expected to remain steady in the US and Japan and decelerate in the Euro area and the UK in 2016, as compared to 2015. The recent weaker performance of the INR, relative to several emerging market currencies, has helped engender a modest reduction in the REER (36-country, export-based weights) to 112.5 in May 2016 from 115.8 in December 2015, which would provide a limited buffer to the competitiveness of Indian exports. Moreover, an above-normal monsoon in 2016 would boost exports of agricultural and allied items.

Table 3: Current Account Deficit

US$ billion	FY2014	FY2015	FY2016	FY2017 exp
Merchandise Trade Balance	-148	-144	-130	-139
o/w Net Oil Balance	*-102*	*-82*	*-53*	*-61*
Services Trade Balance	73	75	70	75
Primary Income	-23	-25	-24	-25
Secondary Income	65	66	63	59
o/w Workers' Remittances	*34*	*41*	*36*	*34*
Current Account Balance	**-32**	**-27**	**-22**	**-30**
Percentage of GDP	***-1.7%***	***-1.3%***	***-1.1%***	***-1.3%***

Source: RBI; ICRA research

A favourable monsoon after a gap of two years would have a mixed impact on trade in various sectors, boosting agricultural exports and limiting imports of crude oil and coal while enhancing the demand for gold to some extent. A meaningful recovery in merchandise exports is unlikely to set in during FY2017, given the sluggish outlook for global trade flows. ICRA anticipates India's net oil imports to rise to ~US$ 61 billion in FY2017 from ~US$ 53.5 billion in FY2016, widening the merchandise trade deficit to US$ 142 billion in FY2017 from US$ 130 billion in FY2016. Any sustained rally in commodity prices, particularly crude oil, would boost the import bill, relative to our baseline forecast while simultaneously counteracting the risk posed by lower remittances, particularly from the Middle East. While the services trade surplus is expected to record an improvement, India's current account deficit is likely to widen to US$ 30 billion in FY2017 from US$ 22 billion in FY2016, but the anticipated capital inflows (particularly from the FDI route) should cover the same comfortably.

Going forward, ICRA believes that incremental FII equity inflows will largely be guided by the improvement in corporate earnings which, in turn, will be reflective of the uptick in rural demand and the strength of the distribution of the monsoons. Notwithstanding the further planned increase in FPI limits in State and Central Government securities, episodes of global risk aversion as well as portfolio rebalancing in line with the expected rise in interest rates in the US may curtail FII inflows in the debt segment in the next few months.

Several foreign joint venture (JV) partners have announced that they would increase their stake in their respective insurance JVs after the easing of FDI norms in H2FY2016, which ICRA expects would generate a surge in FDI inflows into this sector in the next couple of quarters, contributing to an annual growth of 20-25% in aggregate FDI inflows during FY2017 as compared to the record-high US$ 41 billion in FY2016.

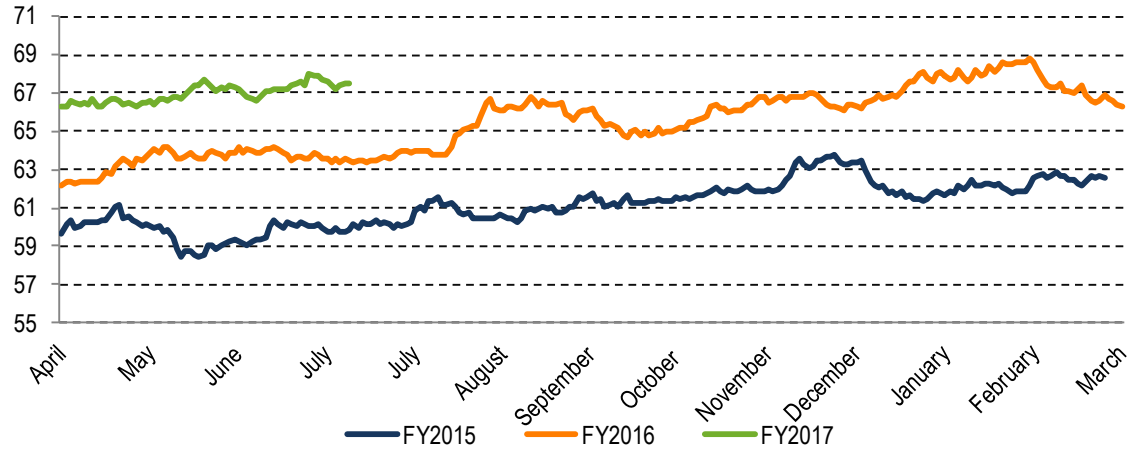
If a broad-based pickup in investment activity sets in, ICRA expects ECB inflows net of refinancing to register a modest growth during FY2017, although volatility in the INR and the expected transmission of past easing to domestic lending rates would curb interest in external debt. At present, ICRA does not expect a surge in interest in ECB from the oil and gas PSUs.

INR depreciates relative to USD despite lower foreign exchange demanded by oil importers: Despite the commencement of the fall in crude oil prices in late FY2015, which curtailed the lower volume of foreign exchange demanded by oil importers to pay for shipments, the INR displayed deprecation over the ensuing months. The fall in crude oil prices was not adequate to prevent a weakening of the INR precipitated by various factors, including inflation differentials, sporadic fiscal concerns as well as global trends such as the impact of the strengthening of USD vs. a basket of global currencies.

Improved sentiments after the Parliamentary election results in May 2014, led to an appreciation in the INR relative to the US$ at the beginning of FY2015. Subsequently, the INR weakened between May 2014-December 2014, from ~Rs. 60/US$ to ~Rs. 63.7/USD, reflecting dollar strength related to some improvement in economic fundamentals in the US as well as the phasing out of the US Federal Reserve's bond-buying programme, in spite of continued FII inflows into India. Consequently, the INR recovered to

61.4/US$ in mid-January 2014 benefiting from easing external sector concerns, following the fall in crude oil prices. However, the currency resumed its weakening streak to around 63/US$ by the end of the fiscal.

Chart 9: Movement in INR-US$ Exchange Rate

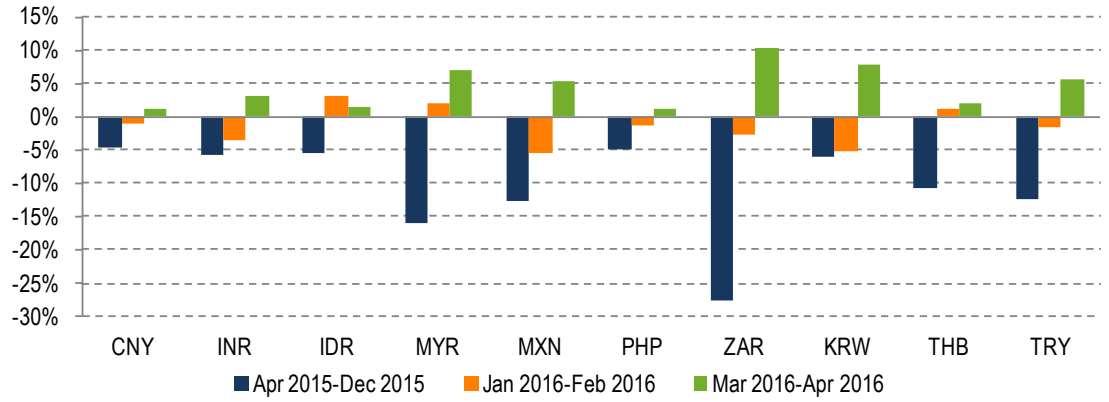


Source: RBI; ICRA research

The INR depreciated by a significant 6% relative to the US$ over the course of FY2016, from ~Rs. 62.6/US$ to ~Rs. 66.3/US$, recovering from the all-time low of Rs. 68.8/US$ (RBI reference rate) on February 26, 2016. While expectation of rate hikes by the US Fed led to broad-based dollar strength and a weakening of several emerging market currencies in April-December 2015, the INR stood out as one of the best performers during this period. In contrast, the US$ weakened during January-April 2016, led by a paring back of rate hike expectations by the US Fed. Moreover, despite the unconventional monetary policies adopted by the Bank of Japan (adoption of negative interest rates in January 2016) and the ECB (rise in monthly purchases under the asset purchase programme to 80 billion euro from 60 billion euro, and cut in the deposit rate to -0.4% in March 2016), the yen and the euro counter-intuitively strengthened with respect to the US$ during this period.

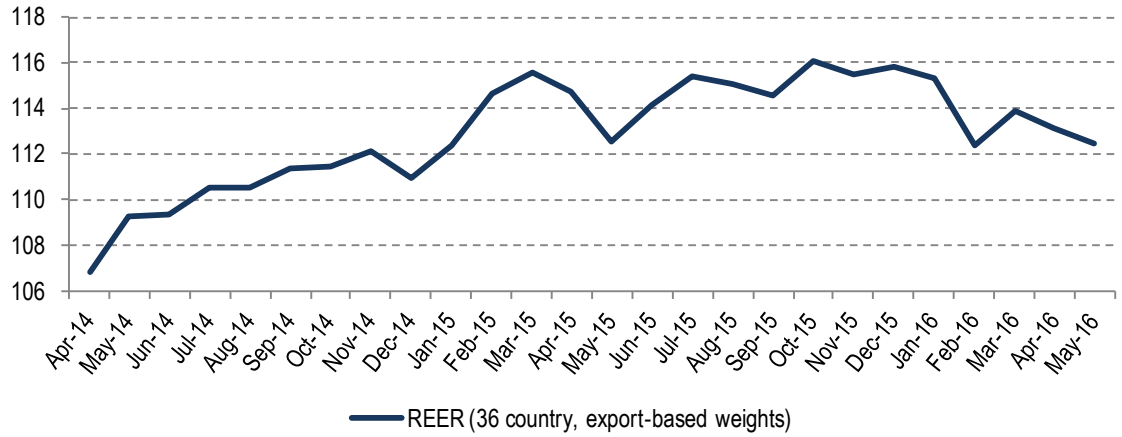
The INR was one of the worst-performing emerging market currencies during January-April 2016. In the first two months of this period, emerging market currencies displayed a mixed trend. The INR weakened by a considerable 3.4% against the US Dollar during January-February 2016, partly led by concerns pertaining to the impending Union Budget, which contributed to FII outflows. During this period, the RBI sold US$ 3.3 billion in the spot market to contain volatility. Subsequently, the Union Budget for 2016-17 assuaged concerns related to the outlook for fiscal consolidation. This, in conjunction with healthy FII equity inflows in March-April 2016, led to a strengthening of the INR by 3.1% against the US Dollar. Nonetheless, the INR was out-performed by the emerging market currencies such as the Malaysian ringgit, South African rand and the South Korean won over March-April 2016.The RBI was a net buyer in the forex spot market, with substantial purchase of US$ 6.0 billion in March-April 2016.

Chart 10: Movement in Various Emerging Market Currencies Relative to the US$



Source: Bloomberg; ICRA research

Chart 11: Index of REER for INR (36 Country, Export-Based Weights)



Source: RBI; ICRA research

The INR recorded some depreciation in May-June 2016, initially led by the renewed expectation of multiple rate hikes by the US Federal Reserve in the current year, stoked by the release of the minutes for the FOMC's April 2016 meeting, and later in the aftermath of the Brexit. However, the weakness in the INR (1.8%) was relatively contained as compared to the depreciation recorded by currencies such as the South African rand (3.5%), the Mexican peso (6.4%) and the Malaysian ringgit (3.2%) during those two months. In contrast to the depreciation relative to the US$, the INR has strengthened as compared to a wider basket of currencies, with a rise in the 36 country export-based REER to 112.5 in May 2016 from 106.8 in April 2014.

A trend of dollar strength and post-Brexit (referendum in the United Kingdom that revealed that a majority of voters do not wish to continue membership of the European Union) uncertainty in global financial markets may weigh upon emerging market currencies, including the INR in 2016. Although the ~US$ 34 billion raised under the two swap windows offered by the RBI, which will mature from September 2016 onwards, are adequately covered by its forward purchases, the potential outflow of NRI deposits after the maturing of the substantial FCNR(B) deposits, may result in some volatility.

While Indian economic growth is expected to accelerate in FY2017, sentiment for the INR may be dampened by any sustained rise in the price of commodities, including crude oil, which would modestly widen India's current account deficit. At present, we expect the INR to record some depreciation over the course of FY2017, and remain in the range of Rs. 66.5-70.0/US$.

Lower prices of crude and mineral oils contribute to decline in WPI inflation; muted impact on CPI inflation: Lower crude oil prices transmitted speedily into wholesale inflation, but had a limited first-round effect on the Indian CPI that is dominated by food and various services. For instance, the weight of crude oil in the WPI stands at 0.9%, whereas mineral oils have a substantial 9.4% weight in that index. On the other hand, while crude oil does not feature in the retail basket, the weight of mineral fuels[1] and fares[2] (within different sub-indices of the CPI; monthly inflation rates for these items are available from January 2015 onwards) stands at a relatively modest 4.4% and 2.5%, respectively, as estimated by ICRA. The pace of transmission of crude oil price movements into retail prices of mineral fuels and subsequently into fares, thus has a differential impact on WPI and CPI inflation.

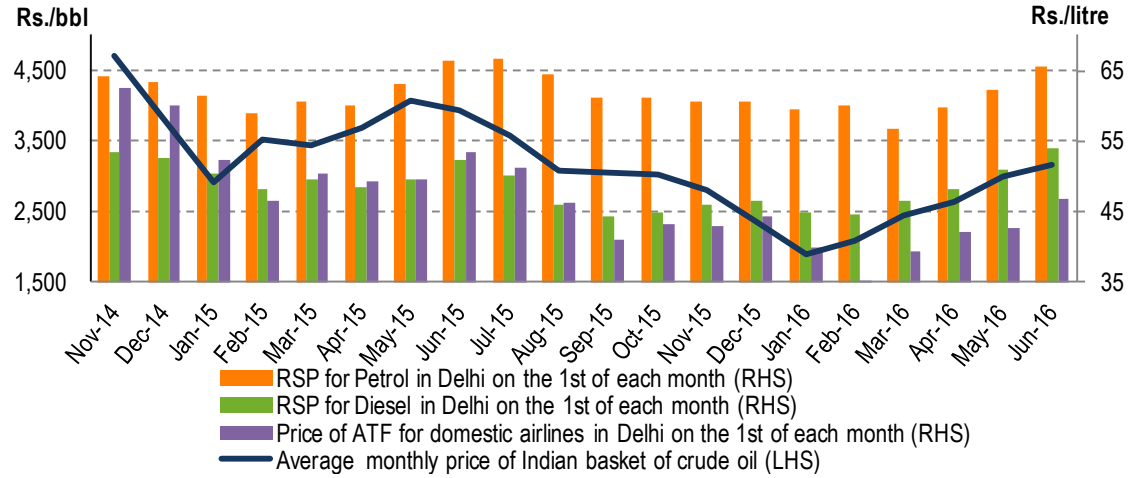
The extent and speed of transmission of the movement in the price of the Indian crude oil basket has varied across the domestic prices of different fuels. For instance, transmission to output prices has been relatively fast for fuels with market-linked pricing, such as aviation turbine fuel (ATF). The price of ATF (for domestic airlines) in Delhi nearly halved from Rs. 62.5/litre on November 1, 2014 to Rs. 35.1/litre on February 1, 2016, before rising to Rs. 49.3/litre on July 1, 2016.

While prices of petrol and diesel (combined weight of 5.8% in the WPI Index) were deregulated by the GoI in 2010 and 2014, respectively, the hikes in excise duty imposed by the Union Government on these fuels (Rs. 11.75/litre and Rs. 13.5/litre, respectively, in various tranches since November 2014) moderated the pass through of the fall in crude oil prices movements into the retail prices of these fuels. Moreover, upward revisions in VAT rates introduced by some State Governments have added to the cost of fuels. For instance, the price of petrol in Delhi eased somewhat from Rs. 64.3/litre on November 1, 2014 to Rs. 56.7/litre on March 1, 2016 before reversing to Rs. 65.6/litre on June 1, 2016. In a similar trend, the price of diesel fell from Rs. 53.4/litre on November 1, 2014 to Rs. 44.7/litre on February 1, 2016, before rising rapidly to Rs. 54.0/litre on June 1, 2016.

However, transmission has been muted in the case of fuels such as kerosene and LPG (combined weight of 1.7% in the WPI Index), which continue to be provided at subsidised prices to a section of consumers. Nevertheless, these two items comprise a relatively small proportion of the mineral oils basket of the WPI Index (weight: 9.4%).

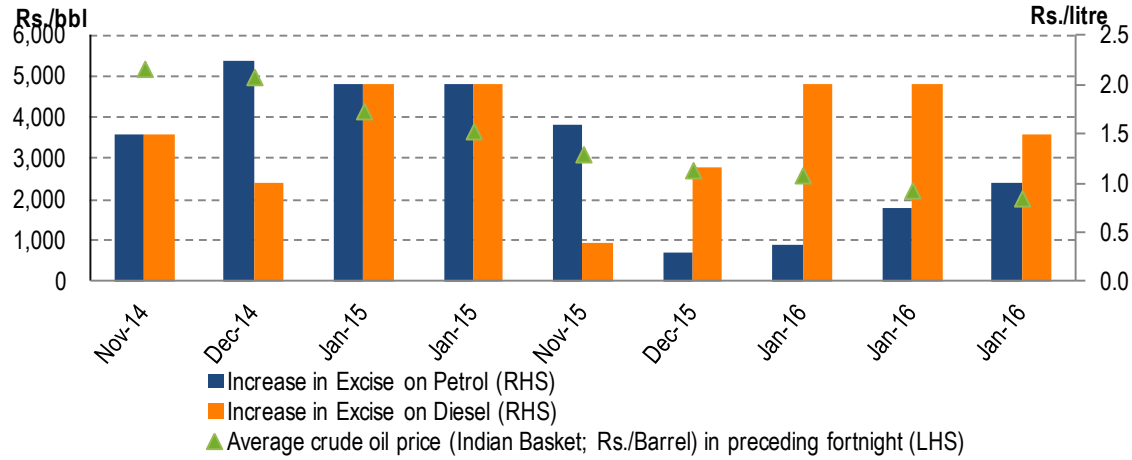
[1] Inclusive of LPG, kerosene, diesel, petrol, lubricants and other fuels.
[2] Inclusive of fares for railway, bus, tram, taxi, auto-rickshaw, van, airplane, boat and steamer, and other conveyance expenses.

Chart 12: Movement in Prices of Crude Oil, ATF, Diesel and Petrol



Source: PPAC, GoI; ICRA research

Chart 13: Increase in Excise Duty on Diesel and Petrol



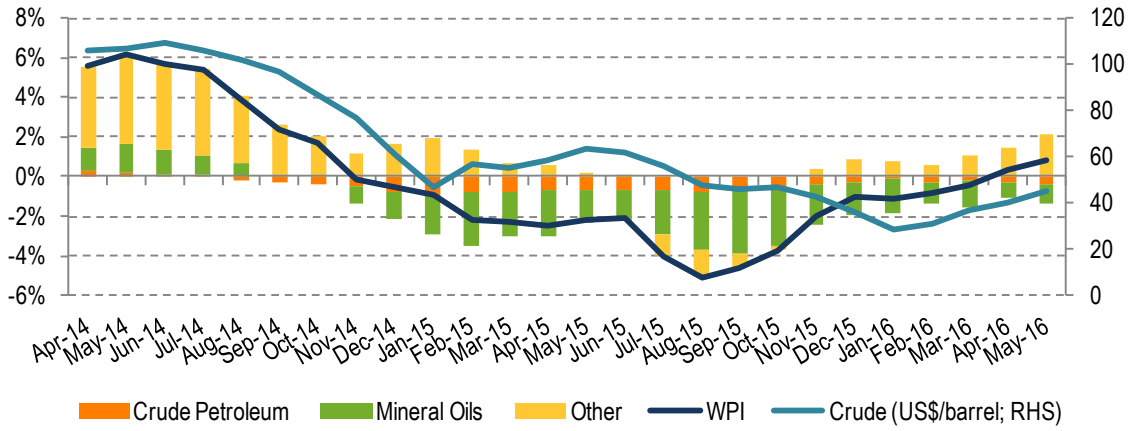
Source: PPAC, GoI; ICRA research

Owing to the overall weight and the contribution of fuels with market-linked pricing in the WPI, the fall in prices of crude and mineral oils has had a considerable impact on WPI inflation from November 2014 onwards. The drag exerted by these items was crucially responsible for the sub-zero WPI inflation for 17 consecutive months from November 2014 to March 2016.

Going forward, a sustained rise in prices of crude and mineral oils is likely to be transmitted fairly quickly to WPI inflation, especially if the GoI chooses not to cut the excise duty on petrol and diesel. While the latter provides a substantial cushion to the Government to dull the inflationary impact of rising crude prices, a cut in excise duty would adversely impact the growth of the GoI's revenue

collections. Nevertheless, moderately healthy volume growth of consumption of petroleum products would partly offset the impact of excise cuts.

Chart 14: Composition of WPI Inflation

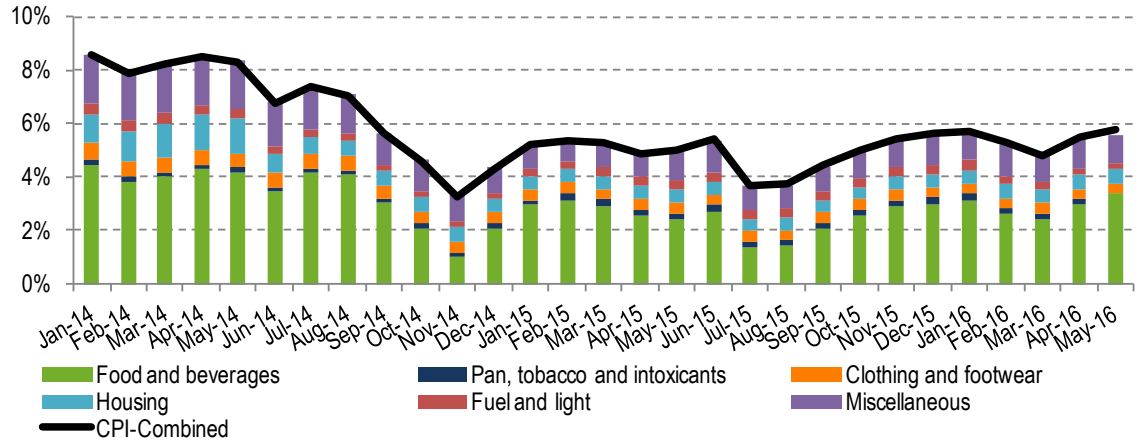


Source: Office of the Economic Advisor, Ministry of Commerce & Industry, GoI; ICRA research

The Report of the Expert Committee to Revise and Strengthen the Monetary Policy Framework released in January 2014 recommended that CPI-combined should be the new inflation anchor for the Reserve Bank of India (RBI), which was subsequently adopted by the Central Bank. CPI inflation was to be brought down from 9.9% in December 2013 to 8% in 12 months (January 2015) and 6% in 24 months (January 2015), after which the recommended a target of 4% +/-2% was to be formally adopted. Inability to achieve this target for three successive quarters would be classified as failure to establish and achieve the nominal anchor. The chief rationale behind adopting CPI-combined as the nominal anchor for the Monetary Policy was that inflationary expectations and, therefore, wage reset demands are influenced by the prices of the entire basket of consumer goods, including food items, that the consumer experiences at the retail level. This enhances the appropriateness of CPI-combined as the nominal anchor as compared to its subset excluding food items and fuel and light (CPI-core), which comprises only 41% of the CPI. Moreover, WPI-core (non-food manufactured products; 55% of the WPI), includes several industrial inputs that are not directly consumed by households, rendering it unsuitable as the Monetary Policy anchor. Furthermore, savings decisions are impacted by real interest rates, after taking into account the CPI, which is more relevant to households than the WPI.

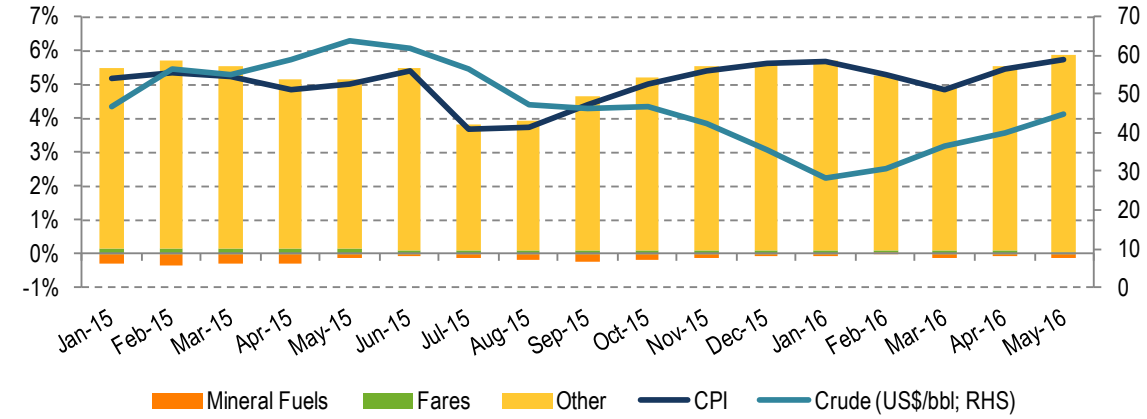
The fall in CPI inflation since early-2014 has largely been driven by food and housing inflation. The drag imposed by mineral fuels on the CPI has been quite limited, given the type of fuels and fares included in this index. For instance, regulated fuels that have not witnessed much of a change in retail prices for the subsidised segment, such as PDS kerosene and LPG, have a substantial combined weight of 1.6% within the mineral fuels basket (weight: 4.4%) of the CPI Index. Moreover, petrol and diesel have a combined weight of 2.3% in the CPI, whereas items such as ATF are, as expected, not included in the retail basket. In addition, fares (weight: 2.5%) are dominated by bus/tram fares (weight: 1.4%), which tend to be closely regulated by State Governments. In contrast, the combined weight of taxi and air fares, which would be more sensitive to changes in fuel prices, is less than 0.7%.

Chart 15: Composition of CPI Inflation



Source: CSO; ICRA research

Chart 16: Composition of CPI Inflation Highlighting Impact of Mineral Fuels and Fares



Source: CSO; ICRA research

The first round impact of crude oil prices on the CPI has been relatively limited in the past. To the extent that retail fuel prices have firmed up, higher transport costs have led to some second round effect on the prices of various goods. In our view, even if the GoI chooses not to cut the excise duty on petrol and diesel going forward, the impact of higher crude oil prices into CPI inflation would be limited. Moreover, factors such as the extent to which monsoon dynamics are successful in dampening food inflation would have a greater role in determining the trajectory of CPI inflation as well as the magnitude of future rate cuts.

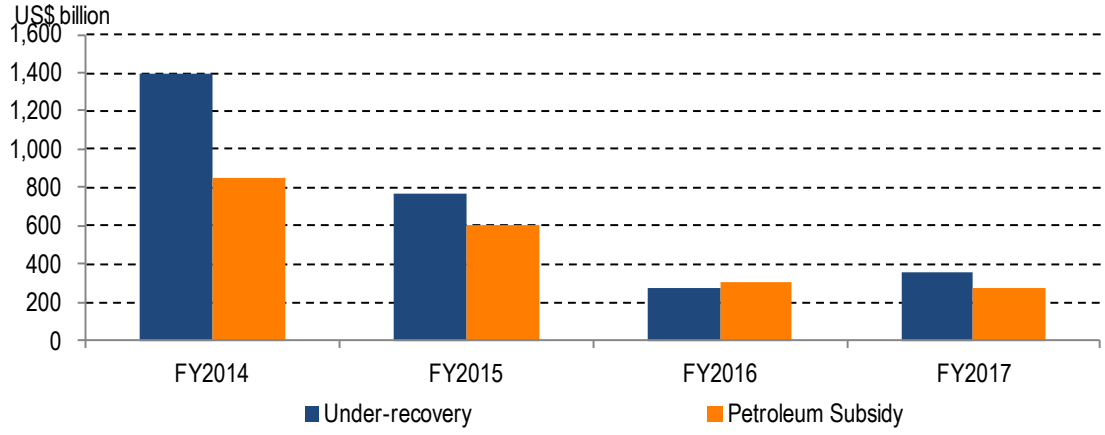
Lower inflation leads to reductions in policy rate; mixed transmission to market and bank interest rates: The decline in CPI inflation created room for the RBI to undertake 150 bps of monetary easing since January 2015. While commercial paper rates adjusted swiftly, the transmission of the same to bank deposit and lending rates remains incomplete. In its second bi-monthly monetary policy review in June 2016, the Central Bank sharpened its focus on addressing persisting impediments to monetary transmission.

3 Impact on Central Government Finances

Lower fuel prices dampen subsidies and boost tax collections: The movement in fuel prices impacts the Central Government's finances through outflow on petroleum subsidies as well as inflows from various taxes and duties, dividend income etc. While the recent decline in fuel prices has both dampened fuel subsidy outgo and allowed for hikes in excise duty rates, the fiscal balances of the Central Government on an absolute basis, have not shown a commensurate improvement. Following the deregulation of diesel and other measures taken by the GoI, the petroleum subsidy bill would not pose much of a risk to the GoI's fiscal balances, even in a scenario of up to US$ 65/barrel and INR 70.5/US$. However, if the GoI chooses to reverse some of the earlier excise hikes to contain inflationary pressures, its revenue receipt and fiscal deficit would be adversely impacted.

Under-recoveries and petroleum subsidy outflow decline significantly: In addition to movements in global crude oil prices and exchange rates, a number of other factors affect the fuel subsidies to be borne by the GoI. The retail prices of petrol and diesel have been deregulated, but kerosene and LPG continue to be sold at administered prices below the market level. The product-wise under-recovery, i.e. the difference between the retail price and market level has varied considerably over the recent years. Moreover, the portion of total under-recoveries reimbursed to the OMCs by upstream companies, impacts the magnitude of fuel subsidy required to be borne by the GoI.

Chart 17: Under-recovery and Petroleum Subsidy Released by the GoI



Subsidy Figures for FY2016 refer to Revised Estimates or RE and FY2017 refer to Budget Estimates or BE; Under-recovery for FY2017 refers to ICRA's forecast
Source: PPAC; GoI; ICRA research

A combination of the fall in global crude oil and fuel prices, and monthly step up in retail diesel prices that culminated in complete deregulation of the same, aided in the halving of under-recoveries to Rs. 763 billion in FY2015 from Rs. 1,399 billion in FY2014. In addition to the continued correction in global prices, steps taken by the GoI to control subsidy outgo such as the Aadhaar-linked DBT scheme for LPG (which weeded

out several bogus accounts) and cessation of LPG subsidy for individuals with income in excess of Rs. 1.0 million per annum, led to a considerable reduction in under-recoveries to Rs. 276 billion in FY2016.
As against the aforesaid under-recoveries, the fuel subsidy released by the GoI declined to Rs. 603 billion (including a substantial spillover for the previous fiscal) in FY2015 from Rs. 854 billion in FY2014. The GoI had approved budgetary support for under-recovery for PDS kerosene and domestic LPG (under Direct Benefit Transfer) for FY2016 at Rs. 12/litre and Rs. 18/kg (Rs. ~255 per cylinder), respectively, with the balance to be borne by the upstream companies. The GoI's Revised Estimates or RE for FY2016 allocated Rs. 300 billion for petroleum subsidy (once again including some spillover for the previous fiscal), higher than the under-recoveries for that year. Overall, the decline in petroleum subsidy resulted in savings of Rs. 250 billion in FY2015 and a modestly higher Rs. 300 billion in FY2016.

Petroleum subsidy allocation for FY2017 appears adequate up to US$ 45/barrel crude oil: The allocation for petroleum subsidy was reduced from Rs. 300 billion in the RE for FY2016 to Rs. 270 billion in the Budget Estimates (BE) for FY2017. In line with the rising price of crude oil, the under-recoveries on kerosene and LPG have increased, although these remain lower than the budgetary support that had been approved for FY2016 (Rs. 12/litre for PDS kerosene and Rs. 18/kg for domestic LPG). **The adequacy of the fuel subsidy allocation for FY2017 would be determined by global fuel prices, the extent of depreciation in the INR relative to the US$, and the amount of under-recoveries to be borne by the upstream companies.**

Table 4: Sensitivity of Under-Recoveries and Petroleum Subsidy in FY2017 to Crude Oil Price

Average Crude Oil Price	US$/bb	40	45	50	55	60	65
Average INR/US$		68.5	68.5	**68.5**	68.5	68.5	68.5
Total U/R	Rs. Billion	231.9	293.2	**354.5**	415.9	477.2	538.6
GoI subsidy share in UR (Rs 12/litre and up to Rs. 255/cylinder)	Rs. Billion	231.9	280.2	**324.3**	368.5	369.2	369.2
Upstream Share	Rs. Billion	0.0	13.0	**30.2**	47.4	108.0	169.4
Net Under-recovery burden on OMCs	Rs. Billion	0.0	0.0	**0.0**	0.0	0.0	0.0

Source: GoI; ICRA research

In our base line scenario, gross under-recoveries of the OMCs would rise to Rs. 354.5 billion in FY2017. Under the current sharing formula, the GoI's subsidy burden would be Rs. 324.3 billion, modestly higher than the BE of Rs. 270 billion, resulting in a muted impact on its fiscal balances. Following the deregulation of diesel and other measures taken by the GoI, the petroleum subsidy bill would reach the ceiling of ~Rs. 369 billion at Indian Basket crude oil price of US$55/bbl for FY2017 under the current sharing formula. As a result, higher petroleum subsidies do not pose much of a risk to the GoI's fiscal balances, even in a scenario of crude oil prices beyond US$55/barrel.

Table 5: Sensitivity of Under-Recoveries and Petroleum Subsidy in FY2017 to INR-US$ Exchange Rate

Average Crude Oil Price	US$/bb	50	50	50	50	50
Average INR/US$		66.5	67.5	**68.5**	69.5	70.5
Total U/R	Rs. Billion	332.3	343.4	**354.5**	365.7	376.8
GoI subsidy share in UR (Rs 12/litre and up to Rs. 255/cylinder)	Rs. Billion	308.7	316.5	**324.3**	332.1	339.9
Upstream Share	Rs. Billion	23.5	26.9	**30.2**	33.6	36.9
Net Under-recovery burden on OMCs	Rs. Billion	0.0	0.0	**0.0**	0.0	0.0

Source: GoI; ICRA research

Hike in excise duties boosts GoI's revenues: The Central Government derives income from the petroleum sector through various cess and duties (including excise duty, customs duty and service tax), royalties, dividend income, profit petroleum etc. Such revenues are dominated by excise duty, which has accounted for over half of these inflows since FY2014. Excise duty is levied on POL products in the form of basic excise duty (sharable with the States as untied tax devolution), additional duty of customs/excise levied on MS and HSD (i.e. road cess, not sharable with the States) and special additional duty on MS (i.e. surcharge; not sharable with the States). The aggregate tax revenues of the GoI, which are considered to be 'shareable', are partly devolved to the State Governments, in a proportion that is based on the recommendations of the successive Finance Commissions. Therefore, a portion of the GoI's tax collections from the petroleum sector are shared with the State Governments. Moreover, the road cess is transferred into the non-lapsable Central Road Fund, a portion of which is also subsequently provided to the States (through grants) for the development of the roads sector.

In the Central Government's accounts, the proceeds from the cess on HSD and MS are transferred to the Central Road Fund by way of a debit entry under the major head roads and bridges (revenue expenditure). Expenditure from the Central Road Fund is accounted for vide an inter account transfer, which is classified as capital expenditure for transfers made to NHAI and revenue expenditure for funds allocated to the States.

The total revenue earned by the GoI from the petroleum sector rose by Rs. 192 billion to Rs. 1,721 billion in FY2015 from Rs. 1,529 billion in FY2014 (Source: PPAC). This was entirely on account of an increase in excise duty of Rs. 212 billion in FY2015 as compared to the previous year, whereas profit petroleum and customs duty revenues declined by Rs. 19 billion and Rs. 3 billion, respectively, in the same years.

On a gross basis, the GoI's excise duty collections on petroleum products rose by Rs. 212 billion to Rs. 992 billion in FY2015 from Rs. 780 billion in FY2014 (Source: PPAC). This was chiefly led by the increase in basic excise duty (shareable with State Governments) on HSD and MS by Rs. 6.5/litre and Rs. 7.75/litre, respectively, in four tranches between November 2014 and January 2015, which the GoI had estimated, would result in an additional Rs. 202 billion of revenues during the remainder of that fiscal.

Table 6: Contribution to Central Exchequer

	FY2014 Rs. Billion	FY2015 Rs. Billion	FY2016 Rs. Billion	FY2015 Growth	FY2016 Growth	FY2015 Absolute Change	FY2016 Absolute Change
Cess on Crude Oil	162	159	155	-2%	-3%	(2)	(5)
Royalty on Crude Oil / Gas	46	39	49	-15%	27%	(7)	10
Customs Duty	50	48	74	-5%	56%	(3)	27
Excise Duty	780	992	1,786	27%	80%	212	794
Service Tax	21	22	28	4%	30%	1	7
Others	2	3	3	22%	4%	1	0
Corporate/ Income Tax**	233	237	246	2%	4%	4	9
Dividend Income to Central Govt	92	92	102	0%	11%	0	10
Dividend distribution tax	30	35	46	19%	31%	5	11
Profit Petroleum on exploration of Oil/ Gas*	114	94	95	-17%	0%	(19)	0
Total	**1,529**	**1,721**	**2,584**	13%	50%	192	864

Source: PPAC; ICRA research

In the Union Budget for 2015-16, basic excise duty rates on MS and HSD were reduced by Rs. 4/ litre, whereas the effective rates of the additional duty of customs/excise levied on these items (i.e. road cess) was increased from Rs. 2 per litre to Rs. 6 per litre.

Based on the actual tax revenue data published by the GoI for FY2014 and FY2015, the components of excise duty on MS and HSD that are not sharable with State Governments (road cess and surcharge) went up by Rs. 78 billion from Rs. 324 billion in FY2014 to Rs. 402 billion in FY2015. The sharable component, therefore, appears to have increased by around Rs. 134 billion from Rs. 456 billion in FY2014 to Rs. 590 billion in FY2015; ~32% of the latter would have been devolved to the States, as per the prevailing sharing formula based on the recommendations of the Thirteenth Finance Commission or ThFC for its award period FY2011 to FY2015. ICRA estimates that the excise revenues collected by the GoI on POL products that were shared with the States vide tax devolution rose by Rs. 42 billion from ~Rs. 143 billion in FY2014 to ~Rs. 185 billion in FY2015. Therefore, around 20% of the gross increase in excise duty on petrol and diesel of Rs. 212 billion in FY2015 relative to FY2014 would have been devolved to the States, while the bulk Rs. 170 billion or 80% would have been retained by the GoI (including the amount transferred to the Central Road Fund).

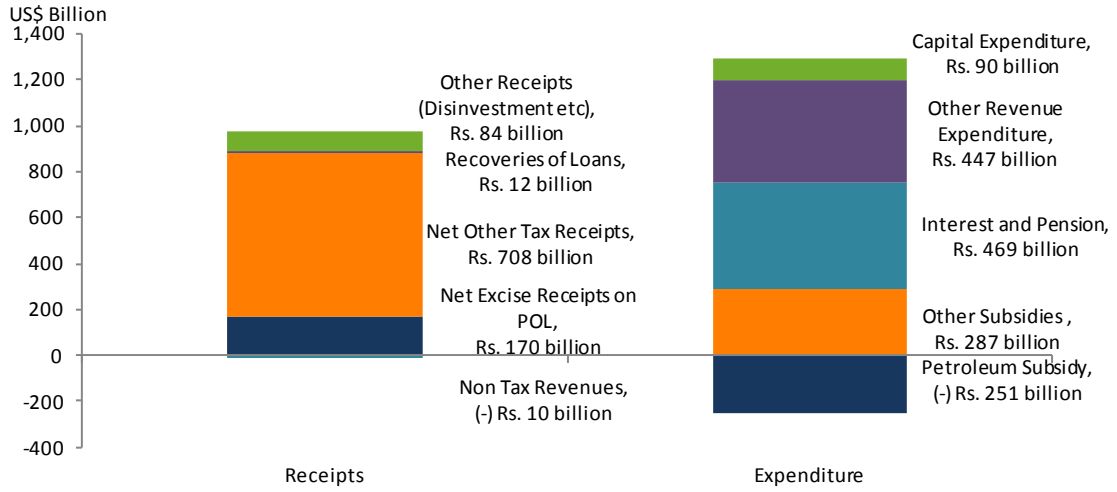
Subsequently, the total taxes, duties, royalties and dividend earned by the GoI from the petroleum sector rose by a sharp Rs. 864 billion to Rs. 2,584 billion in FY2016 from Rs. 1,721 billion in FY2015 (Source: PPAC). The majority of this increase was on account of excise collections, which rose by Rs. 794 billion to Rs. 1,786 billion in FY2016 from Rs. 992 billion in FY2015, benefitting partly from the earlier increase in road cess. Moreover, between November 2015 and January 2016, basic excise duty on HSD and MS were increased by Rs. 7.0/litre and Rs. 4.0/litre, respectively, in five tranches, which was estimated to result in an additional Rs. 170 billion of gross revenues for the GoI during the remainder of FY2016. In addition, the rise in consumption of fuels would have boosted overall excise collections.

As compared to the increase in total excise collections on POL products of Rs. 794 billion in FY2016, the RE for 2015-16 published by the GoI indicate that the non-sharable components of excise duty more-than-doubled from Rs. 402 billion in FY2015 to Rs. 905 billion in FY2016 RE, a rise of Rs. 503 billion. The sharable component of excise collections on POL products is therefore estimated by ICRA to have increased by around Rs. 291 billion, from ~Rs. 590 billion in FY2015 to ~Rs. 881 billion in FY2016. A higher ~42% of the latter would have been devolved to the States, as per the recommendations of the Fourteenth Finance Commission (FFC) for its award period of FY2016 to FY2020. Accordingly, ICRA estimates that the excise revenues collected by the GoI on POL products that were shared vide tax devolution with the States doubled to ~Rs. 364 billion in FY2016 from ~Rs. 185 billion in FY2015. Therefore, around 23% of the gross increase in excise duty on petrol and diesel of Rs. 794 billion in FY2016 relative to FY2015 would have been shared with the States via tax devolution, while Rs. 615 billion or 77% would have been retained by the GoI (including the amount transferred to the Central Road Fund).

The impact of change in crude oil prices on the GoI's fiscal metrics in FY2017 would be influenced by the extent of variation in the excise duty levied on petrol and diesel, as well as whether the changes are made in basic excise duty (shareable with the States) or in the other components of excise duty (retained by the Centre). If the basic excise duty on petrol and diesel levied at present continues during the remainder of ongoing fiscal, the overall excise collections of the GoI on POL products as well as the amount devolved to the State Governments should display a healthy rise during FY2017. However, if the GoI chooses to reduce excise duty to contain inflationary pressures, its revenue receipt and fiscal deficit would be adversely impacted.

GoI's fiscal deficit widens on an absolute basis despite lower petroleum subsidy and incremental excise revenues: The increase in the GoI's net receipts from excise duty on petrol and HSD of Rs. 170 billion (net of amount devolved to the State Governments), was a small component of its incremental receipts in FY2015. Of this Rs. 170 billion, around Rs. 92 billion was on account of basic excise duty, whereas Rs. 19 billion was on account of surcharge and Rs. 59 billion was in the form of road cess. The savings from petroleum subsidy were largely equivalent to the higher expenditure on other subsidies, mainly food. Moreover, the GoI's capital expenditure increased by Rs. 90 billion in FY2015, contributing to a widening of its fiscal deficit.

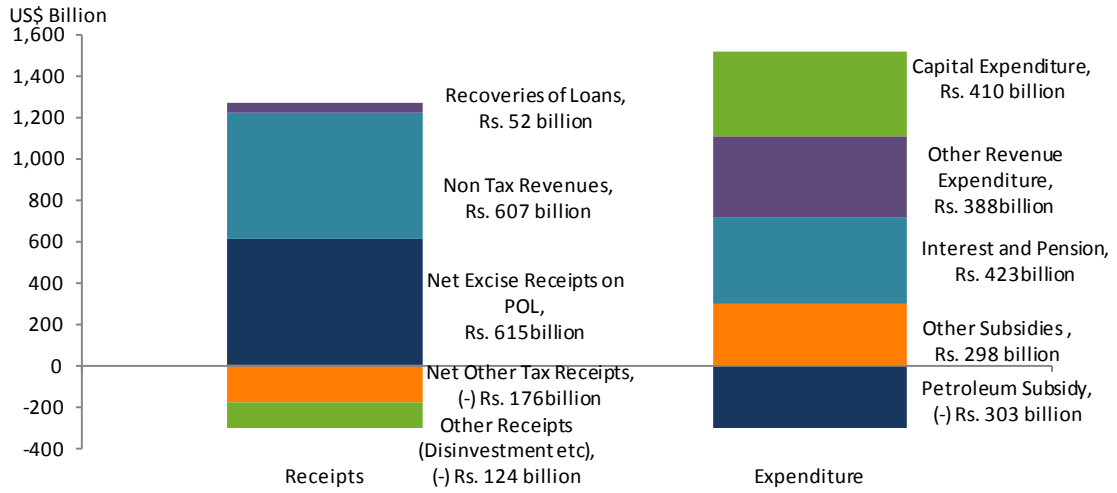
Chart 18: Absolute Change in Major Revenues and Expenditure of the GoI in FY2015



Source: GoI; ICRA research

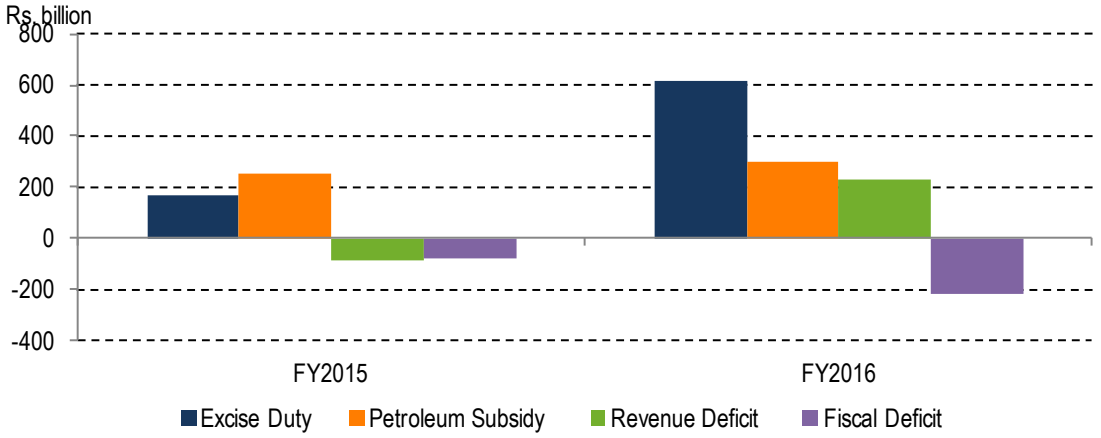
In FY2016 RE, the higher net receipts to the GoI from excise duty on petrol and HSD (Rs. 615 billion), helped to offset the impact of the increase in tax devolution to the State Governments to 42% of shareable taxes during the FFC's award period from 32% during the ThFC's award period, as well as lower receipts from disinvestment. Of the incremental Rs. 615 billion, an estimated Rs. 112 billion was on account of basic excise duty, whereas Rs. 24 billion was on account of surcharge and Rs. 479 billion was in the form of road cess. In line with the trend in the previous fiscal, the savings from petroleum subsidy were largely matched with higher outgo on other subsidies, particularly food. Additionally, the GoI's capital expenditure rose by a sharp Rs. 410 billion in FY2016 RE relative to FY2015, once again, contributing to a higher fiscal deficit on an absolute basis.

Chart 19: Absolute Change in Major Revenues and Expenditure of the GoI in FY2016 RE



Source: GoI; ICRA research

Chart 20: Absolute Change in Petroleum Subsidy, Net Excise Duty on Petroleum Products, Revenue Deficit and Fiscal Deficit of the GoI



Figures for FY2016 refer to RE for petroleum subsidy, ICRA's estimate for excise duty and provisional for revenue and fiscal deficit
Source: PPAC; GoI; ICRA research

Despite the savings on account of lower petroleum subsidy outgo as well as incremental revenues from excise hikes in FY2015 and FY2016, the GoI's fiscal deficit on an absolute basis widened in both these years, on account of a variety of other factors including a rise in food subsidies, interest and pension payments, other revenue expenditure as well as capital expenditure. Moreover, its revenue deficit worsened in FY2015, and the improvement in absolute terms in FY2016 was substantially smaller than the savings emanating from petroleum subsidies and higher excise inflows.

Nevertheless, the GoI's fiscal deficit as a percentage of GDP declined from 4.5% in FY2014 to 4.1% in FY2015 and further to 3.9% in FY2016. Moreover, its revenue deficit as a percentage of GDP declined from 3.2% in FY2014 to 2.9% in FY2015 and further to 2.5% in FY2016. Following the deregulation of diesel and other measures taken by the GoI, the petroleum subsidy bill would not pose much of a risk to the GoI's fiscal balances, even in a scenario of crude oil prices beyond US$ 55/bbl under the current sharing formula. However, to contain inflationary pressures, if the GoI chooses to reverse some of the earlier excise hikes, its revenue receipt and fiscal deficit would be adversely impacted.

4 IMPACT ON STATE GOVERNMENT FINANCES

Lower retail fuel prices dampen sales tax collections of the State Governments: In addition to receiving devolution of a portion of central taxes accruing from the petroleum sector, State Governments themselves levy sales tax/VAT on the consumption of petroleum products, which is a sizeable contributor to their overall revenues. The volume of inflows raised from this source depends on the following factors: domestic price of fuel (which in turn depends on global crude oil prices, exchange rate dynamics, duties levied by the GoI as well as the rate of sales tax/VAT levied by the State Government themselves) and the consumption volumes of such products. After the recent fall in the retail prices of fuels, the pace of growth of sales tax/VAT on petroleum products has eased significantly, since such levies are typically on an *ad valorem* basis. In our base case scenario, if higher crude oil prices in INR terms are passed through to retail prices without any change in basic excise duty, State sales tax collections on POL products are expected to record an improved growth in FY2017.

State Governments are recipients of a portion of the tax revenues raised by the GoI from petroleum products: The proportion of shareable tax revenues of the GoI devolved to the States is based on the recommendations of the Finance Commissions. In the case of petroleum products, such revenue chiefly pertains to the shareable portions of excise duty, service tax and customs duty, whereas various cesses levied by the GoI are not shareable with the States. Moreover, the magnitude of devolution to the States of POL-related central tax collections, is influenced by the level of consumption of various POL products.

As mentioned previously, ICRA estimates the total excise revenues collected by the GoI on POL products that were devolved to the States at ~Rs. 185 billion in FY2015. Additionally, a portion (32% in FY2015; 42% from FY2016 onwards) of the service tax and customs duty on crude oil collected by the GoI, which stood at a limited Rs. 69 billion in FY2015 and Rs. 103 billion in FY2016, would also have been shared with the States. ICRA estimates the excise, service tax and customs duties collected by the GoI that were devolved to the States at ~Rs. 207 billion in FY2015, equivalent to ~15% of the sales tax collections of the latter from POL products in the same year.

With a step up in the percentage of devolution to 42% based on the FFC's recommendations from the 32% that prevailed during the ThFC's award period, and the increase in the magnitude of shareable tax revenues, ICRA estimates that the tax revenues collected by the GoI on POL products that were devolved the States nearly doubled to ~Rs. 396 billion in FY2016 from ~Rs. 207 billion in FY2015. Although the pace of growth of such receipts from the GoI was significantly higher than the same for the States' sales tax revenues from POL products in FY2016 (4%), the level of the former is moderate as compared to the State's own tax inflows from this sector on an absolute basis.

If the basic excise duty on petrol and diesel levied at present continues during the remainder of ongoing fiscal, the excise collections of the GoI on POL products that are shareable with the State Governments should display a healthy rise during FY2017. In contrast, if the GoI chooses to reduce the sharable basic excise duty on petroleum products, it would have a modest impact on the States' fiscal balances.

Revenue for State Governments from petroleum sector dominated by sales tax collections: The State Governments derive direct income from the petroleum sector through royalty on crude oil and natural gas, sales tax on petroleum products, electricity duty, dividend income etc. Such revenues rose by Rs. 81 billion to Rs. 1,606 billion in FY2015 from Rs. 1,525 billion in FY2014. Over 85% of the states' own revenues from this sector have been on account of sales tax collections on petroleum products in recent years. The aggregate direct revenues earned from this sector by the Central Government and the State Governments were similar in FY2015. The total collections of the States from petroleum products in FY2016 stood at Rs. 1,602 billion, slightly lower than the collections during the corresponding period of the previous year, on account of a fall in royalty inflow, which was partly offset by a low growth in sales tax and entry tax.

Table 7: Contribution to State and UT Exchequer

	FY2014 Rs. Billion	FY2015 Rs. Billion	FY2016 Rs. Billion	FY2015 Growth	FY2016 Growth	FY2015 Absolute Change	FY2016 Absolute Change
Royalty on Crude Oil / Gas	145	142	79	-2%	-44%	-3	-62
Sales Tax/ VAT on POL Products	**1,290**	**1,372**	**1,428**	**6%**	**4%**	**81**	**57**
Octroi, Duties Incl. Electricity Duty	42	38	27	-8%	-29%	-3	-11
Entry Tax / Others	47	54	66	13%	23%	6	13
Dividend Income to State Govt.	0	0	1	56%	239%	0	1
Total	**1,525**	**1,606**	**1,602**	**5%**	**0%**	**81**	**-3**

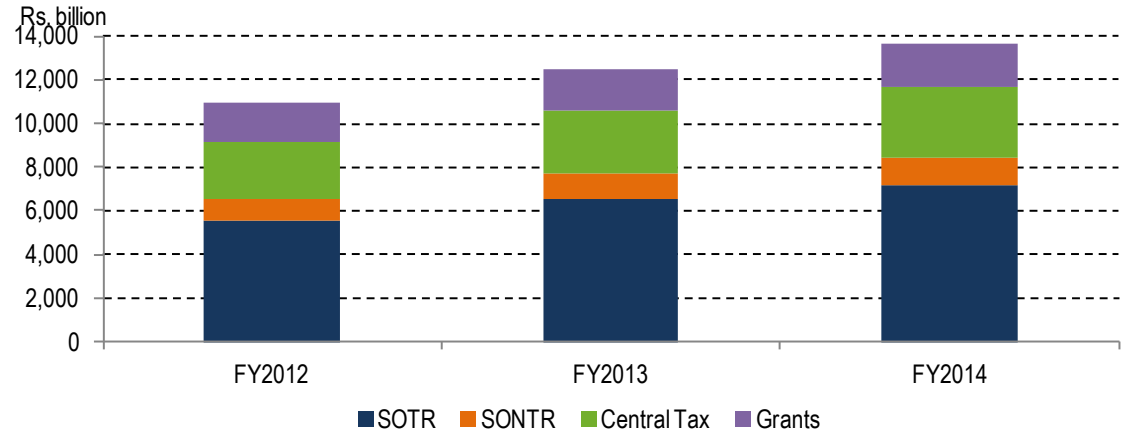
Source: PPAC; ICRA research

Sales tax on petroleum products a key revenue stream for State Governments: The revenue receipts of a State Government can be categorised into four heads, namely, State's own tax revenues (SOTR), State's own non-tax revenues (SONTR), share in Central taxes and grants from the Centre. The aggregate data for all the Indian States indicates that the SOTR contributed nearly 52% to their overall revenue receipts during FY2012 to FY2014. Further, sales tax accounted for nearly 63% of the aggregate SOTR during that period, with the balance led by State excise duty and stamps and registrations collections.

In the last decade, sales tax/VAT on petroleum products has emerged as a significant contributor to the overall sales tax collections of the State Governments. The aggregate sales tax revenues of all the Indian States (excluding UTs) on petroleum products rose from Rs. 978 billion in FY2012 to Rs. 1,257 billion in FY2014, and accounted for 28% of their total sales tax collections and therefore around 9% of their overall revenue receipts during that period. One of the factors leading to the significant collections from POL products is that these products attract a relatively higher rate of VAT as compared to other items. On average, the VAT rate levied on MS and HSD stands at 19% and 25%, respectively, across the Indian States[3], whereas most other goods (other than demerit goods such as liquor and cigarettes) typically attract VAT between 1-14.5%.

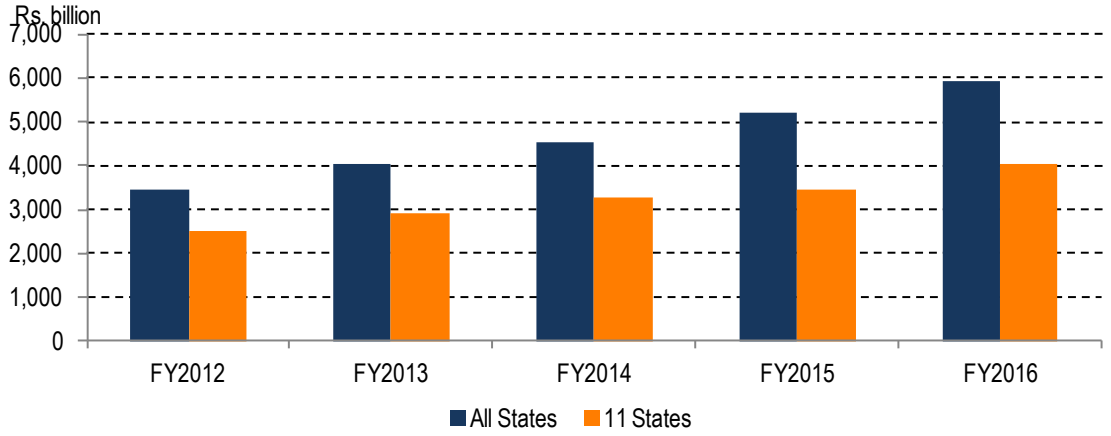
[3] An exception is the State of Madhya Pradesh, in which VAT is imposed at Rs. 1.5/litre and Rs. 3.0/litre, respectively, on MS and HSD.

Chart 21: Composition of Revenue Receipts of State Governments



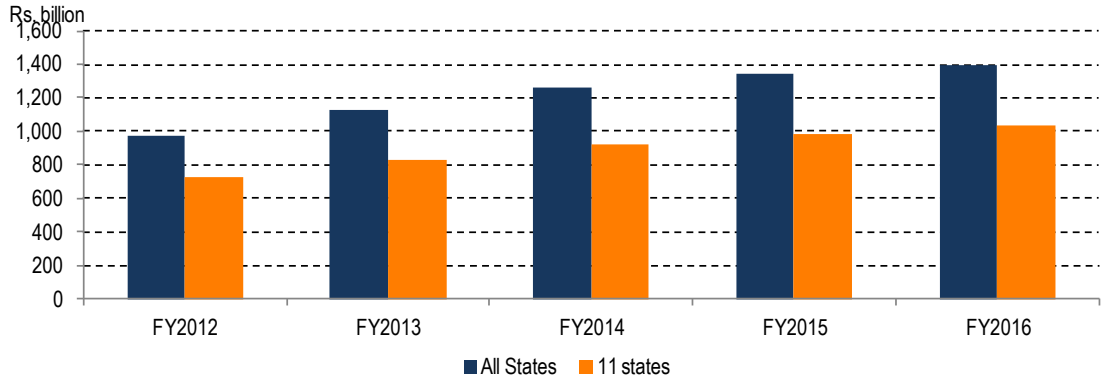
Source: RBI; ICRA research

Chart 22: Sales Tax Collections



The 11 States are Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Punjab, Rajasthan, Uttar Pradesh, Telangana and West Bengal. Data for FY2014 refers to the pre-bifurcation State of Andhra Pradesh, whereas data from FY2015 onwards refers to the successor States of Andhra Pradesh and Telangana.
For All States FY2015 refers to RE and FY2016 refers to BE
For 11 States FY2015 refers to Actuals and FY2016 refers to RE
Source: RBI; Various State Budgets; ICRA research

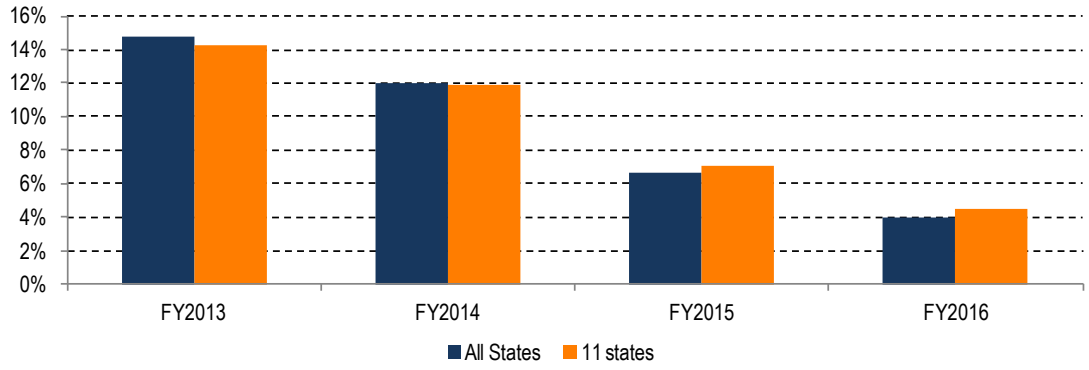
Chart 23: Sales tax/VAT collection on petroleum products



Source: PPAC; ICRA research

Lower retail fuel prices dampen growth of sales tax collections: The growth of sales tax/VAT on petroleum products eased from a healthy 15% in FY2013 to 12% in FY2014, before declining sharply to 7% in FY2015. Moreover, the pace of growth stood at a muted 4% during FY2016 as compared to the previous year. The key factor behind this slowdown in growth in FY2015 and FY2016 is the fall in the retail prices of fuels, as sales tax/VAT on petroleum products is generally levied by the State Governments on an *ad valorem* basis. The considerable increases in excise duty imposed by the GoI on petrol and diesel actually benefited the State Governments, by preventing a sharper fall in the prices on which they levied sales tax. Moreover, some States hiked the VAT rates imposed on POL products. Another offsetting factor was the healthy 11% growth in consumption of petroleum products during FY2016.

Chart 24: Growth of Sales Tax/VAT Collection on Petroleum Products

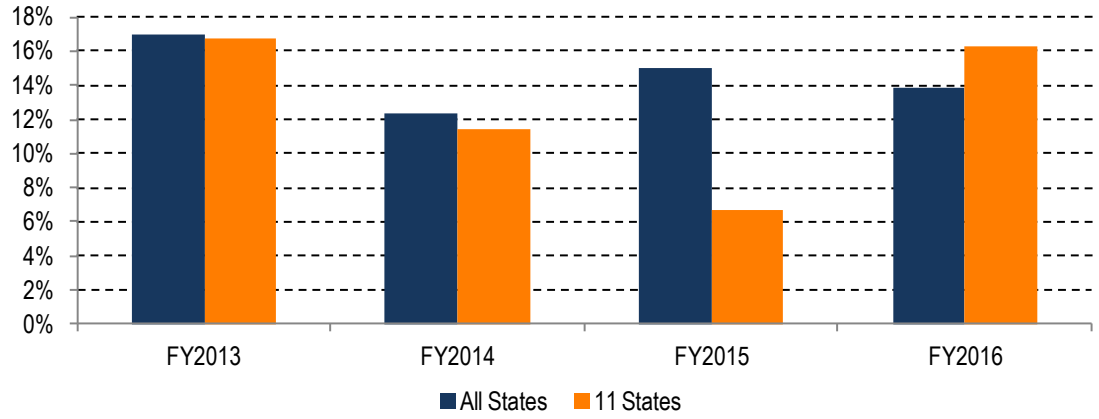


Source: PPAC; ICRA research

The RBI's publication State Finances: A Study of Budgets 2015-16 has published the audited figures for all States for FY2014, in addition to their RE for FY2015 and BE for FY2016. The RE for FY2015 published by the State Governments undertook a downward revision in their aggregate sales tax collections to Rs. 5,219 billion from Rs. 5,368 billion forecast in the BE for FY2015. However, the pace of growth of aggregate

sales tax collections was forecast to rise to 15% in FY2015 RE from 12% in FY2014, which is surprising in light of the data published by PPAC, which indicates a halving in the pace of growth of sales tax/VAT on petroleum products for all States to 7% in FY2015 from 12% in FY2014.

Chart 25: Growth of Sales Tax Collections



For All States FY2015 refers to RE and FY2016 refers to BE; For 11 States FY2015 refers to Actuals and FY2016 refers to RE
Source: RBI; Various State Budgets; ICRA research

Audited data for 11 States confirms slowdown in overall sales tax growth in FY2015: ICRA has collated audited data for 11 states[4] that accounted for nearly two-thirds of the aggregate sales tax collections of all 29 States in FY2014. The actual sales tax revenues of these States rose to Rs. 3,472 billion in FY2015 from Rs. 3,253 billion in FY2014. Moreover, the sales tax raised by these States on petroleum products rose to Rs. 988 billion in FY2015 from Rs. 923 billion in FY2014. Accordingly, petroleum products accounted for a substantial 28% of their total sales tax collections in FY2015.

The pace of expansion of overall sales tax for these 11 States declined to 7% in FY2015 from 11% in FY2014. This is in line with the decline in growth of their sales tax revenues from petroleum products to 7% in FY2015 from 12% in FY2014. This slowdown in growth took place despite ten out of the eleven States increasing the rate of sales tax/VAT levied on petrol and/or diesel during FY2015, in order to mitigate the impact of the fall in the retail prices of various fuels on their revenue collections. Moreover, the incremental sales tax revenues raised by these States from petroleum products eased to Rs.65 billion in FY2015 from Rs. 103 billion in FY2013 and Rs. 98 billion in FY2014.

Variance analysis suggests significant revenue shortfall in FY2015 led by sales tax collections: Around 16% of the shortfall in overall revenue receipts of these 11 States in FY 2015 relative to the RE, was on account of sales tax collections. In ICRA's view, a substantial portion of the lower-than-expected sales

[4] Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Punjab, Rajasthan, Uttar Pradesh, Telangana and West Bengal. Data for FY2014 refers to the pre-bifurcation State of Andhra Pradesh, whereas data from FY2015 onwards refers to the successor States of Andhra Pradesh and Telangana.

tax collections may be attributed to the slowdown in growth of such revenues from the POL sector. Moreover, ICRA expects audited data to reveal a similar slowdown in sales tax growth for the balance 18 State Governments.

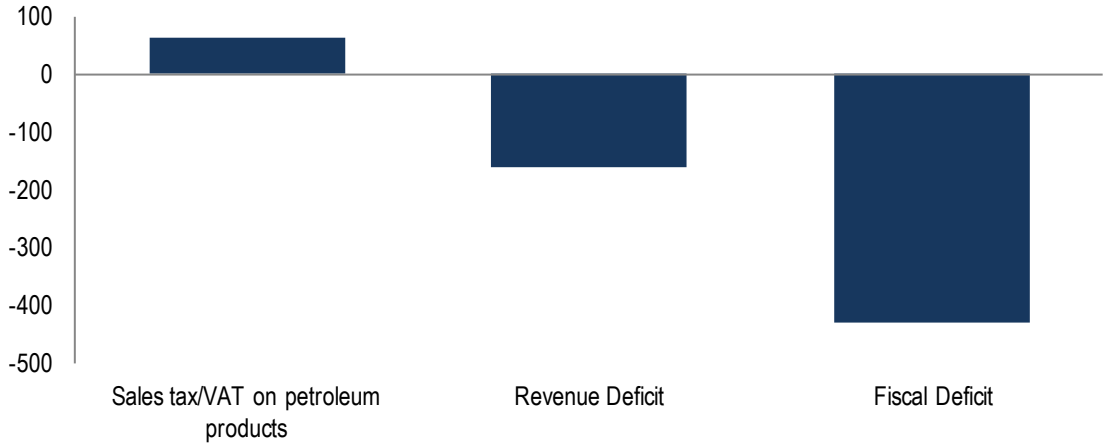
Table 8: Variance Analysis of 11 States in the ICRA Sample (In Rs. billion)

Rs. billion	FY2015			FY2016		
	RE	Actual	Actual - RE	BE	RE	RE-BE
Revenue Receipts	11,217	9,873	-1,344	12,585	12,299	-286
SOTR	5,757	5,460	-298	6,599	6,351	-248
of which Sales Tax	3,692	3,472	-221	4,217	4,037	-180
SONTR	1,048	910	-138	1,238	1,043	-195
Central Transfers	4,412	3,503	-908	4,748	4,905	157

Source: RBI, State Budgets, ICRA research

Audited data indicates a worsening of fiscal balances in FY2015: Despite the incremental sales tax revenues raised by these 11 States from petroleum products of Rs. 65 billion, their aggregate revenue and fiscal deficits widened on an absolute basis in FY2015 as compared to FY2014 by Rs. 161 billion and Rs. 430 billion, respectively.

Chart 26: Absolute Change in Sales Tax on Petroleum, Revenue Deficit and Fiscal Deficit of the 11 States in FY2015 as compared to FY2014 (Rs. billion)



Source: RBI, State Budgets, ICRA research

Divergent trends emerge from States' RE for FY2016 and PPAC data: The aggregate sales tax collections of the aforesaid 11 States have been revised lower to Rs. 4,037 billion in the RE for FY2016 from the Rs. 4,217 billion forecast in the BE for FY2016, which accounts for the majority of the downward revision in revenue receipts. Despite this, the RE for FY2016 published by these States indicates that sales tax revenues rose by a healthy 16% in FY2016. In contrast, data published by PPAC reveals that the sales tax on petroleum products for these 11 States rose by a low 4% to Rs. 1,032 billion during FY2016 from Rs. 988

billion in FY2015. While the price of petroleum products continued to weaken in FY2016, only three of the 11 States increased the rate of sales tax/VAT on petrol and diesel in FY2016 to counter the impact of the same on their sales tax collections.

However, the growth of consumption of petroleum products more-than-doubled to 11% in FY2016, from 4% in FY2015. Lower retail prices of fuels boosted consumption demand and may also have resulted in a shift of freight movement from other forms of transport to road transport. Moreover, the second consecutive year of a deficit monsoon in 2015 is likely to have led to a pickup in the consumption of diesel for extracting ground water for irrigation. Nevertheless, the continued decline in crude oil prices appears to have largely offset the impact of this healthy rise in consumption on sales tax collections.

In ICRA's view, given the sizeable contribution of the POL sector in overall collections, the growth of sales tax revenues from other items would have had to record a growth of 21% in FY2016 to achieve the target of 16% growth in sales tax in the 11 States' RE for FY2016, which seems optimistic in light of the prevailing scenario in the economy. Therefore, ICRA expects audited data for sales tax for FY2016 to print lower than the level projected in the RE and indicate a muted growth relative to the collections for FY2015 for our subset of 11 states. Moreover, audited data for the balance 18 States is expected to reveal a modest growth of sales tax collections in FY2016, weighed down by the low growth of revenues from petroleum products.

Outlook FY2017: In the BE of FY2017, the sub-set of 11 States have projected a 15% expansion in both SOTR and sales tax relative to FY2016 RE. The realisation of the projected growth will be contingent on several state-specific factors as well as the collections from sales tax/VAT on petroleum and other products. Overall consumption demand is expected to improve after the implementation of the Seventh Central Pay Commission's recommendations and the one-rank-one-pension scheme for the defence services. Moreover, an above-normal monsoon would contribute to a turnaround in the performance of the agricultural sector, boosting rural incomes and demand in H2 FY2017. Such factors would support growth of states' sales tax collections in FY2017, regardless of the evolving scenario related to pricing and demand for petroleum products.

Variation in crude oil prices and exchange rates will impact State Governments' sales tax collections, which will depend on the retail prices of various fuels and growth of consumption. The domestic prices of fuels will in turn be influenced by factors such as the global crude oil prices, exchange rate, excise duty levied by the GoI and the rate of sales tax/VAT levied by the State Government on such products.

The baseline scenario of crude oil price of ~US$ 50/barrel exchange rate of INR 68.5/US$ suggests an upward bias to domestic fuel prices on average in FY2017 as compared to FY2016. If higher crude oil prices in INR terms are passed through to retail prices without any reduction in excise duty, State sales tax collections on POL products are expected to record an improved growth in FY2017. Given that nearly all the 11 States in the sub-set increased the rate of sales tax/VAT levied on petroleum products either in FY2015 and/or FY2016, we expect a low probability of further increase in the rate of sales tax/VAT levied on petroleum products by these State Governments in FY2017. Moreover, volume growth in consumption of petroleum products is expected to be moderate in FY2017.

5 Upstream Oil Companies and Service Providers

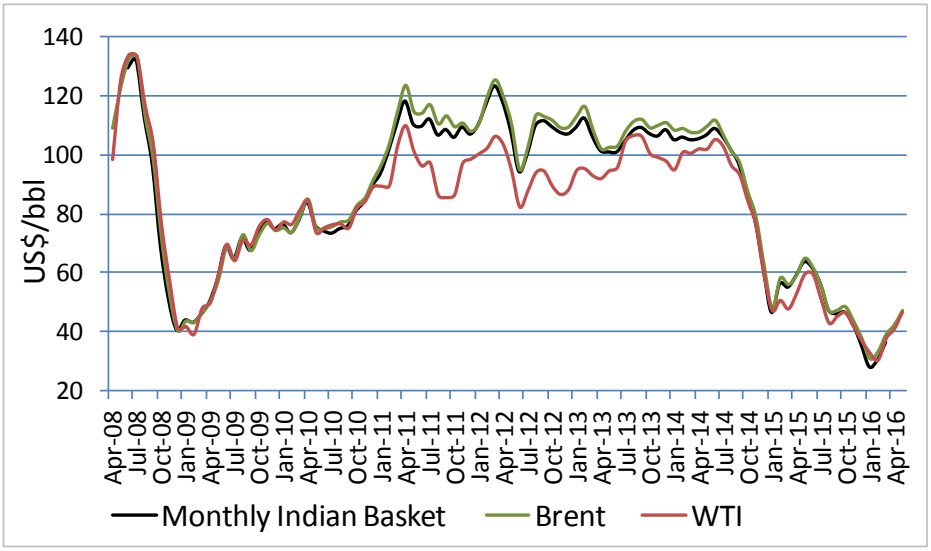
5.1 Trend of crude oil prices and impact on upstream companies

Weak outlook for crude oil prices: Global crude oil prices have declined by ~60% from US$ 112/bbl (Brent) in June 2014 to US$ ~45-50/bbl now (as in May 2016 end) primarily due to the following factors:

- Significant increase in supply, albeit declining lately, with US crude oil production at a 25-year high due to shale oil boom
- Improving technology to drill more oil per well
- Demand slowdown in Europe, Japan and China
- Decision of Saudi Arabia to protect market share rather than act as a swing producer of oil

With the lifting of sanctions on Iran in January 2016, the country is scaling up its crude oil output so that it can recapture its market share of 2.2-2.3 million barrels per day (mbd) that it had exported before the US and the EU had imposed oil sanctions in 2012 from pre-sanction exports of 1 mbd. The additional production of Iranian oil assumes significance considering the already oversupplied market and weaker than expected demand and would have a further dampening effect on crude oil prices. Besides the current and near term increase in production, it is pertinent to note that Iran holds about 9.3% of the global oil reserves and 18.2% of the global gas reserves. Post lifting of the sanctions, Iran is aggressively looking to attract companies and investments to develop its vast reserves of oil and gas. Prices are expected to remain at moderate levels in the near term, as shown in table 9 below, because of high supplies, modest global demand and lack of consensus within OPEC to cut oil production. Going forward, significant increase in crude oil supplies from Iran, change in stance of OPEC towards production level, significant geo-political events and cut back in supplies by high cost shale oil players would be key sensitivities for oil prices.

Chart 27: Crude Oil Price Trends



Source: Industry, ICRA research

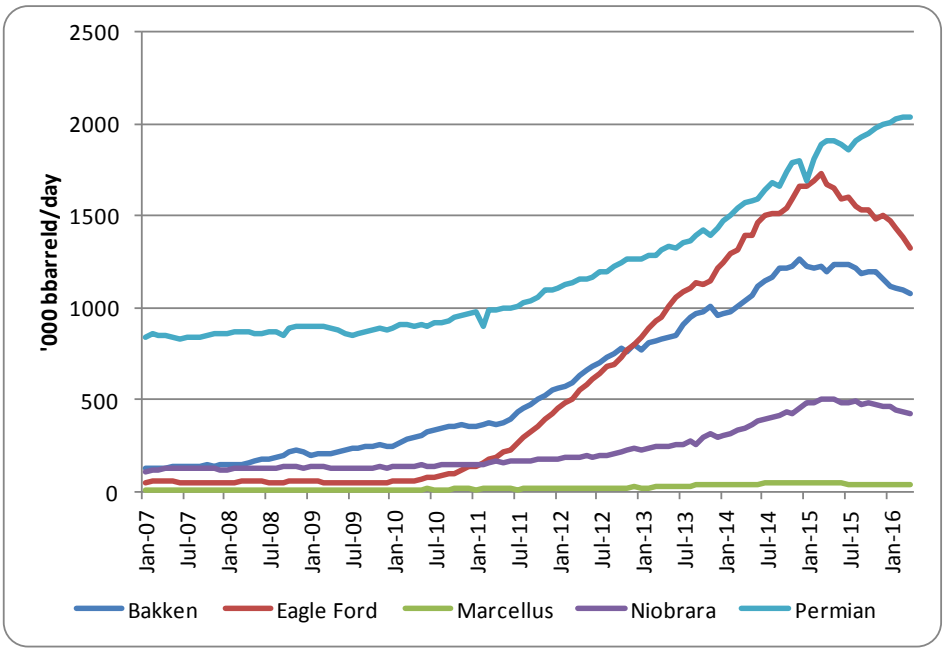
Table 9: Crude Oil Price Outlook

Brent Price, USD/barrel	2016	2017
World Bank	41.0	50.0
IMF	43.9	51.0
EIU	40.3	55.5
EIA	43.0	51.8

Source: World Bank, IMF, EIU, EIA, ICRA research

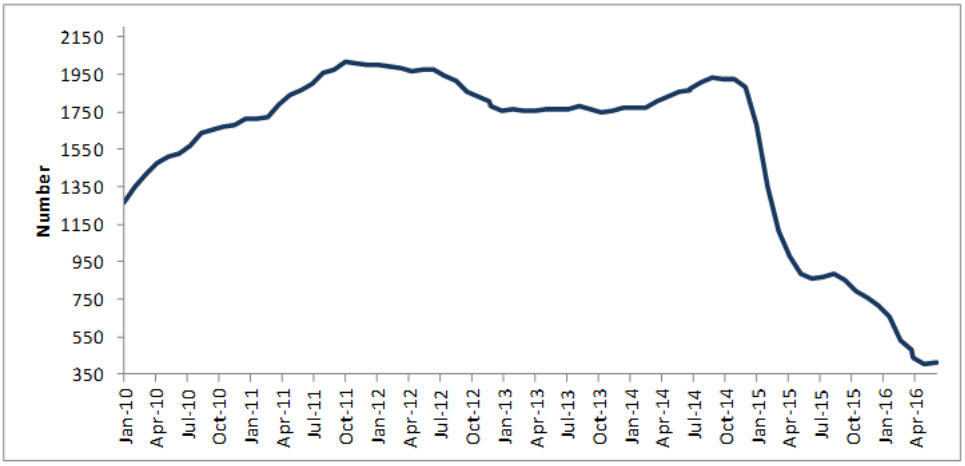
Shale production declining: Crude oil prices are expected to remain at moderate levels in the short to medium term due to the aforementioned reasons. However, production growth is slowing down primarily from shale assets as shale-oil wells witness material fall (60-70%) in output, post first year of operations and slow down in investments in these fields. Further, shale oil companies are facing fund constraints due to negative free cash flows, speculative grade ratings and reduced appetite in the US Bond market for such papers. A large number of shale oil companies have filed for bankruptcy in the US. Nevertheless shale oil production decline has been slower than expected as drillers became more efficient and unlocked resources in the low cost, high-return areas such as the Permian basin. Following the increase in crude oil prices to ~$50/bbl levels (as on May end) from less than $30/bbl in January 2016, the rig count in the US has increased in June 2016.

Chart 28: Region wise Oil Production in Major Shale Regions



Source: EIA, ICRA research

Chart 29: U. S. Rig Count



Source: Baker Hughes, ICRA research

Impact on Indian upstream producers: Lower crude oil prices would materially impact profits of crude oil producers. The impact on Oil and Natural Gas Corporation Limited (ONGC) and Oil India Limited (OIL) has been limited as their crude oil realisations were earlier dampened by large under recovery sharing burden.

The impact of decline in international prices of crude oil has been higher on private upstream players who are unencumbered by subsidy sharing and overseas ventures of ONGC, OIL and RIL etc. With the low oil price scenario private players and overseas ventures of PSU companies have undertaken various optimisation measures, including the increase in operational efficiency related to existing facilities, deferment of non-critical activities, re-negotiations with existing contractors for lowering the rental/unit rates/services cost. These companies have renegotiated rates of some of the oil field services and reduced these by as much as 30-40%. Additionally the fiscal levies on overseas ventures are mostly on an ad valorem basis, besides which at low crude oil prices some fiscal levies are not triggered such as windfall tax, creaming provision etc.

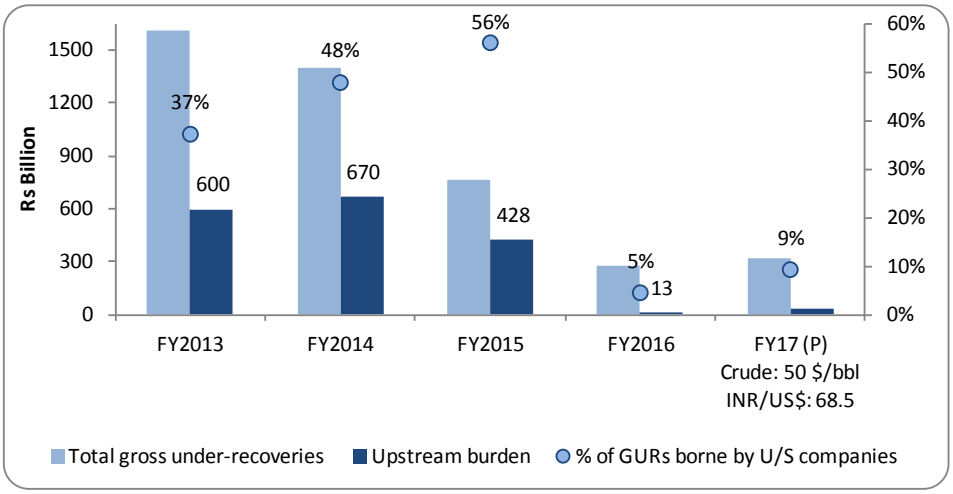
Besides the impact on profitability, the decline in crude oil prices and a moderate outlook for the same adversely impacts the viability of new exploration and development projects owing to expectations of lower realisations on sales. Vulnerable projects include those involving high finding and development costs such as oil sands, deep water and geologically challenging and risky assets.

Under-recovery sharing formula revised: In August 2015, the GoI announced that it would share under-recovery up to Rs. 12/litre on SKO (PDS), while the balance under-recovery on kerosene will be borne by the PSU upstream companies. Similarly for LPG (domestic), GoI approved a fixed subsidy capped up to Rs. 18/kg under the Direct Benefit Transfer for Domestic LPG (DBTL) policy, which translates to Rs. 255.6 per cylinder. As per current international LPG prices, there is a material cushion in the subsidy cap fixed for LPG that will allow it to absorb some increase in global LPG prices in the future. However, there is lack of clarity on whether the PSU oil companies will bear the entire balance subsidy or whether some of the burden will be passed on to end-consumers in case global crude oil and LPG prices increase significantly from the

current levels. Overall, the under-recovery burden on the PSU upstream companies is expected to remain low in FY2017, following low crude oil prices and the existing subsidy sharing mechanism. However, as the GoI has capped its subsidy share, any significant rise in crude oil prices could lead to an increase in the burden on upstream companies. Although PSU upstream companies may benefit with lower under-recovery sharing burden as per the revised subsidy-sharing formula, their profits may still decline in case crude oil prices decline below their net crude oil realisations.

We project the gross under recoveries to increase to about Rs 355 billion in FY2017 (considering an average crude oil price of $50/barrel and Rs/USD exchange rate of 68.5) from Rs 276 billion in FY2016 owing to higher crude oil price and exchange rate. For sensitivities of the under recoveries at different crude oil prices and exchange rates please refer to Section 9 on sensitivity analysis. In case of a decline in realisations, cash generation of overseas ventures of ONGC Videsh Ltd, OIL and Reliance Industries Ltd (RIL) would decrease significantly.

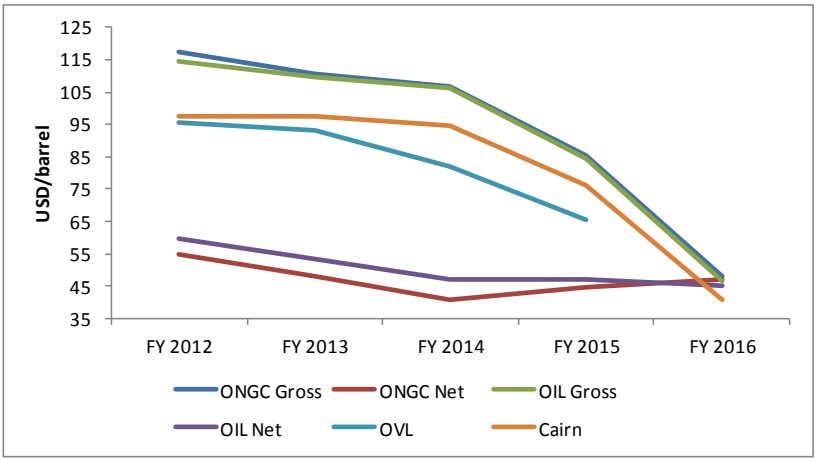
Chart 30: Gross Under-recoveries and Burden on Upstream Companies



Source: Industry reports, company disclosures and ICRA research

Impact on the revenues and profitability of upstream companies: The revenues of domestic oil and gas producers declined YoY by about 4% in FY2016 vis-a-vis FY2015 owing to lower crude oil and domestic gas realisations. While the realisations on crude oil increased for ONGC and declined marginally for OIL due to sharply lower under recoveries, these declined substantially for Cairn India. The operating profitability of the industry also declined in the past two years owing to lower realisations on oil for Cairn India and lower realisations for domestic gas for ONGC and OIL (in FY2016). The net profit in FY2016 has also been impacted by impairment charges taken booked by ONGC, OIL and Cairn India Limited.

Chart 31: Crude Oil Realisation of Upstream Companies



Source: Company disclosures and ICRA research

In the past, the profits of ONGC and OIL varied with their under-recovery burden, however, with the change in subsidy formula the under recovery burden on the upstream PSUs has reduced. Nevertheless, if international crude prices decline below the net realisations of the upstream PSUs their profitability will be adversely impacted. Moreover, in the case of ONGC, production of crude oil from JV fields, production of value added products and OVL's production of oil and gas will be impacted by low oil prices as they get market linked realisations.

Table 10: Upstream Industry Financials

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of companies*		6	6	6	5	5
Operating Income (OI)	Rs. Billion	951.2	1126.1	1154.9	1005.5	968.7
Operating Profit	Rs. Billion	481.1	624.4	578.0	480.6	448.6
Net Profit	Rs. Billion	293.0	396.0	324.9	203.7	192.1
Operating Profit/OI	%	50.6%	55.5%	50.0%	47.8%	46.3%
Net Profit/OI	%	30.8%	35.2%	28.1%	20.3%	19.8%
RoCE	%	23.3%	27.8%	19.4%	14.1%	
RoNW	%	18.4%	22.4%	16.7%	10.0%	9.1%
Total Debt	Rs. Billion	161.0	158.4	267.3	97.3	92.0
Tangible Net Worth	Rs. Billion	1688.5	1850.5	2041.7	2037.2	2119.9
Debt-Equity Ratio	Times	0.10	0.09	0.13	0.05	0.04
Interest Coverage Ratio	Times	158.89	184.58	277.76	85.17	118.99

**Includes financials for ONGC, OIL, Cairn India, Hindustan Oil Exploration Company, Selan Exploration Technology Limited and Gujarat State Petroleum Corporation. For FY2015 and FY2016 data for Gujarat State Petroleum Corporation is not available.*
Source: Ace Equity, company disclosures and ICRA research

Table 11: Impact on PBT of Upstream cos

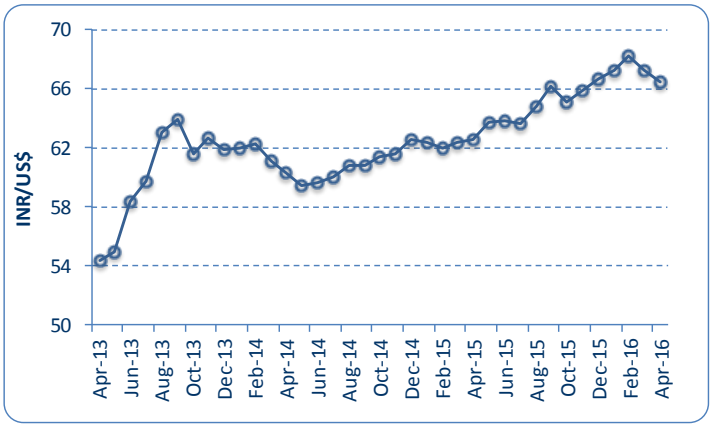
Percentage	YoY Impact on FY2017 PBT vis-à-vis FY2016	
Assumed Crude Oil Price ($/barrel)	*40*	*35*
Assumed Exchange Rate (Rs/$)	*68.5*	*68.5*
ONGC	-40%	-59%
ONGC Videsh	-97%	Loss
Cairn India	-10%	-43%
Oil India Limited	-35%	-54%

Assuming no under-recovery burden due to low oil prices; excludes the impact of impairment losses. Source: ICRA research

For every $1/barrel change in crude oil prices the revenues and profit before tax of ONGC is impacted by ~ Rs 12.4 billion and Rs 8.6 billion, of OIL by Rs 1.7 billion and Rs 1.2 billion, of Cairn by Rs 3.1 billion and Rs 2.3 billion and of RIL by Rs 0.6 billion and Rs 0.4 billion respectively considering an exchange rate of Rs/USD of 68.5. The cash break even crude oil price for ONGC is estimated to be about $16/barrel, of OVL $32/barrel, of Cairn $ 17/barrel and of OIL $22/barrel.

Depreciation of Indian rupee trims losses: The depreciation in INR/US$ level may provide marginal comfort for the upstream companies in a soft crude pricing scenario as their realisations are US$ denominated and the operating costs are a fraction of the realisation levels. Average INR/US$ depreciated by 7% to 65.46 in FY2016 from 61.15 in FY2015. The forex rate appreciated from Rs/USD of 68.2 in February 2016 to 66.46 in April 2016. Though private players like RIL, and CIL gain/lose directly with forex rate movements, the gains of PSU upstream companies in the past varied, depending upon the under-recovery sharing burden, which is determined by the GoI. However, with the revised sharing formula, the direction in crude oil prices would weigh more on the profits of PSU upstream companies than subsidy-sharing and forex movement.

Chart 32: Trend in INR/USD Levels



Source: PPAC and ICRA research

In Union Budget 2016, the GoI announced a change in cess levied on domestic crude oil production from 20% ad valorem from a fixed rate of Rs. 4,500 /MT (~US$9/bbl). While providing relief for the Upstream companies at low crude oil prices, the move becomes negative when crude oil prices increase beyond US$45/bbl.

For every Rs1/USD change in exchange rate the revenues and profit before tax of ONGC is impacted by Rs 0.8 billion and Rs 0.7 billion, of OIL by Rs 0.1 billion and Rs 0.1 billion, of Cairn India by Rs 0.05 billion and Rs 0.03 billion and of RIL by Rs 0.2 billion and Rs 0.2 billion respectively.

Impact on the capex plans of upstream producers: ONGC and OIL own significant drilling infrastructure, and as a result their operating cost remains competitive vis-à-vis global peers, especially in a scenario of high drilling charges and oilfield service costs. However, in the offshore areas, reliance on third-party agencies has been high, which in turn had pushed up operating cost in the past following the firming up of charter hire rates. ONGC and OIL have other infrastructure such as work over rigs, offshore logistics vessels, cementing units, logging services units and well stimulation units. Owing to the relatively lower finding and development costs and the GoI push to reduce the dependence on energy imports, PSU Upstream companies have not scaled down their exploration and production activities whereas Private upstream players are scaling down the capital expenditure (capex) programme due to soft crude oil prices. However the quantum of capex to be incurred has reduced for even PSU companies at the same level of exploration and production activity owing to the decline in oil field services rates. For example Cairn India has cut down the capex significantly – from US$ 1.1 billion in FY2015 to US$ 300 million in FY2016 to an estimated US$ 100 million in FY2017 and renegotiated with its vendors to trim costs. Cairn India's strategy is to ensure positive free cash flows in a low crude oil price environment and accordingly the capex has been cut drastically. On the other hand ONGC's capex is estimated to be about Rs 290 billion in FY2017 from Rs 310 billion in FY2016 and Rs 360 billion in FY2015 owing to GoI target to reduce energy import dependence. Similarly capex of OIL is expected to remain stable at around past levels.

Impairment losses recognised by several oil and gas companies: The impairment loss is the amount by which the carrying amount of an asset (acquisition cost minus depreciation) or cash-generating unit exceeds its recoverable amount (future cash flows). With a decline in the cash generating ability (due to lower realisations on sale of oil and gas) of their E&P blocks, several companies in the oil and gas industry have recognised an impairment loss in their book of accounts. However, the impairment loss is reversible on a pro rata basis to the extent of recovery in international price of crude oil. For example ONGC had recognised an impairment loss of Rs 39.94 billion at the time of its 9M FY2016 results but wrote back Rs 8.52 billion in its FY2016 results, thereby recognising a net impairment loss of Rs 31.42 billion as an exceptional item on account of the decline in international crude oil prices. Similarly OIL has recognised an impairment loss of Rs 2.5 billion on account of a fall in global oil and prices in the accounts of FY2016. RIL has also provided an impairment charge of Rs 32.6 billion on its shale gas assets. Cairn India recognised an impairment loss of Rs 116.74 billion in FY2016 on the goodwill carrying value and some of its non-producing oil and gas assets on account of the decline in crude oil prices. Vedanta had recognised a Rs 200 billion goodwill impairment charge in FY2015 for loss of value of Cairn India.

5.2 Trend of Domestic Gas Prices and Impact on Upstream Companies

Implementation of the modified Rangarajan formula for domestic gas pricing:

The Government of India appointed a committee in May 2012 under the Chairmanship of Dr. C Rangarajan, Chairman, Economic Advisory Council to the Prime Minister, to look into several aspects relating to the Production-Sharing Contract (PSC) mechanism in the petroleum industry, including an approach to domestic gas pricing. After deliberations, the Rangarajan Committee submitted its report to the GoI in December 2012. As per the Committee-recommended formula for natural gas, the domestic gas price would be computed, based on the trailing 12-month average of:

a) Volume-weighted net-back pricing of Indian LNG imports
b) Volume-weighted price of US's Henry Hub, UK's NBP and Japan's JCC-linked price

The Ministry of Petroleum and Natural Gas (MoPNG) had sent the proposal on the new uniform gas price to the Cabinet Committee of Economic Affairs (CCEA), based on the recommendations made by the Rangarajan Committee and on June 27, 2013, the latter approved the gas pricing formula, which was to be applicable from April 1, 2014 for a period of five years. However, in March 2014, after a reference by the MoPNG, the Election Commission asked the Ministry to defer the implementation of the new gas pricing formula till a new government is formed after the General Elections. The newly formed Government, on June 25, 2014 deferred the hike by three months (i.e. up to September 2014) and referred the pricing issue to a four-member committee of secretaries (CoS) consisting of secretaries of power, fertilizer and expenditure and the additional secretary in the MoPNG. The CoS submitted its report in September 2014 and recommended a new formula, based on a modification of the Rangarajan formula by:

a) Removing both the Japanese and the Indian LNG import components from the formula
b) Considering Alberta Gas Reference price in place of Henry Hub Prices for Canadian consumption.
c) Considering the Russian actual price in place of the National Balancing Point price for the Russian consumption considered under the former Soviet Union countries
d) Deductions on account of transportation and treatment charges for different hub prices

However in September 2014 the Government deferred a decision on the natural gas price, but with a commitment to take a decision before November 15. 2014. Subsequently the CCEA on October 18, 2014 approved the modified Rangarajan Committee gas-pricing formula as suggested by the CoS. The formula is as below:

$$P = \frac{VHH*PHH + VAC*PAC + VNBP*PNBP + VR*PR}{(VHH + VAC + VNBP + VR)}$$

Where

a) VHH = Total annual volume of natural gas consumed in USA & Mexico
b) VAC = Total annual volume of natural gas consumed in Canada
c) VNBP = Total annual volume of natural gas consumed in EU and FSU, excluding Russia
d) VR = Total annual volume of natural gas consumed in Russia

e) PHH and PNBP are the annual average of daily prices at Henry Hub (HH) and National Balancing Point (NBP) less the transportation and treatment charges
f) PAC and PR are the annual average of monthly prices at Alberta Hub and Russia respectively less the transportation and treatment charges

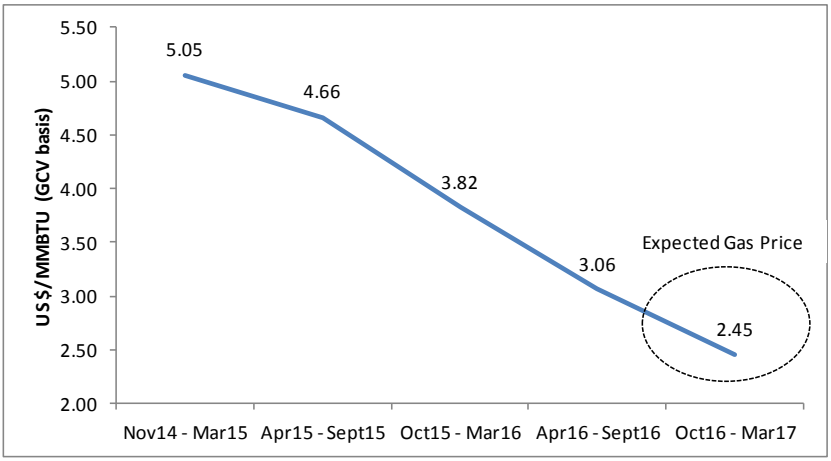
The pricing is for all natural gas domestically produced – conventional, shale, or coal bed methane — with the following exceptions:

a) Small and isolated fields in nomination blocks for which guidelines for pricing of gas were issued in 2013 and would continue to apply
b) Where prices have been fixed contractually for a certain period of time, till the end of such a period
c) Where the Production Sharing Contract (PSC) provides a specific formula for natural gas price indexation/fixation
d) Such Pre-NELP blocks where Government approval for gas pricing has not been provided under the PSC

The price and volume data used for calculation of the gas price is the trailing four quarters data with one quarter lag. This new price came into effect from November 1, 2014 and was valid till March 31, 2015 and is revised bi-annually. The gas price was applied on Gross Calorific Value (GCV) basis, instead of the earlier prevailing Net Calorific Value (NCV)-based pricing in India.

Decline in crude oil prices led to dip in gas prices at international hubs: With the precipitous decline in international crude oil prices the economics of gas vis-à-vis alternate fuels such as Fuel Oil have been adversely impacted. Accordingly prices of gas at various international hubs and spot prices of LNG have also declined. The spot prices of LNG at the beginning of CY2014 were ruling at $ 17-18 /mmbtu are now ruling at $ 4-5/mmbtu. As per the aforementioned formula, the gas price worked out to $5.05/mmbtu (GCV basis) and $ 5.6/mmbtu (NCV basis) for the period November 1, 2014 to March 31, 2015. However, post the initial increase, gas prices have declined for the subsequent three half-year periods and are US$3.06/mmbtu (GCV basis) for the six-month period April 1, 2016 to September 30, 2016 which is a 20% reduction from the gas price of US$3.82/mmbtu (GCV basis), applicable for the period October 1, 2015 to March 31, 2016. With the latest reduction, domestic gas prices have declined by almost 40% from the time the modified Rangarajan formula was implemented (November 1, 2014) when gas prices were at US$5.05/mmbtu (GCV basis).

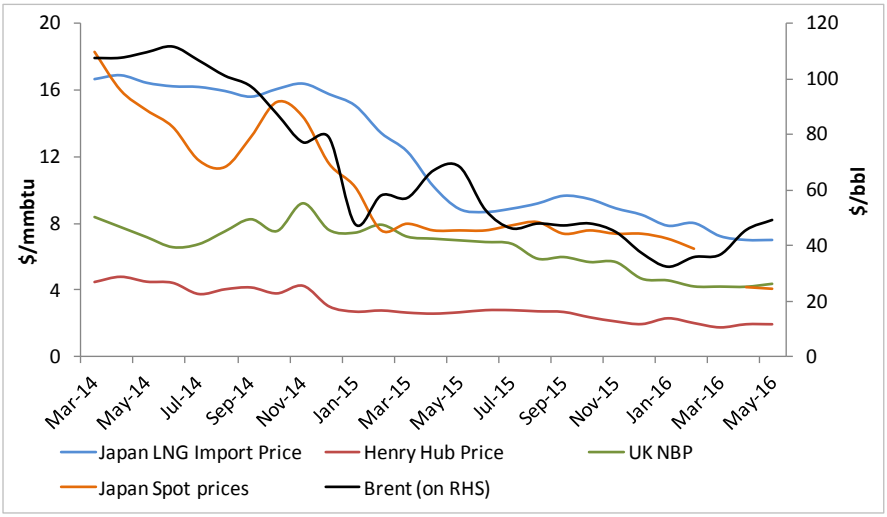
Chart 33: Domestic Gas Price Trend



Source: PPAC and Industry

Weak outlook for gas prices: Going forward, ICRA research expects the prices of gas at various international hubs to remain muted in the near term owing to weak outlook for crude oil prices and accordingly crude derived alternate fuels such as fuel oil etc. Also the global trade in LNG is expected to witness healthy growth of about 5% over the long term, driven by increasing production of natural gas (shale formations in the US, offshore Mozambique etc), the start-up of new liquefaction capacity, especially in Australia and the US, increase in global demand, especially from the emerging economies and commencement of imports by new markets with Floating Storage & Regasification units (FSRUs) reducing costs and lead-time. However, Australia will add about 58 million tons and the US about 18 million tons of liquefaction capacity over the next three years which would considerably increase the supply and weigh on the prices of gas globally even as the largest LNG importer of the world, Japan, restarts its nuclear plants leading to lower consumption of LNG by the latter.

Chart 34: International Gas Price Trend



Source: Bloomberg

Impact of low gas prices on upstream companies: The reduction in gas price for domestically-produced gas affects upstream producers adversely as it i) reduces the profitability of the gas produced from the existing fields and ii) adversely impacts the viability of new exploration and development projects. Considering that the upstream industry has been seeking an increase in gas prices for a long time, the reduction in gas price to below APM levels adversely impacts the gas exploration and development.

E&P activities get progressively more challenging and cost intensive for onshore, onshore-frontier areas, offshore-shallow waters, offshore-deep waters and offshore-ultra deep waters — in that order, due to the increasing scales of difficulty in accessing the reserves and higher cost of equipment and services on account of the higher degree of complexity, technical challenge and specialisation. Therefore, according to upstream companies, progressively higher prices signals are necessary for incentivising E&P activity in the aforementioned areas.

Low gas prices adversely impacting the profitability of upstream gas producers: ICRA estimates that with every US$ 1/mmbtu fall in domestic gas price, the annual impact on the profit before tax of ONGC is expected to be Rs. ~39 billion, while the impact for RIL and OIL would be Rs. ~13 billion and ~Rs.5 billion respectively. However, any depreciation of INR against the USD would partially offset the negative impact on the profitability in Rupee terms. While the state-owned upstream companies may not go slow with their E&P capex plans, private producers are likely to have a rethink on their field developmental plans if the soft price regime were to continue. Overall, with weak price signals, domestic gas supplies will continue to fall short of demand, which is a credit negative for the consumers over the long term as they will have to increasingly use costlier R-LNG, even while they gain marginally in the near term, through a decline in gas prices.

Marketing and pricing freedom for gas discoveries in challenging fields, yet to commence production: The GoI, while announcing the formula for domestic gas pricing in October 2014 had stated that price premium would be announced for the fields in challenging areas, viz. deep water, ultra-deep water and high pressure-high temperature (HPHT) areas, to compensate for the higher costs and higher risks involved in producing gas from such areas. Realising that gas production would not be viable from such areas at the current prices of domestic gas, the GoI has proposed marketing and pricing freedom instead of price premium for every field or category of fields. For all discoveries in deep water, ultra-deep water, and HPHT areas that were yet to commence commercial production as on January 1, 2016 and for all future discoveries in such areas, operators will be allowed marketing freedom, including pricing freedom, subject to a ceiling. However, if contractors have any arbitration or litigation pending that directly pertains to gas pricing covering such fields, the pricing and marketing freedom would apply only on the conclusion or withdrawal of such litigation or arbitration.

The price ceiling will be based on publicly available prices of substitute fuels and will be calculated as the lowest of: (a) landed price of imported fuel oil (b) weighted average import landed price of substitute fuels (namely coal, fuel oil and naphtha) and (c) landed price of imported LNG. The weighted average import landed price of substitute fuels in (b) above will be defined as: 0.3 x price of coal + 0.4 x price of fuel oil + 0.3 x price of naphtha. The landed price-based ceiling will be calculated once every six months and applied

prospectively for the next six months. The price data used for calculating the ceiling price in US$ per mmbtu (GCV) will be the trailing four quarters' data with one quarter lag.

As per GoI, natural gas prices for challenging areas works out to US$6.61/mmbtu as of now, which is more than double the current domestic gas prices for other fields. Besides, this price may keep varying in line with the prices of substitute fuels (fuel oil, naphtha prices may increase as crude oil prices rise). Notwithstanding the decline in domestic gas prices, the aforementioned pricing formula, along with marketing freedom, would improve the viability of gas discoveries in challenging fields and could lead to higher domestic gas production over the longer term. ICRA research expects domestic natural gas production to increase to ~110 MMSCMD by FY2020/21 and ~130 MMSCMD by FY2025 from the current level of ~90 MMSCMD. The major companies to benefit in the medium term would be ONGC, RIL and GSPC as they have discovered but undeveloped gas fields that were not viable at the current domestic-gas price levels. However, the applicability of the policy for RIL appears uncertain at this juncture, given the ongoing arbitrations with the GoI on its KG-D6 block. But RIL would benefit from higher prices on incremental production after the conclusion or withdrawal of the arbitrations.

As the ceiling price formula factors in the prices of coal and competing liquid fuels, it could lead to a balanced price for consumers, which could benefit from higher domestic gas production volumes available at prices lower or equal to that of imported R-LNG or other substitutes. ICRA believes that reforms initiated in gas-consuming segments, like gas price pooling in the fertiliser segment and Ujwal DISCOM Assurance Yojana (UDAY) in power, could also help consumers absorb higher gas prices for incremental gas volumes, with the availability of more domestic gas. Besides, an increase in domestic gas production would help the cause of the environment as gas is a cleaner fuel as compared with coal or petroleum products.

As the policy of pricing and marketing freedom proposed by the GoI in March 2016 does not apply to onland and shallow water blocks, upstream companies would not enjoy marketing and pricing freedom on production from these blocks and realisations on gas sales from these fields would continue to be governed by the modified Rangarajan formula. Even factoring in the lower exploration and development costs for onland and shallow water fields (vis-a-vis deep water, ultra deep water and HPHT fields) and the opex, the current gas prices remain low for upstream companies to justify the viability of exploration and development in these fields, which would be a damper for exploration and production from these fields.

5.3 Impact on Oil Field Services Companies

Demand for oil field services determined by upstream capital spending: Oilfield services encompass a wide range of products and services that are used in exploration, extraction, transportation and development of hydrocarbons. In the upstream sector, much reliance is placed upon service and upon contractor companies who provide specialist technical services to the industry, ranging from geophysical services, drilling and cementing, etc. However, a majority of the companies specialise in a particular line of activity, such as oilfield equipment manufacturers, offshore drillers, onshore drillers, seismic services and transportation/logistics. Demand for oil field services is determined by upstream capital spending, with the latter influenced by prevailing and expected oil and gas prices. Consequently, the industry's performance is

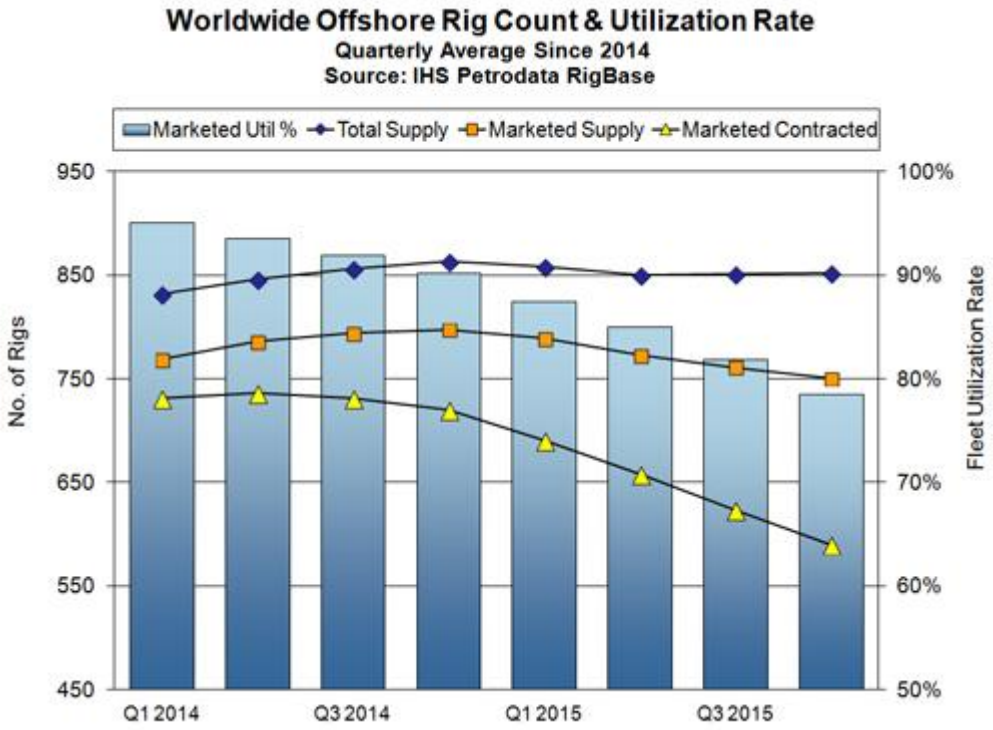
prone to the cyclicality of demand, with various products and services experiencing different levels of cyclicality.

Off-shore rig market dynamics: The drilling operators deploy the rigs on either spot basis or on medium / long-term contract basis (charter), for which they are paid "day rates", usually quoted in $/day, by the E&P companies. The latter normally enlists the services of drilling contractors through a global tender basis and, to that extent, competition is global for the players. However, due to the costs involved in moving a rig from one region to the other, regional disparities do exist in terms of day rates. In general, the day rates differ according to the type of rigs used. Movement in day rates is, however, a function of demand-supply level for the drilling rigs, which are influenced by the availability of rigs (rig count), capacity utilisation and prevailing oil/gas prices.

Since 2000, the number of offshore rigs in operation increased by 40% globally (prior to the oil price decline since June 2014), while offshore oil production remained largely flat. This is on account of the high rate of decline in oil production from ageing fields, which are largely shallow water fields. Given that E&P players have to report 100% reserve replacement year after year, the increase in focus towards further deep waters leads to an increase in the number of rigs deployed and results in premium rates for deepwater assets.

Decline in crude oil prices and increased availability of rigs in the market negatively impact utilisation: Offshore drilling activity has seen a significant slowdown since the crash in crude oil prices in recent years. The total supply of offshore rigs was on an uptrend till Q4 CY2014 and has remained stagnant since then as low crude oil prices have forced E&P companies to abandon or push projects further out in the future leading to idling of many rigs. Many rig operators have entered into arrangement with shipyards to delay delivery of under construction rigs. The marketed supply of rigs has dropped to ~750 but the contracted rigs have fallen to levels of ~580-600 as on Q4 CY2015. Utilisation levels of the rigs have been on a downtrend as well and neared ~80% in Q3 CY2015. In 2015, 14 jackups were retired from service, 4 more than 2014. However, the average age of rigs being retired increased to ~35 years as compared to ~29.7 years in the time period of 2000-2013. This is an indicator of the intention of the rig owners to hold on to their assets for longer than investing in new rigs.

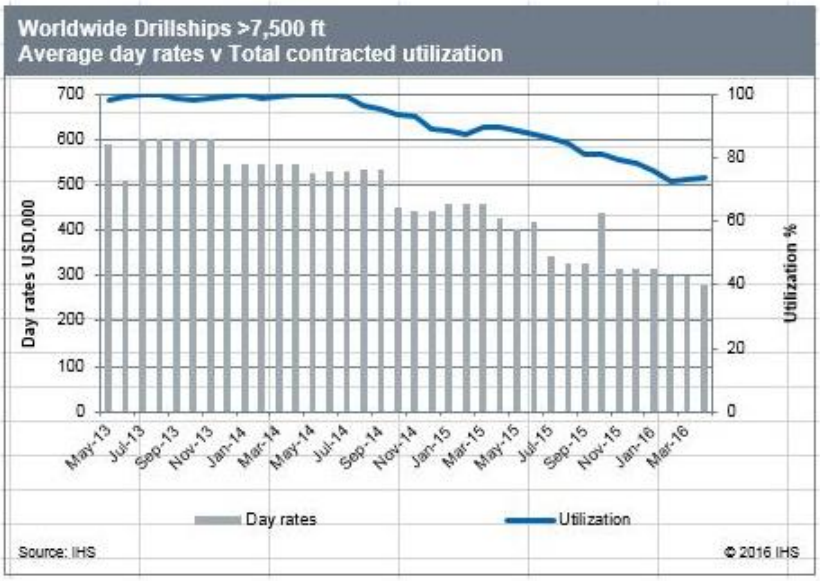
Chart 35: Worldwide Offshore Rig Count and Utilisation Rate



Source: IHS Petrodata

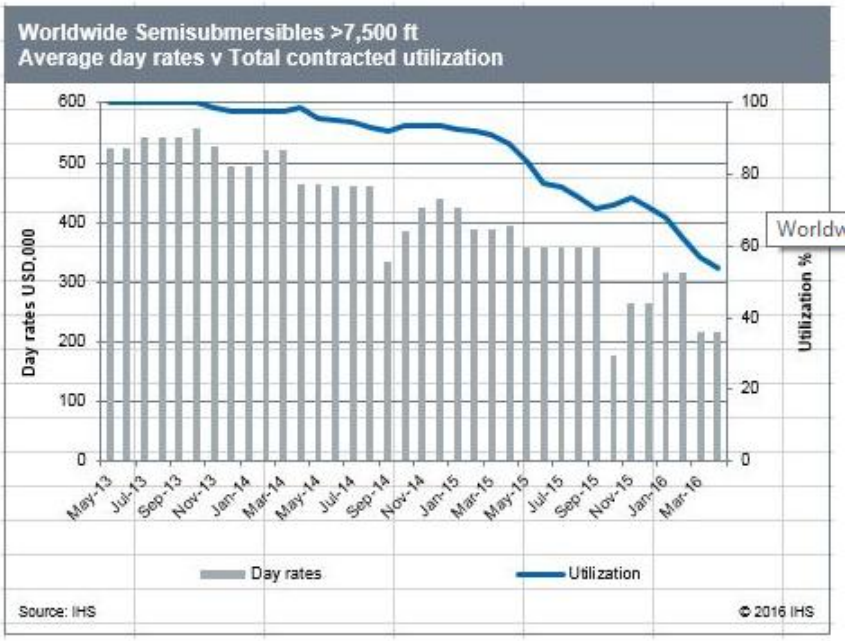
Decline in crude oil prices lead to fall in domestic day rates: In response to the crude oil price decline, most of the global E&P companies have cut their budgets related to capex and it is expected to weigh down heavily on the day rates as more rigs become idle due to lack of contract availability. Additionally, the outlook for crude oil price remains weak. The weak outlook has weighed down on the rig contracts even leading to an early termination. With increasingly idle capacity of rigs in the market (26 rig contracts were terminated early from late 2014 to December 2015) and a few new rigs slated to enter the market, day rates are expected to remain soft in the near term. Though global E&P companies have announced capex cuts, in case of India, ONGC, being the biggest E&P player, has continued its activities as the government looks to reduce its reliance on imports. However, the global day rates have a bearing on the day rates at which ONGC charters the rigs and thus these rates are expected to remain at subdued levels. There has been nearly a 30% decline in day rates in India.

Chart 36: Worldwide Drillship Day Rates and Utilisation



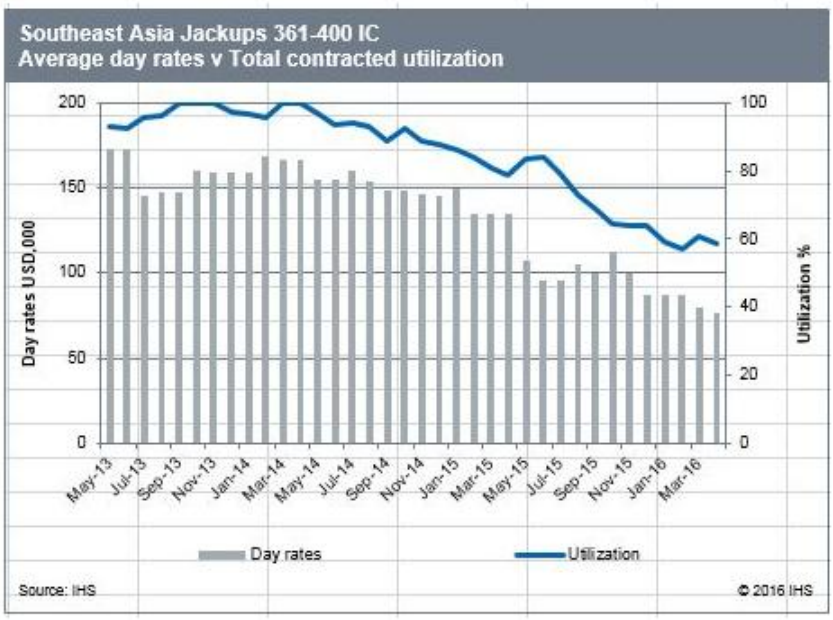
Source: IHS Petrodata

Chart 37: Worldwide Semisubmersible Day Rates and Utilisation



Source: IHS Petrodata

Chart 38: Southeast Asia Jackups Day Rates and Utilisation



Source: IHS Petrodata

High competition in the domestic industry: Competitive intensity in the offshore drilling business in India and particularly for ONGC contracts (which offer advantages of longer tenure, rate stability and high payment security) is generally of a high order. Moreover, given that the global E&P market conditions have been relatively less attractive compared to the Indian scenario and many rig owners have been suffering from low fleet utilisation rates and financial distress, there has been an increase in competition in the recent past.

ONGC is the largest contractor for rigs in India while Cairn, Focus Energy and RIL remain the other key players. While private players like Cairn have de-hired rigs to cut down on costs and counter low crude prices, ONGC has not cut down on its exploration plans.

According to IHS Petrodata, the demand for jack-up rigs in India is expected to rise to 40 units by the end of CY2016 from about 33 currently. The main demand for these rigs is expected to come from ONGC, which had tendered 11 rigs in 2015. Four of the tendered rigs have already started working in the field while four others will start work by mid-2016.

The day rates for a few jack-up rigs recently deployed in Indian waters are given below:

Table 12: Day Rates for few Jack-up Rigs Deployed Recently in Indian Market

Operating Company, Rig Name	Client	Approximate Day Rates	Year of Construction
Aban Offshore, Aban II	ONGC	$46,000	1981
Vivekananda 1	ONGC	$73,542	2015
Vivekananda 2	ONGC	$73,542	2015
Greatship, Greatdrill Chitra	ONGC	$75,080	2009

Source: ICRA research

It may be noted that the day rates for recent builds of 2013 and 2014 contracted by ONGC prior to the oil price decline were about $ 110,000. Accordingly the day rates of recently contracted Vivekanand 1 and 2 indicate a decline of about 30% from earlier levels.

If all the contracts that are being sought by ONGC are successfully deployed then the number of jack-up rigs by end of 2016 should be near 37 while the supply would be approximately 42.

Service companies offering integrated offerings:

Faced with capex cuts oil field services companies and EPC companies are joining hands to provide integrated offerings, with products and services bundled into a single package and/or turnkey solutions. This optimises the cost for customers and at the same time allows for faster installation.

Nevertheless low energy prices are pushing oil field services companies towards consolidation, especially for those serving the offshore industry. Accordingly Schlumberger acquired Cameron in 2015 and Halliburton tried to merge with Baker Hughes though the merger was eventually called off as it faced stiff resistance from regulators in the U.S. and Europe over antitrust concerns. However high fixed costs have prevented rig providers from cutting expenditure in the same way service companies have due to which some rig providers have filed for bankruptcy such as Vantage Drilling and Hercules.

Impact on oil field service companies:

The revenues of oil field service companies have declined in the in FY2015 and FY2016 owing to decline in day rates. Companies within our coverage group exhibited high EBITDA margins in the range of 31-36% over FY2011-FY2013; FY2014 industry aggregates witnessed substantial decline primarily on account of high losses posted by Shiv-Vani Oil & Gas Exploration Services Ltd. (SVOL). The performance of the industry continued to be weak in FY2016. It may be noted that the aggregate results are skewed by losses of SVOL.

Table 13: Oil Field Services Industry Financials

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies*		7	7	7	7	5
Operating Income (OI)	Rs. Billion	58.8	64.6	60.7	60.1	47.1

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Operating Profit	Rs. Billion	31.7	31.7	31.7	31.7	23.1
Net Profit	Rs. Billion	5.0	2.3	-2.8	-3.9	-5.5
Operating Profit/OI	%	53.9%	49.0%	52.3%	52.8%	49.1%
Net Profit/OI	%	8.4%	3.5%	-4.6%	-6.5%	-11.7%
RoNW	%	8.5%	3.7%	-4.4%	-5.4%	-7.8%
Total Debt	Rs. Billion	202.6	207.0	219.1	220.0	153.1
Tangible Net Worth	Rs. Billion	58.6	62.3	63.8	72.2	70.1
Debt-Equity Ratio	Times	3.46	3.32	3.44	3.05	2.18
Interest Coverage Ratio	Times	2.02	1.75	1.68	1.64	1.66

**Includes financials for Aban Offshore, Alphageo, Asian Oil Field Services, Deep Industries, Dolphin Offshore, GOL Offshore and Shiv-Vani Oil & Gas Exploration Services. For FY2016 data for Asian Oil Field Services and Shiv-Vani Oil & Gas Exploration Services is not available. Source: Ace Equity, company disclosures and ICRA research*

PSU tenders expected to see more competition: Earlier PSU upstream companies contracts had a price preference clause for domestic suppliers in its earlier tenders which gave domestic suppliers a preference if their price was within 10% of the L1 bidder (if non-domestic). This clause was meant to help Indian companies gain experience in the oil field services business. The upstream PSU companies had been asking for the removal of this clause as it is believed that the clause had been in place for 30 years, which is an adequate period of time for domestic companies to gain exposure. Additionally participation from international bidders had reduced drastically, which hampered competition. It also resulted in additional costs for the PSU upstream companies, impacting their cost competitiveness. The removal of the price preference clause should increase the competitive intensity for PSU upstream companies' tenders.

A large number of rigs also face the prospects of idling as many contracts are coming to an end or are being terminated prematurely. In order to prevent the idling of rigs, rig owners have been quoting low rates in tenders chasing utilisation over margins. With the 10% Price Preference for Domestic Players now gone, the competitive intensity may rise as all the players will now compete on an equal footing. However, some industry sources suggest that the overheads for foreign players are higher than domestic players, which will prevent foreign players to compete directly in the market. However, with an increased supply of rigs and longer terms and visible revenue streams, competition for PSU tenders is expected to intensify.

5.4 Impact on Mud Chemical Suppliers, Pipe Suppliers, Equipment Suppliers, EPC Companies

Demand for supplies a function of upstream capital spending: Demand for mud chemicals, pipes, equipment and EPC services would remain a function of the upstream capital spending, which in turn is dependent upon current and expected oil and gas prices. Though globally upstream companies have reduced their capex significantly in response to the decline in energy prices, the domestic upstream PSUs have maintained their exploration and development activities even as Indian private sector has followed the trend of global companies.

Decline in prices as global capex cuts lead to demand slowdown: With the decline in energy prices globally and weak outlook for the same over the medium term many companies globally reduced their capex leading to supply demand balance easing out. Faced with a demand slowdown and commodity price decline, prices of some mud chemicals, pipes, equipment have also declined. Accordingly suppliers had to contend with not only lower demand but also lower prices. Several companies globally renegotiated existing contracts for supplies as a severe decline in realisations on oil and gas left very low margins even as new exploration and development became uneconomical in many geologies and projects.

Impact on pipe-manufacturing companies: The revenues of pipe manufacturing companies declined in FY2016 owing to a decline in commodity prices. Additionally, the pipe manufacturing companies have had to contend with cheaper imports from China. However, the profitability margins of the industry are skewed by the higher profits of Jindal Saw, which earned higher profits in other pipe segments whereas Maharashtra Seamless' profits dipped in FY2016 and Oil Country Tubular and ISMT posted losses.

Table 14: Pipe Manufacturer Industry Financials

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies*	No.	4	4	4	4	4
Operating Income (OI)	Rs. Billion	100.0	94.6	86.8	97.4	83.3
Operating Profit	Rs. Billion	13.2	9.5	8.2	10.4	10.6
Net Profit	Rs. Billion	6.0	2.6	0.6	1.9	0.0
Operating Profit/OI	%	13.2%	10.0%	9.5%	10.7%	12.7%
Net Profit/OI	%	6.0%	2.7%	0.7%	2.0%	0.1%
RoNW	%	9.2%	3.8%	0.8%	2.7%	0.1%
Total Debt	Rs. Billion	37.2	44.9	48.0	60.4	63.2
Tangible Net Worth	Rs. Billion	64.9	67.6	68.8	72.4	89.9
Debt-Equity Ratio	Times	0.52	0.62	0.67	0.80	0.71
Interest Coverage Ratio	Times	5.16	2.85	1.90	1.96	1.38

**Includes financials for Maharashtra Seamless, Jindal Saw, Oil Country Tubular and ISMT; Source: Company disclosures and ICRA research*

Impact on EPC companies: The revenues of EPC companies have not declined as these have been buoyed by L&T. However the profitability of the industry has declined owing to pressures on rates and more intense competition.

Table 15: EPC Industry Financials

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies*		3	3	3	3	3
Operating Income (OI)	Rs. Billion	785.5	882.3	978.9	1008.4	1084.8
Operating Profit	Rs. Billion	135.8	155.9	164.3	175.2	116.8
Net Profit	Rs. Billion	54.3	58.3	48.4	39.4	36.1
Operating Profit/OI	%	17.3%	17.7%	16.8%	17.4%	10.8%
Net Profit/OI	%	6.9%	6.6%	4.9%	3.9%	3.3%
RoNW	%	15.9%	15.0%	11.4%	8.8%	7.9%
Total Debt	Rs. Billion	571.7	733.5	906.7	1007.4	974.9
Tangible Net Worth	Rs. Billion	342.1	389.9	424.9	445.3	454.1
Debt-Equity Ratio	Times	1.67	1.88	2.13	2.26	2.15
Interest Coverage Ratio	Times	3.73	2.87	2.23	2.12	2.84

**Includes financials for Engineers India Limited, L&T and Punj Lloyd; Source: Ace Equity, company disclosures and ICRA research*

Impact on equipment-supplier companies: The revenues of equipment-supplier companies have not declined as these have been buoyed by L&T. However, the profitability of the industry has declined owing to higher competition and accordingly finer rates.

Table 16: Industry Financials of Equipment Suppliers

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of companies*		4	4	4	4	4
Operating Income (OI)	Rs. Billion	1185.7	1286.6	1296.0	1280.7	1346.5
Operating Profit	Rs. Billion	234.4	247.4	218.4	207.8	109.6
Net Profit	Rs. Billion	122.0	122.3	86.7	64.5	49.2
Operating Profit/OI	%	19.8%	19.2%	16.8%	16.2%	8.1%
Net Profit/OI	%	10.3%	9.5%	6.7%	5.0%	3.7%
RoNW	%	21.6%	18.4%	11.9%	8.3%	6.2%
Total Debt	Rs. Billion	523.7	698.3	893.8	962.2	936.6
Tangible Net Worth	Rs. Billion	565.7	664.5	731.1	774.8	797.8
Debt-Equity Ratio	Times	0.93	1.05	1.22	1.24	1.17
Interest Coverage Ratio	Times	7.59	5.15	3.27	2.78	3.48

**Includes financials for BHEL, L&T, Thermax and Deep Industries; Source: Ace Equity, company disclosures and ICRA research*

5.5 Impact on Employment

Layoffs reported worldwide: With the severe decline in the prices of crude oil and gas, oil and gas companies have been reducing their costs and to this end they have resorted to pruning manpower costs. Additionally, a large number of projects in several geologies became uneconomical due to which further development in these projects was stopped leading to layoffs. The effect has been transmitted to service providers and suppliers who have also reduced their headcount in a bid to save costs amid substantial decline in day rates and prices of supplies and services.

The projects that have been worst hit are the ones which require high break even prices of crude oil such as those in deepwater or Canadian tar sands etc. With the decline in crude oil prices, several of these projects have been deferred or cancelled, leading to large layoffs.

The increase in oil prices and an improvement in fracking technology had led to a rapid growth in the number of shale oil wells in the US. However, most of the shale oil wells are profitable only when oil prices are above $60/barrel. Some of the shale oil companies had taken large loans in order to expand their production and with oil prices remaining low several of these companies have filed for bankruptcy. With many shale oil companies cutting costs there have been large layoffs and unemployment within the shale oil and gas industry is on the rise. However, it is not just the small oil companies that have reduced their work force. Even big oil and gas companies such as Chevron, British Petroleum, Shell have also cut thousands of jobs in response to lower oil and gas prices.

Oil-producing nations base their spending plans on an assumed crude price. Low oil prices are squeezing domestic budgets of all oil exporting countries leading to austerity measures being imposed. Gulf economies are almost fully dependent on income from oil exports. There are several projects that have been cancelled across the Middle East. The fall in crude prices has led to job cuts and resulted in companies not granting increments and the sizeable Indian expatriate population in the Middle East has been hit by retrenchment and higher living expenses. GCC countries are now imposing taxes and have increased the cost of fuel, water and electricity.

Among the domestic companies while the upstream PSUs have not resorted to job cuts, their private counterparts such as Cairn India have reduced headcount in a bid to reduce costs.

5.6 Impact on Overseas Oil & Gas Asset Acquisition by Indian Upstream Companies

Overseas oil and gas investments suffer from geo-political risks such as unstable regimes, resource nationalisation, changes in fiscal laws etc. For example ONGC Videsh holds stakes in blocks in Syria and South Sudan, which have been impacted by political unrest. Syria has been in the grip of a civil war since February 2011 and in the same year the European Union imposed a series of sanctions on Syria. As a result of these sanctions OVL's revenues from its E&P assets in Syria have been affected. In the case of South Sudan, an alleged coup attempt and civil war in South Sudan had led to violence in December 2013

due to which OVL had shut its oilfields and evacuated all personnel from the country. Accordingly oil companies strive to have a relatively diversified presence in stable and unstable regions.

The acquisition of stakes in overseas oil and gas assets exposes PSU upstream companies to significant event, geological, execution and geo-political risks in the host countries, however, these companies have safeguards built in with a three-tier approval process i.e. vetting by Company Board, Empowered Committee of Secretaries and Cabinet Committee of Economic Affairs. The upstream PSU companies set the hurdle rate for acquisitions after factoring in the geo-political risks inherent in the host country, and their status as a GoI company helps to obtain feedback from the Government's diplomatic network, besides which, their own due diligence exercise on target assets is detailed, involving an in-house team, external reservoir consultants, investment banks, and legal experts.

Some of the oil and gas deals made in recent years are as below:

In January 2014, OVL along with Oil India Limited completed the acquisition of 10% participating interest in the Rovuma Area 1 Offshore Block in Mozambique for US$ 2.48 billion from Videocon Mauritius Energy Limited. Additionally in February 2014, OVL completed the acquisition of an additional 10% participating interest for US$ 2.64 billion from Anadarko. The partners in this block include Anadarko, operator of the project, ENH, Mitsui, Bharat Petro Resources Private Limited and PTTEP. The aforementioned block has huge recoverable gas reserves of around 45-70 tcf. The valuation of the aforementioned deals work out to about $ 2.1-4.4/boe based on the estimates of the recoverable gas reserves. The purchase consideration for 10% stake in the block is in line with payment made by PTT Exploration and Production for the purchase of Cove Energy PLC whose principal asset is the 8.5% stake in the same block. The deal was concluded in August 2012 and PTT paid about $ 1.9 billion for about 8.5% stake in the same block, which translates to about $ 2.0-3.7/boe based on recoverable gas reserves. Additionally in March 2013 China National Petroleum Corporation purchased 20% stake in an adjacent block (Area 4, an offshore block in Rovuma Basin, Mozambique with recoverable gas reserves of 75 tcf) for a consideration of $ 4.21 billion which translates to about $ 1.6/boe based on recoverable gas reserves.

In September 2015, ONGC Videsh Limited, signed definitive agreements to acquire up to 15% shares in CSJC Vankorneft, which is the owner of Vankor Field and North Vankor licence. Vankorneft is the fully-owned subsidiary of Rosneft Oil Company. Vankor is Russia's second largest field by production and accounts for 4% of Russian production. The field is situated in the Turukhansky district of Krasnoyarsk Territory in Eastern Siberia. The initial recoverable reserves of the Vankor field as on January 1, 2015 are estimated at 476 million tonnes of oil and condensate and 173 billion cubic meters of gas. The daily production from the field is around 440,000 bpd of crude oil. The valuation of the deal is about US$ 1.25 billion or about US$ 1.9/boe which is lower than the OVL's Imperial energy acquisition at a valuation of $ 2.28/boe. ONGC Videsh further signed an MoU to acquire an additional 11% in the Vankor field for $925 million.

Additionally, in March 2016, Indian Oil Corporation Limited, OIL and Bharat PetroResources Limited signed definitive agreements to acquire participatory shares representing 29.9% of the charter capital of LLC

"TYNGD" from a wholly-owned subsidiary of Rosneft Oil Company. The acquisition is subject to relevant Board, Government and regulatory approvals and is expected to close by September 2016. Rosneft Oil Company holds 80% shares while BP PLC (UK) holds 20% shares in TYNGD through their respective subsidiaries. TYNGD (Taas Yuriakh Neftegazodobycha) is an E&P oil and gas company in Yakutia (Russian Federation). The company is operated on the central and southern blocks of the Sredne Botuobinskoe oil and gas field, one of the largest oil and gas fields in East Siberia, Russia. Taas-Yuriah oilfield holds recoverable reserves of 137 million tonnes. Post acquisitions the Indian companies the share of production would be 0.3 million tons per annum at current levels of production. The production from this field is expected to increase to 100,000 bopd by 2021, which will entail a share of 1.5 million tons for the Indian consortium. The valuation of the deal of the Indian consortium's stake is $1.28 billion for 29.9% stake, which translates to a valuation of about US$ 4.2/boe (as compared to OVL's Imperial energy acquisition at a valuation of US$2.28/boe and Vankor acquisition at a valuation of US$ 1.9/boe).

ONGC is reported to be in talks to buy a stake in Gujarat State Petroleum Corporation's (GSPC) KG-OSN-2001/3 (Deendayal) block in the Bay of Bengal. GSPC is the operator of the block and Canada's GeoGlobal Resources and Jubilant Energy hold 10% each. GSPC is facing technical issues in the development of the field as it's a high temperature high pressure deep water field, wherein complexities are high. To develop the block, GSPC had sought a strategic partner in 2010 but without success. ONGC's collaboration with GSPC could help reduce costs of development in the former's KG-DWN-98/2 block, if technically feasible.

In another transaction in the Indian upstream industry, ENI spA sold 24.75% stake in Hindustan Oil Exploration Company (HOEC) to Ashok Goel, through the Ashok Goel Trust and Rohit Dhoot through Dhoot Industrial Finance for a consideration of Rs 0.65 billion. Post this sale, the shareholding of Eni spA in HOEC came down to 22.43%. Currently, HOEC has a participating interest in 10 oil / gas pre-NELP fields (in Cambay basin, Cauvery basin and Assam Arakan basin) which are in varying stages of E&P life cycle i.e. exploration, development and production. The company is the operator in six of these Pre-NELP blocks.

Barring the above deals, there has not been a substantial increase in stake acquisition by Indian companies in overseas oil and gas assets owing to the mismatch in expectations of buyers and sellers.

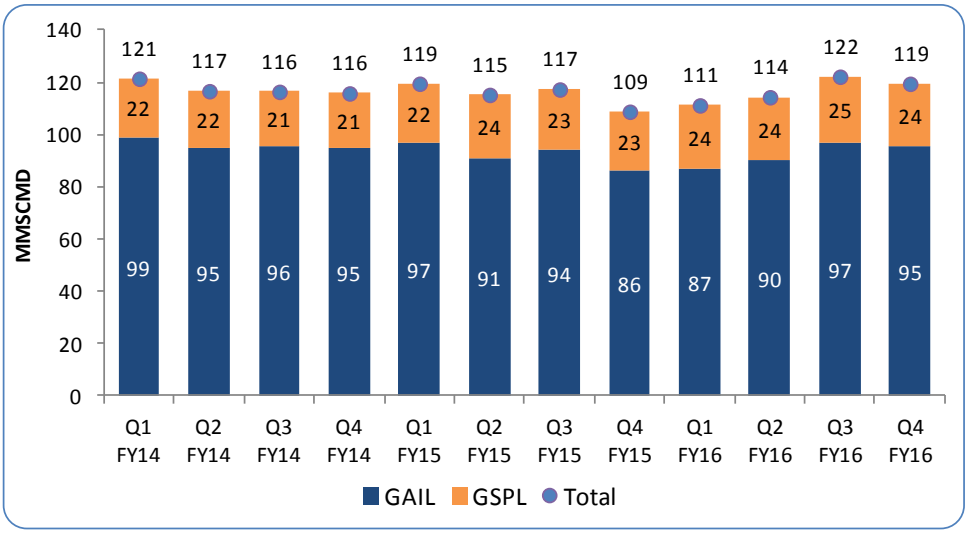
However, in the US, low oil prices are expected to spur mergers and acquisitions as some companies are forced to sell to avoid bankruptcy with private equity firms being probable buyers. The high amount of debt of several Shale oil companies would be the trigger for mergers and acquisitions.

6 IMPACT ON MIDSTREAM COMPANIES

6.1 Transmission and Marketing Players

Gas transmission volumes decline largely in line with the fall in domestic natural gas production till FY2015: Natural gas transmission volumes witnessed a consistent decline over the last few years primarily in line with the fall in domestic gas production from 111 MMSMD in FY2013 to 92 MMSCMD in FY2015. The volumes of GAIL and GSPL, which cover almost the entire domestic transmission volumes, declined from ~132 MMSCMD in FY2013 to ~115 MMSCMD in FY2015. The difference between transmission and domestic gas production (net of flaring and internal consumption) volumes primarily represents the R-LNG volumes transmitted through pipelines.

Chart 39: Trend in Transmission Volumes of Major Players



Source: Companies' quarterly results, ICRA research

Lower crude oil prices, along with oversupply in global LNG market, leading to soft spot LNG prices push up RLNG consumption and transmission volumes in FY2016: Spot LNG prices have softened from US$12-14/mmbtu in H1 FY2015 to US$4-5/mmbtu currently primarily due to two major factors: (i) significant fall in crude oil prices post October 2014 and (ii) material increase in LNG capacities globally along with modest demand growth leading to oversupplied global LNG market. Spot LNG prices came under pressure due to material decrease in prices of naphtha and FO (crude derivatives), which are the major competitive fuels for LNG. Though the oversupplied global LNG market led to a reduction in slope[5] of spot LNG prices from 13-15% to 10% over last 1.5 years, the lower level of crude oil prices have been the primary factors for lower spot LNG prices.

[5] LNG Price (in $/mmbtu) = Constant + Slope * Crude Oil Price (in $/bbl)

The total gas consumption in India increased by 3% (YoY) to ~128 MMSCMD in FY2016 from ~124 MMSCMD in FY2015 primarily in line with 15% (YoY) rise in R-LNG consumption to ~58 MMSCMD even as domestic natural gas consumption decreased by 6% (YoY) to 69 MMSCMD in FY2016. The aggregate transmission volumes of GAIL and GSPL have increased to 117 MMSCMD in FY2016 from 115 MMSCMD in FY2015. The increase in R-LNG consumption has been driven primarily by lower prices of spot LNG, which boosted RLNG consumption in industrial sectors along with incremental demand from the power segment, following the GoI's scheme to improve utilisation levels of under-utilised and stranded power plants through use of LNG.

Growth in transmission volumes to be contingent upon gas availability and affordability of prices against liquid fuels: Transmission volumes are expected to grow at modest rate in the near term (over next one year / FY2017) as domestic gas production is unlikely to increase in the current year. However, the availability of RLNG volumes would increase post expansion of regasification capacity of the Dahej terminal of Petronet LNG Ltd (PLL) in Q3 FY2017, which may lead to higher RLNG imports towards the end of FY2017, depending upon the relative economics against liquid fuels. We believe that soft spot LNG prices could lead to competitive landed RLNG prices for consumers against liquid fuels, especially in a scenario of recovery in crude oil prices. Over the medium to long-term, transmission volumes would materially benefit from an increase in domestic gas production as well as the increasing regasification capacity in the country along with expectation of relatively softer LNG prices.

Impact of lower crude oil prices on financial performance of transmission players: Tariffs of natural gas transmission companies are independent of crude oil or natural gas prices and are regulated by PNGRB, based on other parameters like investment made in the particular pipeline, volume build-up over the years, maintenance capex, inflation, etc. However, due to lower than anticipated transmission volumes, the profits (PBIT of transmission segments) of pipeline players suffered especially on under-utilised pipelines.

Table 17: Trends in Tariffs and Profitability of Leading Gas Transmission Players

	FY2014	FY2015	FY2016	YoY for FY2016
GAIL Transmission Revenues (Rs Billion)	41.0	33.5	39.9	19%
GAIL Average Tariff (Rs/mmbtu)	33.2	28.3	33.7	19%
GSPL Transmission Revenues (Rs Billion)	10.2	10.3	9.6	-7%
GSPL Average Tariff (Rs/mmbtu)	37.5	34.8	30.4	-13%
GAIL Transmission PBIT (Rs Billion)	18.0	13.2	18.5	40%
GAIL PBIT per unit (Rs/mmbtu)	14.6	11.1	15.6	40%
GSPL Transmission PBIT (Rs Billion)	7.7	7.6	7.0	-7%
GSPL PBIT per unit (Rs/mmbtu)	20.5	21.2	24.7	17%

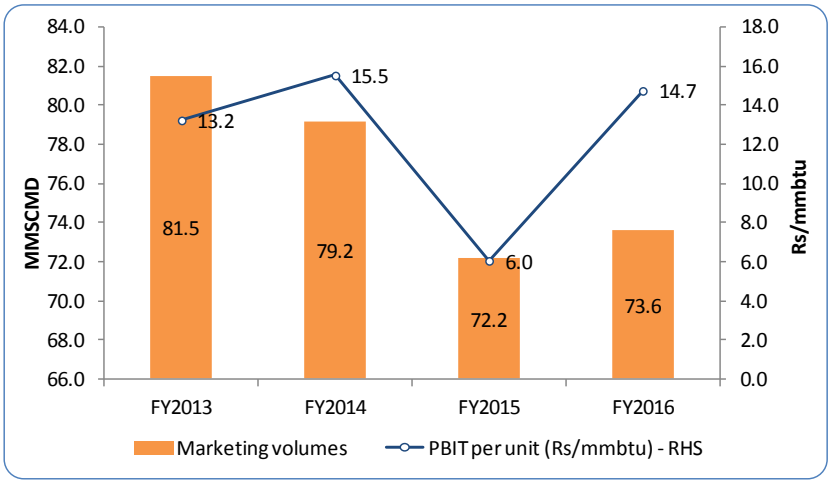
Source: Companies' results, ICRA research

As shown in the table above, GAIL has reported 19% (YoY) rise in average transmission tariff in FY2016 due to base effect of lower tariffs in Q1 and Q2 FY2015 due to provisions made for retrospective fall in tariffs for some pipelines. Overall with stable volumes and higher tariff in FY2016, GAIL reported 19% (YoY) and 40% (YoY) rise in revenues and PBIT respectively during FY2016. Further, as the players had to provide 50% discount in the tariff on spot RLNG volumes to the power sector companies, the same had a negative impact on transmission tariffs. The GSPL transmission tariff decreased by 13% (YoY) in FY2016; however due to an increase in volumes, the impact on revenues and PBIT was lower at 7% (YoY) each in the year.

As growth in transmission volumes is expected to be modest in FY2017, there could be moderate positive impact of the same on profits of gas transmission players. However, the players may benefit from expected increase in tariffs of under-utilised pipelines as per notification of PNGRB in January 2016. Notwithstanding the near-term outlook, the gas transmission operations are likely to benefit significantly over the medium to long-term with increase in transmission volumes.

Marketing profits increase in FY2016 as RLNG volumes, margins rise because of lower spot LNG prices: GAIL, GSPC, Shell, BPCL and IOCL are the leading marketers of natural gas in India. However, as information on the marketing profits of other companies is not available separately, this note restricts itself to assessing the marketing margins of GAIL, which has ~60% share of the overall gas sales in the country.

Chart 40: Trend in Marketing Volumes and Margins of GAIL



Source: Companies' results, ICRA research

GAIL's marketing volumes witnessed ~9% (YoY) decline in FY2015, which along with materially lower margins on R-LNG and inventory loss on LNG, led to a fall in marketing profit (measured as PBIT per mmbtu) during the year. The margins have increased to Rs.14.7/mmbtu in FY2016 following an increase in spot LNG volumes and expansion in margins driven by lower spot LNG prices (due to effect of lower crude oil prices); partly offset by lower marketing margins on incremental R-LNG volumes coming from the power sector. GAIL had continued to defer costlier long-term RasGas LNG volumes till 9M FY2016 (April to

December 2016), which was a risk given the high "take or pay" liabilities accrued in CY2015. However, the issue has been resolved with RasGas, and GAIL will make up for the shortfall in volumes in the remaining period of the contract.

Marketing margins to be healthy over the near to medium term: The outlook on marketing margins on spot LNG is positive for the next one to two years as the prices of spot LNG are expected to be low, making it more affordable. Further, with any recovery in crude oil prices would lead to higher prices of competing fuels, spot LNG may see favourable economics as the increase in spot LNG prices could be lower than those in liquid fuels due to a discount on its prices (relatively lower slope than past average) resulting from the oversupplied global market and the declining demand from Japan as they gradually restart their nuclear reactors. Besides, regulatory developments in the country like ban on registration on new diesel vehicles in certain cities are likely to boost the demand for natural gas, leading to an increase in overall profits of gas marketers.

Renegotiation of RasGas contract formula relieves gas marketing companies from huge 'take or pay' liabilities: GAIL, IOC and BPCL have the marketing rights (in the ratio of 60%:30%:10%) for PLL's RasGas long-term (LT) R-LNG from the Dahej terminal through a 25-year take-or-pay agreement. RasGas LNG prices were earlier determined on the basis of a formula taking into account the slope of the 12-month average crude oil prices, subject to floor and cap based on the 60-month average. As the average crude oil prices of the last 60 months remained significantly higher than that for the last 12-months, the floor of the formula kept RasGas LNG prices at a materially higher level than the prevailing liquid fuel and spot LNG prices. The contract between PLL and RasGas was revised in January 2016 and the major changes in the contract were: a) FOB prices of LNG would be linked with the three-month average Brent crude oil prices (against earlier prices linked to 12-month average JCC with floor and cap based on 60-month average) and b) LNG volumes not offtaken by PLL from RasGas during 2015 will be taken and paid for by PLL during the remaining term of the contract (i.e. over the balance period of 13 years). As the 'Take or Pay' liabilities would have been large in relation to the networth of PLL and some of the offtakers, it was a major credit concern. As per the revised agreement, PLL can make good these volumes over the balance period of the contract at revised prices. This option of sourcing deficit volumes has relieved the offtakers and PLL from the above liabilities, thereby removing a major concern from the credit perspective.

Relatively stable marketing margins expected on RasGas LNG for gas marketers going forward: With the renegotiated gas pricing formula for long-term R-LNG of PLL with RasGas, any changes in Brent crude oil prices would get reflected faster in gas prices. Following greater alignment of gas prices with Brent crude oil prices, and therefore, crude oil derived alternative fuels, the chances are lower for the economics of gas getting misaligned vis-à-vis alternative fuels for long periods of time. Also, with the removal of floor and cap on gas prices there are lesser chances of prolonged periods of highly favourable economics for gas vis-à-vis alternative crude-derived fuels that the industry enjoyed in the past and adverse economics seen in the CY2015. This may help gas marketers earn relatively stable marketing margins on RasGas long-term RLNG. Currently, RasGas LNG prices (FOB) are around US$4.5/mmbtu, which are comparable to global spot gas prices.

***Low crude oil and spot LNG prices along with GoI scheme lead to additional R-LNG demand from power sector; a marginally positive for transmission and marketing companies*:** On March 27, 2015, the GoI approved a scheme for use of LNG by gas-based power plants so as to increase their utilisation levels. The scheme aims to effectively utilise the current regime of low crude oil and spot LNG prices to enable stranded/under-utilised power plants through use of cheaper spot LNG. In the auction for the period April to September 2016 (H1 FY2017), stranded gas-based capacity won the bid for R-LNG volumes of ~8 MMSCMD for power generation of around 6.79 billion units. Although this is an additional demand for natural gas (spot or short-term R-LNG) from power generation companies, the volumes of H1 FY2017 are comparable to H1 FY2016. However, these additional volumes are primarily due to lower prices of spot LNG and the scheme of the GoI (which would also be viable till low prices continue). Overall, natural gas transmission companies stand to gain marginally as pipeline throughput would be higher (most trunk pipelines remain under-utilised). Even though transmission companies are providing a discount on the applicable pipeline tariffs for incremental volumes, the same should, nonetheless, lead to a moderate increase in operating profit for gas transmission players as the variable cost of transmission is very low. Overall, transmission companies stand to gain moderately from the additional cash generation on transmission and marketing of power sector volumes even as pipeline tariffs and marketing margins would be materially lower than the same on other R-LNG volumes. The scheme has been envisaged for two years (FY2016 and FY2017).

Heightened risks related to Henry Hub-based contracts especially in low crude oil price scenario: In December 2011, GAIL signed an agreement to import 3.5 MMTPA of LNG from Cheniere Energy's Sabine pass liquefaction plant in the US for a period of 20 years. Besides, GAIL also has another 2.3 MMTPA contract to liquefy gas at Cove Point terminal in the US. The pricing formula for these contracts is linked to the Henry Hub index (the benchmark natural gas price in the US), which in the past had remained significantly cheaper than the oil indexing contracts. However, the competitiveness of HH-based LNG pricing against liquid fuels has deteriorated significantly lately due to a material decline in crude oil prices. If crude oil prices continue to be at low levels over the longer term, the same may put significant pressure on margins of gas trading segment of GAIL due to challenges expected in marketing of HH linked LNG due to its higher prices than spot LNG and liquid fuel prices. However, GAIL is actively trying to enter into swapping contract, i.e. to sell its US gas to LNG buyers in Europe (which is served by the Middle-East) and procuring gas for India from the Middle-East, which may lead to a material reduction in freight cost.

6.2 Regasification Players

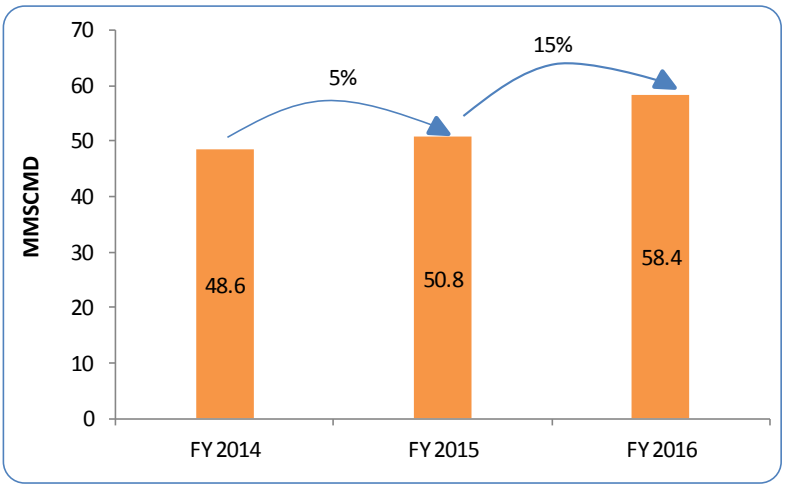
Demand for R-LNG price-sensitive; faces significant competition from cheaper domestic natural gas: ICRA notes that the demand for R-LNG is price-sensitive and believes that domestic natural gas will continue to be cheaper than R-LNG. Hence, domestic gas would be the first choice for price-sensitive consumers in the regulated sectors like power and fertilizer. The priority set by the GoI for domestic gas consumption (other than for small and isolated fields) is: (1) CNG (transport) and PNG (domestic); (2) gas consumed for atomic energy and space research; (3) gas used for extraction of higher fractions (like LPG) from natural gas; (4) gas-based urea plants; and (5) gas-based power plants. However, as domestic

supplies of gas would be limited in relation to the demand from these consumers, part of the residual demand would have to be met with the more expensive R-LNG. Besides, incremental demand from the other consuming segments, which have a higher ability to absorb high-cost gas, might be met primarily from R-LNG. The demand from these segments (like refinery, petrochemicals, PNG for industrial use, etc.), which have the ability to consume high-priced R-LNG, however, can also be met by liquid fuels like naphtha and FO, which pose a significant competition to R-LNG. Nevertheless, spot LNG prices have remained low in last few months, despite marginal recovery in crude oil prices; which aid near term demand prospect of R-LNG.

Impact of incremental power demand on regasification companies a positive: The additional R-LNG demand from the power sector following implementation of the LNG scheme for gas-based power plants is a marginally positive impact on regasification players. Although regasification charges on power sector volumes were expected to be 50% of the usual regasification charges, the regasification terminal companies have been able to charge the usual margins so far. The impact of this development on regasification companies is marginally positive, and the benefit could increase if the volumes are sustained over the medium term.

Steady increase in R-LNG import a positive trend for regasification terminals: LNG import has been on an increasing trend in India over the last few years as R-LNG consumption replaced a part of domestic gas which has seen consistent decline in production levels. In the past, the growth in R-LNG volumes have been moderate due to several factors including constrained regasification capacity in the country, affordability of R-LNG in various sectors (especially at high LNG prices), etc. However, R-LNG imports increased at a healthy growth of 15% (YoY) to 58.4 MMSCMD in FY2016 from 50.8 MMSCMD in FY2015. The performance of PLL, the only listed regasification company, has also shown an improvement in FY2016 as reflected by increase in operating profit by 11% (YoY) in line with volume growth of 10% (YoY) during FY2016

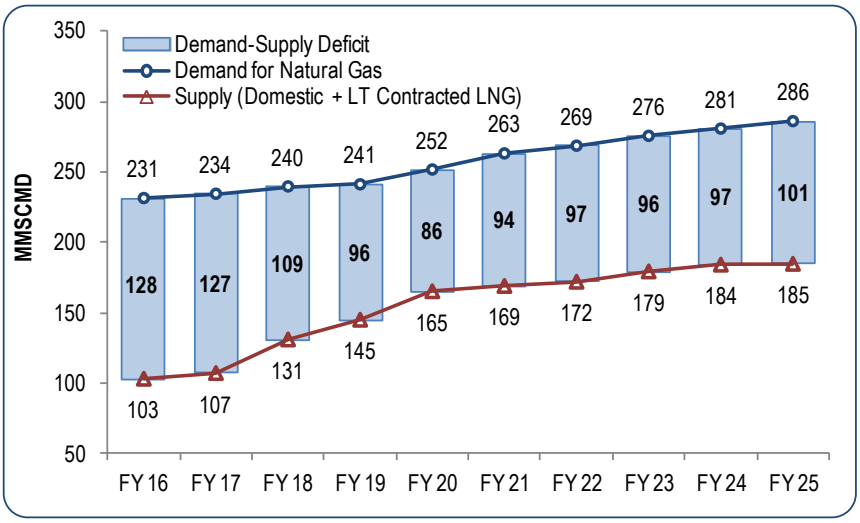
Chart 41: Trend in LNG Import Volumes



Source: PPAC, ICRA research

Significant rise in regasification capacity to improve R-LNG availability, thereby reducing demand-supply gap: The total natural gas supply potential is expected to increase significantly over the next seven to eight years with higher domestic gas production and commissioning of firm regasification capacity during FY2018-21. With the increase in supplies, the difference between the projected demand and supply potential is expected to narrow down FY2020 onwards. Further, the demand for R-LNG could be affected because of significant competition from liquid fuels, and as a result the actual consumption of R-LNG could be lower, leading to significant competitive pressures in the regasification segment over the medium term. Thus, upcoming LNG capacities may operate at relatively lower utilisation than the current utilisation of regasification capacities in the country. The price sensitivity of R-LNG demand would be critical in this regard. ICRA believes that if many regasification terminals, as planned, come on stream over the next four to five years, the new entrants would face significant pressure on volumes and margins as they will have to compete with the existing terminals and brownfield expansion projects which are more cost efficient because of lower capital intensity. Sub-optimal capacity utilisation and lower regasification margins could put significant pressure on the returns and credit profiles of new entrants, especially in the initial years of operations.

Chart 42: Estimated Demand for Additional R-LNG



Note: Supply = Supply from domestic fields + LNG supplied through current long-term contracts; Demand-Supply Deficit = Total estimated demand for gas - Supplies from domestic fields - LNG supplied through current long-term contracts.
Source: ICRA research

6.3 City Gas Distribution Entities

Preference of domestic gas for CNG and PNG (domestic) leads to improved gas availability for these segments; PNG (industrial) relies largely on R-LNG: In February 2014, the GoI mandated provision of domestic gas for the entire consumption of the CNG and PNG (domestic) segments of all CGD entities in the country. The move by GoI is a long-term positive for the CGD sector as it ensures availability of domestic gas for the current consumption and future growth in these segments. As opposed to CNG and

PNG(d) segments, PNG (industrial) consumers have to largely rely on imported R-LNG, which makes PNG(i) volumes critically dependent upon price economics of liquid fuels vis-à-vis R-LNG.

Gas price trends and impact on margins of CGD players: The decline in global gas prices has resulted in a decrease in domestic gas prices (on GCV basis based on formula) from US$3.82/mmbtu in H2 FY2016 to US$3.06/mmbtu in H1 FY2017. The lower price of domestic gas is resulting in higher competitive advantage over liquid automotive fuels, which have not seen material fall in prices due to excise duty hikes. While the domestic gas allocation for the entire demand of CNG & PNG(d) and lower domestic gas prices continue to boost demand growth and margins of incumbents; the same has exacerbated competition for new cities to be bid out.

With regards to PNG(i), the significantly lower prices of industrial fuels in line with lower crude oil prices over the last 1-1.5 years have increased the concerns for demand in the PNG (i) segment; however, sourcing costs of spot LNG have declined as well on account of the sharp correction in global LNG prices during this period. The lower spot LNG prices would aid in lowering the cost of LNG thereby protecting demand and margins to some extent.

Cessation of LPG subsidy and revision of RasGas contract terms long term positives for CGD sector: In December 2015, the GoI announced a cessation of subsidies on LPG cylinders to high income consumers (with annual income greater than Rs 1 million). With the removal of subsidy for consumers in the higher income bracket, there is a significant advantage of PNG (d) over LPG and this should result in a change in the consumer preference in favour of piped gas. Thus, it augurs well not only for the anticipated PNG(d) volume growth for existing CGD players, but also for the prospects of CGD industry expansion in new geographies. Further, the revision in price formula for RasGas LNG, which will result in downward revision in contracted supply prices for CGD players will allow players to price PNG(i) at more competitive rates.

Financial performance of CGD companies: The operating profits for CGD companies have improved over the last two years with domestic gas allocations leading to improved profitability in the CNG segment. CGD companies, especially in Gujarat, had been operating prior to November 2013 with R-LNG as the major input and their profitability remained constrained, given the lower competitiveness in the CNG and domestic PNG segments. However, post November 2013, domestic gas allocation at lower prices has ensured strong profitability for the CGD companies, especially in the CNG segment. Further, CNG volumes have also increased, post fall in domestic gas prices while auto fuel prices have not declined in proportion to crude oil price fall due to excise hikes. Besides, regulatory developments like the ban on diesel vehicle registration (with higher than certain engine capacity) and the odd-even scheme in Delhi are helping CNG volumes. Overall, the margins on CNG and PNG(d) are anticipated to be healthy with an upward bias over the medium term. However, the PNG(i) segment continues to face stiff competition from liquid fuels like furnace oil, LSHS and naphtha. Nonetheless, considering the fall in long-term and spot LNG prices, the demand and margins are expected to marginally increase in the near to medium term. ICRA believes that the price economics of spot LNG or long-term RasGas would be favourable against the liquid fuels over the near to

medium term, unless crude oil prices again decline significantly from the current level of US$50/bbl (in the beginning of June-2015).

Overall impact of low crude oil prices on midstream companies: ICRA has tried to summarise the impact of sustained low crude oil prices (US$40-60/bbl) over the medium term on different players in the midstream sector in the following table:

Table 18: Impact of Low Crude Oil Prices on Gas Utilities - Summary

Sub-sector in Midstream	Impact of low crude oil prices
Transmission	**Largely Neutral**: Tariff determination to have higher impact. Low crude oil and spot LNG prices to push up transmission volumes but discount in transmission tariff for additional RLNG demand of power sector to limit the benefit
Marketing	**Positive:** Low spot LNG prices as well as revision in long-term RasGas prices to lead to improved marketing margins
Regasification	**Moderate Positive:** Incremental LNG volumes to push up regasification capacity utilisation and profits
CGD	**Moderate Positive:** CNG volumes to grow with regulatory developments along with benefits over competing auto fuels. However, in a low crude oil price environment, margins on PNG(i) would be low due to high competition from FO and naphtha

Source: ICRA research

7 Impact on Downstream Companies

7.1 Consumption of Petroleum Products

Domestic demand growth at 10.9%, the highest level since 2000, on the back of improving economic activity and lower crude oil prices: India's petroleum products demand increased to 183.5 MMT in FY2016 from 165.5 MMT in FY2015 registering a growth of 10.9% (YoY), the highest level since 2000. This kind of demand growth was the highest in the last two decades and was on a much larger base. The high demand growth is primarily driven by economic recovery and acceleration in demand on the back of lower crude oil prices. The impact of lower crude oil prices is reflected by the fact that the demand of products like naphtha and FO, with overall decline in consumption by 2.3% pa and 7.9% pa during FY2005-FY2015, reported an increase of 20.9% (YoY) and 11.9% (YoY) during FY2016. The increase in demand of these products was high as they replaced a part of the costlier long-term RasGas LNG consumption.

Table 19: Domestic Consumption of Petroleum Products

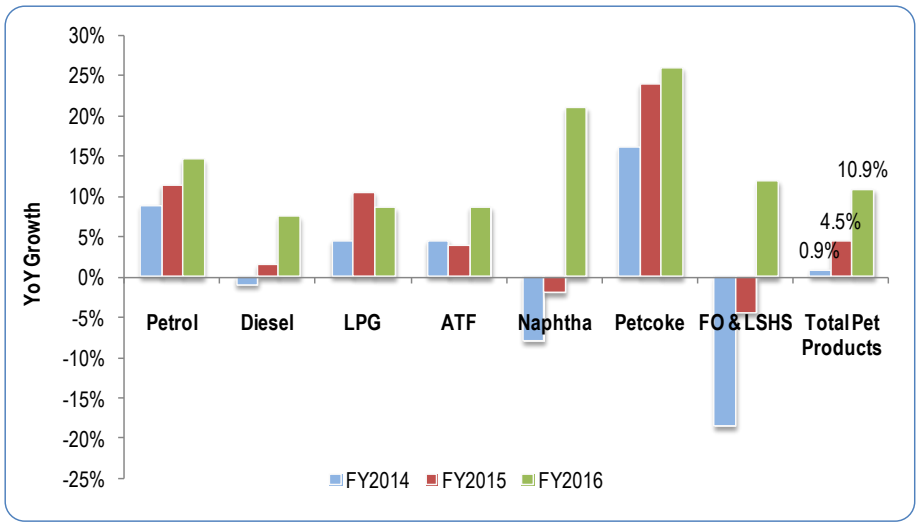
Product	FY2012	FY2013	FY2014	FY2015	FY2016	YoY for FY2016
LPG	15.35	15.60	16.29	18.00	19.55	8.6%
MS	14.99	15.74	17.13	19.08	21.85	14.5%
Naphtha	11.22	12.29	11.31	11.08	13.40	20.9%
ATF	5.54	5.27	5.51	5.72	6.22	8.7%
SKO	8.23	7.50	7.17	7.09	6.83	-3.7%
HSD	64.75	69.08	68.36	69.42	74.64	7.5%
LDO	0.41	0.40	0.39	0.37	0.41	11.4%
Lubricants & Greases	2.63	3.20	3.31	3.31	3.22	-2.7%
FO & LSHS	9.31	7.66	6.24	5.96	6.67	11.9%
Bitumen	4.64	4.68	5.01	5.07	5.82	14.6%
Petroleum coke	6.14	10.14	11.76	14.56	18.32	25.9%
Others	4.92	5.51	5.96	5.87	6.57	12.0%
Total POL	**148.13**	**157.06**	**158.41**	**165.52**	**183.50**	**10.9%**

Source: PPAC and ICRA research; volumes in million metric tonnes (MMT)

Almost all petroleum products, except kerosene and lubricants, report healthy growth in FY2016: The total petroleum products' demand growth in FY2016 was more than double of the cumulative average growth (CAGR) level of 4% (achieved during FY2005-15) in line with high growth in consumption of petrol, naphtha, LPG, petcoke and bitumen, along with material improvement in growth in diesel demand. Except kerosene and lubricants, almost all petroleum products reported a healthy increase in consumption in FY2016. The trend in consumption and outlook for major petroleum products is as follows:

Petrol: Despite modest growth of 3.0% in sales of two-wheelers, the growth in petrol demand was robust at 14.5% (YoY) in FY2016 on account of 7.2% (YoY) growth in FY2016 for passenger vehicles and shift in four-wheeler buyers to petrol from diesel, following a lower differential between the prices of petrol and diesel, besides the large base of vehicles on the road. Despite excise duty hikes, the petrol prices declined in the first 9-10 months of FY2016 in line with the fall in crude oil prices, which also boosted the demand of petrol. However, with recovery in crude oil prices and no relief in excise duty, the prices of petrol have increased materially over April-May 2016, which are expected to moderate the demand growth in the near term. ICRA believes that the petrol consumption growth rate could continue to be healthy over the near term in line with the growth in passenger car sales and existing high vehicle population. The dynamics of petrol prices (largely driven by crude oil prices) and CNG prices (driven by domestic natural gas prices) would also impact the petrol consumption as recovery in crude oil prices may encourage conversion to CNG and moderate consumption growth of petrol over the medium term.

Chart 43: Domestic Petroleum Products Consumption Growth



Source: PPAC, ICRA research

Diesel: The demand growth for diesel accelerated to 7.5% (YoY) in FY2016 from 1.5% (YoY) in FY2015 and -1.0% (YoY) in FY2014. Apart from the economic recovery and lower prices, the diesel demand increase in FY2016 is attributable to increased consumption of diesel by DG sets for irrigation following weak monsoon; higher demand of bulk diesel from industrial segments; higher demand of logistics and transportation services; and high growth of 29.9% (YoY) in sales volume of the medium and heavy commercial vehicles (M&HCV) segment in FY2016. The retail diesel prices (post factoring increase in excise duties) continued to be at YoY lower levels in FY2016 propping consumption; however, the recent increase in diesel prices in FY2017 may moderate the growth. Overall, the pickup in transportation activity in line with the improvement in the overall economic scenario is expected to lead to a healthy growth in diesel consumption over the medium term. However, the recent ban by the Supreme Court on diesel vehicles with higher than certain engine capacity may moderate the diesel growth.

LPG: The LPG demand registered a growth of 8.6% (YoY) in FY2016 against 10.5% (YoY) in FY2015; the fall in growth primarily due to lower diversions following implementation of DBTL. Post implementation of DBTL, the diversion of LPG (domestic) for commercial and Auto-LPG purposes has decreased as is reflected in the high Auto-LPG demand growth rate of 4.3% (YoY) during FY2016 against a demand decline of 24.4% during FY2015. LPG (non-domestic), used for commercial purpose, has grown 39.3% (YoY) in FY2016 against a fall of 2.1% in FY2015. The growth in commercial LPG as well as bulk LPG was driven by higher prices of PNG(i) due to materially higher prices of RasGas long-term LNG. Post renegotiation of the RasGas contract, long-term LNG prices have fallen since January 2016 and thus the consumers of commercial and bulk LPG are likely to shift back to PNG (i) thereby impacting the demand of commercial and bulk LPG. The consumption of alternative fuels, like PNG (domestic), whose prices are linked to domestic gas pricing, would also compete with the LPG demand over the medium term, especially with the GoI's increased focus on expanding the PNG network. Nevertheless, ICRA believes LPG demand growth to be high during near to medium term in line with the increase in penetration of domestic LPG, following GoI efforts and higher demand for commercial and bulk LPG in line with the improvement in economic activity and increase in consumer spending.

Naphtha and FO: The consumption of naphtha increased by 20.9% (YoY) in FY2016 against a decline of 2% (YoY) in FY2015 and 8% (YoY) in FY2014. The high growth in consumption was primarily driven by the demand from petrochemical companies like RIL, IOC, Haldia Petrochemicals and ONGC. Further, the demand from the fertiliser segment increased as subsidy was announced for fertiliser plants in Q4 FY2015, while there was no subsidy mechanism for naphtha plants during Q3 FY2015. The increase in naphtha demand in FY2016 is attributable to a partial replacement of costlier long-term RasGas RLNG by cheaper naphtha in current low crude oil prices. Further, with high domestic demand of polymers, the demand of naphtha from petrochemical sector may increase over the near to medium. However, with the fall in RasGas RLNG prices post renegotiation of the contract, the naphtha demand growth from petrochemicals segment may moderate to some extent and would continue to critically depend upon relative economics against LNG prices.

The demand of FO and LSHS from the fertiliser sector decreased due to a conversion of the plants to natural gas. However, the other sectors like petrochemicals, steel, power and other industrial units reported increased off-take of FO leading to overall increase in consumption by 11.9% (YoY) in FY2016. The price competitiveness of FO for industrial units improved with deregulation of the retail diesel prices, which has provided some support to FO consumption. Further, relative economics against RLNG prices helped FO consumption due to low prices of FO.

Demand outlook positive for the medium term; recovery in prices of crude oil and petroleum products along with availability of cheaper LNG to moderate the growth rates in coming years: The demand for petroleum products is expected to be materially higher than the long-term average over the medium term, following prospects of increased economic activity and low prices of crude oil and petroleum products incentivising the consumers in different segments to switch over from alternate fuels. However, the recovery in crude oil prices may lead to certain moderation in growth rates from the current high levels.

Besides, lower prices of LNG as compared to liquid fuels may moderate growth rates for products like naphtha and FO in the near to medium term.

7.2 Refineries and Marketers

GRMs in FY2015 significantly impacted due to high inventory losses: The crude oil prices witnessed material correction (~50%) during September 2014 to March 2015; which led to high inventory losses for some Indian refiners. During Q3 FY2015 Brent crude oil price declined from about US$ 94/bbl at the start of Q3 FY2015 to about US$ 55/bbl at the end of Q3 FY2015. Accordingly, several refining companies reported large inventory losses in Q3 FY2015; which led to even negative GRMs for IOC, MRPL, CPCL in 9M FY2015. The inventory valuation losses were accentuated for inland refineries which are saddled with large crude inventory of several million barrels in pipelines while some of their coastal counterparts fared better on account of lower crude oil inventories. However, some support to the GRMs was available from the higher crack spreads witnessed during H2 FY2015 for several products. Overall, high inventory losses made a significant impact on GRMs, which were at extremely low levels in FY2015 for most of the refineries.

Table 20: Inventory Loss, GRMs and Net Profit/(loss) of Major Refineries

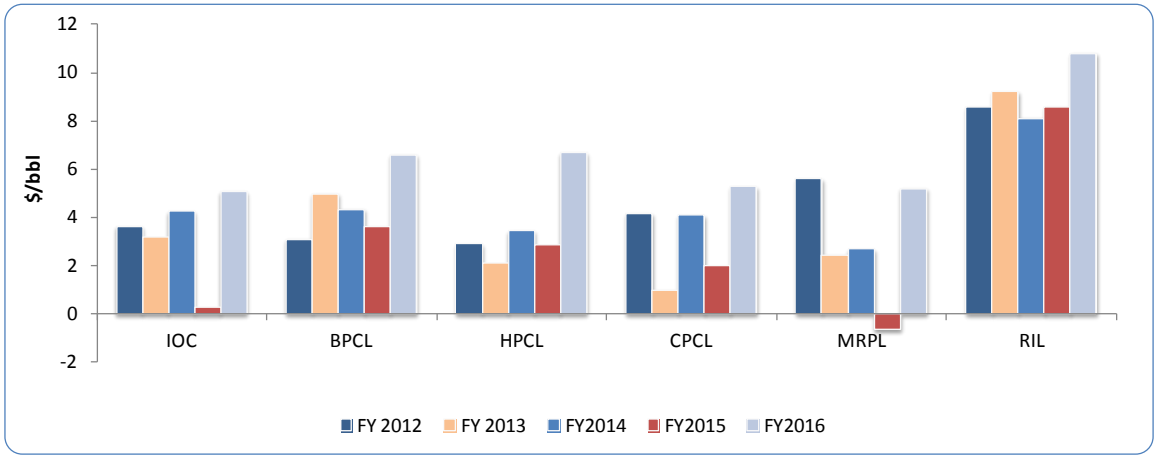
Company	Inventory Loss during FY2015		GRMs during FY2015	Net Profit/(Loss) during FY2015	Networth as on March 31, 2015
	Rs billion	US$/bbl	US$/bbl	Rs billion	Rs billion
IOC	156.0	6.46	0.27	49.1	688.3
BPCL^	16.6	2.3	2.08	48.1	225.5
HPCL	NA		2.84	15.0	140.4
MRPL	27.5	4.08	-0.64	-28.8	41.9
CPCL	NA		1.97	-0.4	16.6
RIL	NA		8.6	235.7	2184.8
Essar Oil#	NA		8.37	15.3	39.1

Source: ICRA research; ^9M FY2015 for BPCL, # EOL reports 'current price GRMs' which are not comparable to the GRMs reported by other leading refineries due to differences in computation

Low prices of crude oil and petroleum products led to higher demand of liquid fuels resulting in high crack spreads and international GRMs in FY2016: The lower prices of crude oil and petroleum products led to the increase in global demand of petroleum products and liquid fuels replaced part of consumption of other competing fuels like LNG. The improved demand, along with limited supply addition, led to improved supply demand balance for global refining industry, which got reflected in higher crack spreads for almost entire product slate of the refineries. The high demand growth of polymers/petrochemicals at relatively lower prices led to an increase in demand of naphtha, which also boosted global GRMs.

GRMs of Indian refining companies got a boost due to widened global crack spreads for most products. Driven by healthy crack spreads in FY2016, most of the domestic refineries reported materially high GRMs in FY2016, the highest level in the last five years for most of the companies.

Chart 44: Trend in GRMs of major domestic refineries

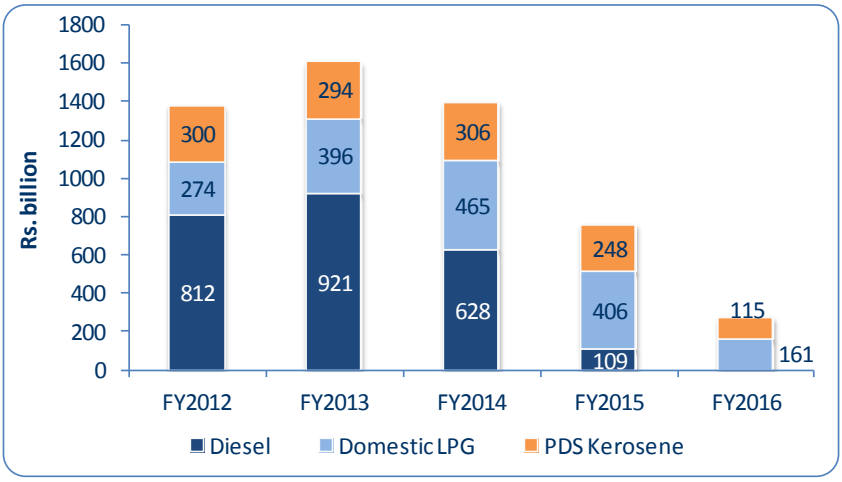


Source: Company data, ICRA research

GRMs expected to be healthy in the medium term; any recovery in crude oil prices to result in inventory gains: The medium term outlook for GRMs is healthy in line with healthy demand levels and expectation of demand growth exceeding supply addition globally. Low crude oil prices could continue to support the demand growth despite modest global economic prospects. In India, the demand growth would be healthy in line with improving economic activity. Overall, despite certain moderation from high levels reported in FY2016, the crack spreads of most of petroleum products are expected to be healthy leading to high GRMs in the near to medium term. Besides, any recovery in crude oil prices may also lead to inventory gains for the refiners.

Significant fall in crude oil prices during H2 FY2015 along with deregulation in diesel prices led to material fall in GURs in FY2015: The gross under-recoveries (GURs) of public sector oil marketing companies (OMCs) almost halved with 45% (YoY) decline to Rs. 763 billion in FY2015 from Rs. 1399 billion in FY2014 primarily driven by 83% fall in under-recoveries on diesel to Rs. 109 billion in FY2015 from Rs. 628 billion in FY2014 following diesel price deregulation in Oct-14. Besides, the significant fall in crude oil prices in H2 FY2015 led to 13% YoY decline in under-recoveries on domestic LPG to Rs. 406 billion in FY2015 from Rs. 465 billion in FY2014. The under-recoveries on PDS kerosene also decreased by 19% (YoY) to Rs. 248 billion in FY2015 from Rs. 306 billion in FY2014 line with fall in global crude oil and kerosene prices.

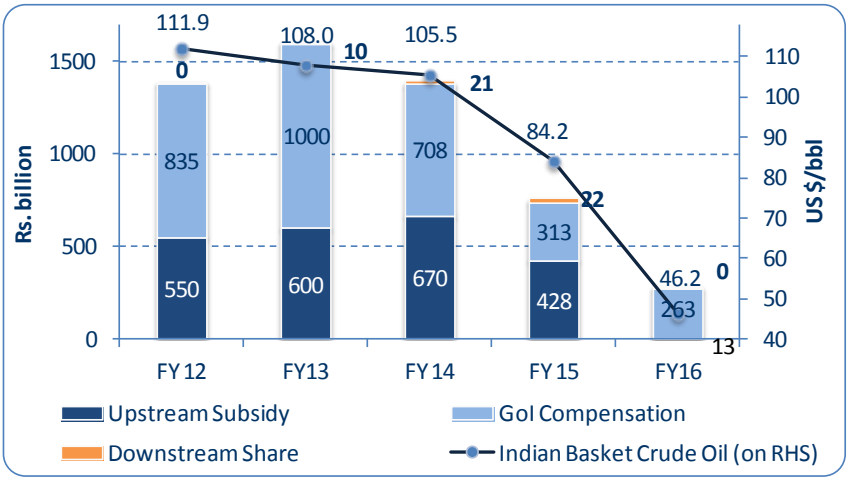
Chart 45: Product-wise Under-recoveries of OMCs



Source: PPAC and ICRA research

Complete benefit of low crude oil prices got reflected in 64% fall in GURs in FY2016: The GURs of OMCs declined by 64% (YoY) to ~Rs. 276 billion (including cash reimbursement under DBTL) in FY2016 from Rs. 763 billion in FY2015 in line with lower Indian Basket crude prices at US$46/bbl in FY2016 against US$84/bbl in FY2015. The impact of lower crude oil prices was moderated due to depreciation in INR/US$ to ~65.4 in FY2016 from ~61.1 in FY2015. The under-recoveries on LPG (domestic) decreased by 60% (YoY) to Rs. 161 billion in FY2016 from Rs. 406 billion in FY2015 due to low global prices as well as savings achieved through cancellation of fake connections and GoI's Give It Up campaign; while a part of the savings were offset by high LPG demand growth. The under-recoveries on PDS kerosene witnessed sharper decline of 54% (YoY) to Rs. 115 billion in FY2016 from Rs. 248 billion in FY2015 due to fall in consumption of kerosene by 3.7% (YoY) apart from lower prices. Following deregulation in Oct-2014, the diesel under-recoveries were nil in FY2016 against Rs. 109 billion in FY2015 and Rs. 628 billion in FY2014.

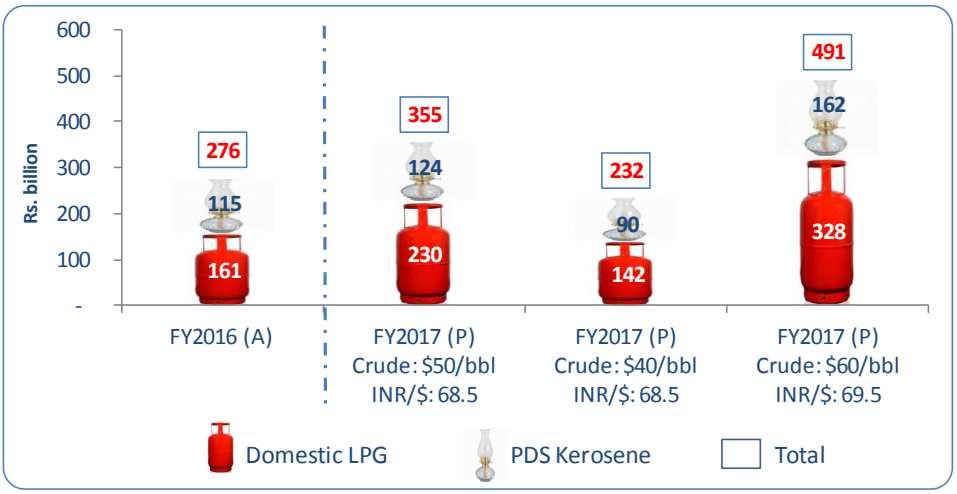
Chart 46: Movement of GURs with Crude Prices and Sharing Burden



Source: Company Disclosures, PPAC and ICRA research

GURs expected to moderately increase in FY2017 with recovery in crude oil prices: ICRA projects GURs of OMCs to increase to ~Rs. 355 billion for FY2017 (estimated at average Indian basket crude oil price of US$50/bbl and INR/US$ of 68.5 for FY2017). Indian Basket crude oil prices have largely remained around US$40-50/bbl over the last couple of months. Although soft level of crude oil prices and deregulated prices of auto-fuels would lead to materially lower under-recoveries on sensitive petroleum products (LPG and kerosene) in comparison to past high levels seen till FY2015; the same are expected to be higher in FY2017 as compared to FY2016. If average crude oil prices remain significantly lower, the under-recoveries may be flat (around Rs. 232-293 billion for Indian Basket crude oil price ranging from US$40-45/bbl. Further, there could be a downside to GURs if the GoI reduces the household income threshold for domestic LPG subsidy from the current level of Rs. 1 million per annum.

Chart 47: Projected Product-wise GURs at Various Crude Prices and Exchange Rate



Source: PPAC, ICRA research; Note: FY2016 figures are actuals, while FY2017 (P) denotes projected figures

Note: Figures reflect Indian Basket average crude oil price and INR/US$ for FY2017. ICRA Research has estimated GURs assuming no hike in retail prices of LPG (domestic) and SKO (PDS) and 9% (yoy) growth and 3% (yoy) decline in consumption volumes of LPG and SKO respectively. Further for our estimation of under-recoveries, we have factored in long-term average crack spreads of sensitive products over crude oil and if actual crack spreads are lower/higher, the GURs could be lower or higher than the projected levels.

LPG demand and level of crude oil prices would be key drivers of subsidies in the future: Along with global crude oil and LPG prices, LPG (domestic) demand growth has a significant impact on LPG subsidies. Despite cancellation of fake domestic connections and lower diversions, LPG (domestic) demand reported a healthy growth of 7.1% (YoY) in FY2016, although at much lower rate than 11.3% for FY2015. The LPG demand growth is driven by fresh connections (20.33 million fresh connections and 10.29 million DBCs in FY2016) and lower LPG prices, as compared to alternative fuels. Future growth of LPG (domestic) is expected to be robust with the efforts of the GoI to increase penetration of LPG (domestic) to replace other harmful cooking fuels like coal, wood etc. The same, however, may lead to an increase in LPG subsidy burden in the ensuing years.

Impact on Financial Performance of Refineries and Marketers

Operating profits improve with higher GRMs and marketing margins: In line with high GRMs, the operating performance of domestic refiners improved materially in FY2016 after a significant hit on operating profit (EBITDA) in FY2015 due to inventory loss. Further, the marketers have been able to improve the marketing margins on most of petroleum products due to lower crude oil prices and robust domestic demand growth. The consolidated operating profit of standalone refineries increased by 41.8% (YoY) in FY2016, while the net profit increased by 37.8% (YoY) in FY2016, primarily due to improved operating profits and fall in interest cost.

Table 21: Consolidated Financial Performance of Standalone Refineries

Parameter	FY2012	FY2013	FY2014	FY2015	FY2016	YoY for FY2015	YoY for FY2016
Operating Income (OI)	4379.1	4770.6	5205.3	4382.7	2988.0	-15.8%	-31.8%
Raw Material Expenses	3796.1	4211.9	4559.0	3663.3	2101.3	-19.6%	-42.6%
Operating Profit	361.0	305.7	330.9	306.3	434.2	-7.4%	41.8%
Interest	31.6	39.0	41.4	32.2	33.4	-22.3%	3.9%
Net Profit	211.9	186.2	226.5	212.8	293.3	-6.0%	37.8%
Operating Profit/OI (%)	8.2%	6.4%	6.4%	7.0%	14.5%		
Net Profit/OI (%)	4.8%	3.9%	4.4%	4.9%	9.8%		
Interest Coverage	11.42	7.83	8.00	9.53	12.99		
Short-term Debt	152.6	176.3	264.8	164.9	265.2	-37.7%	60.8%
Total Debt*	680.9	676.1	1005.6	1020.9	1027.5	1.5%	0.6%
Tangible Net Worth	1805.9	1920.5	2096.5	2268.6	2502.6	8.2%	10.3%

Source: Ace Equity, ICRA research; Consolidated financials of 5 domestic refineries (RIL, CPCL, MRPL, NRL and NORL – figures for NRL for FY2016 not yet available); Figures in Rs. Billion
**TD for FY2016-end does not include current portion of long-term debt*

Apart from improving margins on industrial products, the OMCs have also benefited from deregulation in prices of auto-fuels as the marketing margins on these products reported to have increased to Rs. 1-1.5 /litre from 65-70 paise per litre before deregulation. After inventory loss driven fall of 9.1% (YoY) in FY2015, the operating profit of OMCs improved by 40.5% (YoY) in FY2016 due to improved GRMs and marketing margins. Further, the net profit of OMCs increased by 65.7% (YoY) in FY2016, due to material fall in interest costs (as detailed in next paragraph).

Table 22: Consolidated Financial Performance of OMCs

Parameter	FY2012	FY2013	FY2014	FY2015	FY2016	YoY for FY2015	YoY for FY2016
Operating Income (OI)	7887.9	8939.3	9566.4	8822.4	7194.8	-7.8%	-18.4%
Raw Material Expenses	3447.9	3804.2	3984.5	3559.0	2438.2	-10.7%	-31.5%
Operating Profit	326.5	303.8	348.0	316.4	444.4	-9.1%	40.5%
Interest	96.2	101.6	78.6	47.2	42.0	-39.9%	-11.0%
Net Profit	61.8	85.5	128.1	130.9	216.9	2.2%	65.7%
Operating Profit/OI (%)	4.1%	3.4%	3.6%	3.6%	6.2%		
Net Profit/OI (%)	0.8%	1.0%	1.3%	1.5%	3.0%		
Interest Coverage	3.39	2.99	4.43	6.70	10.57		
Operating Net Working Capital^	596.8	636.4	645.3	365.7	416.4	-43.3%	13.9%
Short-term Debt	937.7	984.8	734.8	192.2	214.6	-73.8%	11.6%
Total Debt*	1190.5	1343.5	1325.2	785.4	707.2	-40.7%	-10.0%
Tangible Net Worth	859.1	914.8	1004.6	1064.6	1194.6	6.0%	12.2%

Source: Ace Equity, ICRA research; OMCs include IOCL, BPCL and HPCL; Figures in Rs. Billion
^ Operating Net Working Capital has been estimated as Debtor + Inventory - Creditors
**TD for FY2016-end does not include current portion of long-term debt*

Lower working capital requirements leading to fall in interest costs: The Total Debt level of OMCs as well as refining companies materially decreased over last 1.5 years owing to lower prices of crude oil and petroleum products. The YoY material fall in under-recoveries also led to a decrease in borrowing levels and interest burden, thereby resulting in an improvement in profitability and liquidity position of the OMCs. Overall, despite depreciation in INR/US$, debt levels of OMCs decreased by 40.7% over FY2014-end to FY2015-end due to a 73.8% fall during the period in line with material fall in crude oil prices during H2 FY2015. The short-term debt levels of OMCs have, however, increased by 11.6% during FY2016 due to an increase in short-term borrowings to fund rise in working capital requirements resulting from volume growth as well as depreciation in INR/US$. The fall in interest cost of OMCs has been significant at 39.9% (yoy) and 11.0% (YoY) for FY2015 and FY2016 respectively primarily due to lower borrowings and fall in interest rates in India.

The standalone refineries also benefited from the fall in working capital requirements due to lower crude oil prices as reflected by fall in consolidated short-term debt levels by 37.7% over FY2015 resulting in a decrease in total interest cost by 22.3% during FY2015. However, the short-term debt levels have increased in FY2016 leading to moderate increase in interest cost during the year.

7.3 Lubricant and ATF Players

Operating profits improve with lower raw material expenses for lubricants: In line with a material fall in prices of base oil (key raw material for lubricants) driven by low crude oil prices, lubricant players have reported a material improvement in operating margins as compared to their past long-term average levels. ICRA in its analysis has included only standalone lubricant players as lubricants revenues and profit for OMCs, which have ~50% market share in the segment, are not separately available. The consolidated operating margins increased by approximately 450 basis points (bp) during FY2016 as compared to FY2015 levels with different players reporting improvement of around 200-600 bp on the back of around 300-1000 bp reduction in raw material expenses/operating income. The improvement in operating margins was lower than raw material benefits as the companies had to spend more on marketing efforts in FY2016, which was a difficult year as reflected by country-wide de-growth in consumption of 2.7% (YoY) in the year. The de-growth in FY2016 after high levels of de-growth of 10.3% (yoy) in FY2015 and 9.5% (YoY) in FY2014 reflect the overall continued pressure on volumes in the industry due to various factors attributable to technological advancements in the automotive engines which led to (a) reduction in the frequency of oil change for engines and (b) lower quantities of oil consumption per engine at each fill.

Table 23: Consolidated Financial Performance of Lubricants

Parameter	FY2012	FY2013	FY2014	FY2015	FY2016
Operating Income (OI)	66.30	64.84	80.60	81.71	79.27
Operating Profit	9.57	8.83	10.66	10.96	14.27
Net Profit	6.86	6.72	8.08	8.22	9.50
Operating Profit/OI (%)	14.4%	13.6%	13.2%	13.4%	18.0%
Net Profit/OI (%)	10.3%	10.4%	10.0%	10.1%	12.0%

Source: ICRA research;
Consolidated financials included Castrol India, Valvoline Cummins, Tide Water Oil, Gufl Oil Lubricants India and Savita Oil; Castrol India CY2015 results considered part of FY2016 (and similarly in previous years);
FY2016 – estimated financials for Valvoline Cummins

Inventory loss in FY2015 for ATF players due to sharp fall in prices; margins improve in FY2016: OMCs are major ATF marketers in the country and their infrastructure and regulatory approvals have been primary barriers in the ATF marketing industry. Shell MRPL Aviation Fuels & Services Limited is one of the major private players present in the segment. Although the data for OMCs ATF marketing is not separately available, it is reported that ATF marketers suffered inventory loss in FY2015 due to sharp fall in its prices following material fall in crude oil prices during H2 FY2015. The fall in ATF prices has helped airlines players to improve their margins during FY2016, which along with robust increase in passenger traffic has led to healthy growth in demand of ATF by 8.7% (YoY) in FY2016 as compared to moderate growth of 1.3% (YoY) in FY2015 and 4.4% (YoY) in FY2014. The increase in demand growth has also helped ATF marketers to improve their margins in FY2016.

Overall Impact of Low Crude Oil Prices on Downstream Companies: ICRA has summarised the impact of sustained low crude oil prices (US$40-60/bbl) over the medium term on different segments in downstream sector in the following table:

Table 24: Impact of Low Crude Oil Prices on Downstream Companies – Summary

Sub-sector in Midstream	Impact of low crude oil prices
Refining	**Moderate Positive**: Soft crude oil prices to push demand which along with limited supply addition to keep GRMs at healthy levels in the medium term.
Marketing	**Positive:** Low crude oil prices to provide scope for higher margins on liquid fuels, even while keeping demand growth healthy.

Source: ICRA research

8 Impact on Industrial End Users and Retail Consumers

8.1 Industrial Users

Petrochemicals ***POSITIVE***

Petrochemicals are chemical products derived from hydrocarbons that are obtained from the processing of crude oil or natural gas. The two most common petrochemical classes are olefins - ethylene, propylene and aromatics, such as benzene, toluene and xylene. There are several companies that manufacture petrochemicals in India, however, most procure the feedstock or intermediates from other companies. Only large refining companies such RIL and IOCL are integrated across crude refining to petrochemicals and only RIL and GAIL manufacture petrochemicals from gas feedstock.

Petrochemical prices are driven primarily by the demand-supply balance in the international market; however, the price trends always have strong correlation with crude price trends. Following the decline in international crude prices, the prices of all crude derivatives fell, resulting in an improved cost structure for petrochemical players with liquid hydrocarbons as feedstock. Also, given the relatively stronger market position that petrochemical players command over their customers and the lower competitive pressures faced by them, the reduction in cost was passed on through price cuts with a lag. As crude prices stabilised at lower levels, the industry players retained a larger contribution margin, compared to earlier years. This is reflected by the lower RM/OI in FY 2015 and FY 2016 as compared to previous years and has ultimately resulted in an improvement in the EBITDA margins of companies in this sector. Also, lower polymer prices gave a fillip to demand with FY2015-16, witnessing one of the highest growth in the past decade for PE, PP and PVC. Going forward, petrochemical companies are expected to achieve healthy volume growth and maintain healthy EBITDA margins at soft crude prices ($40-60/barrel). At higher crude prices, volume growth could be impacted and as a result, margins could be impacted depending on the demand supply scenarios within the petrochemical segment.

For gas-based petrochemical players such as GAIL, their profitability got impacted severely due to fall in product prices not matched by gas prices. Recovery in global oil prices will be the key to the profit improvement of gas crackers.

Table 25: Aggregated Industry Financials for Listed Petrochemical Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		13	13	13	13	10
Net Sales	Rs Bn	28.9	29.7	26.7	26.2	20.1
Raw Material Consumed	Rs Bn	19.2	21.2	18.3	18.1	11.9
Power & Fuel Cost	Rs Bn	4.6	5.1	4.2	3.8	2.5
Operating Profit (Excl OI)	Rs Bn	1.9	0.9	0.3	0.2	0.9
RM / OI %		**66.4%**	**71.4%**	**68.7%**	**69.1%**	**59.5%**
P & F / OI %		**15.8%**	**17.1%**	**15.8%**	**14.4%**	**12.5%**
OPBDITA %		**6.7%**	**2.9%**	**1.1%**	**0.7%**	**4.4%**

Source: Company results and ICRA Analysis

Paints ***POSITIVE***

With a market size of ~ Rs. 406 billion, the Indian paint industry is the second largest market in the Asia Pacific region, which can be broadly classified into two segments – (a) decorative and (b) industrial segments. The decorative segment can be further classified as the following – exterior, interior, wood and enamel and ancillary. The industrial segment can also be sub-classified into – automotive, powder and protective. The decorative segment remains the mainstay contributing to ~71% of the total market in India and the balance ~29% is contributed by the industrial segment. The paint industry in India is characterised by high fragmentation, with the market polarised into the organized market contributing to ~65% of the market and the unorganised market contributing to the rest. Over the last ten years, the industry has grown at a CAGR of 19%, aided by growth in the housing sector, shortening of re-painting cycle, higher disposable income, increased urbanisation and industrialisation (industrial segment).

The paints sector is raw material intensive, with over 300 raw materials involved in the manufacturing process. Raw materials for paint companies include titanium dioxide, additives, pigments, resins and solvents. Apart from titanium dioxide, which forms about 30-40% of the raw material cost, all other raw materials are largely crude derivatives and have linkages to crude prices. While the trickle-down effect would not be equal for paint companies since they use derivatives, a sharp fall in crude prices has improved their gross margins. Margins have also been aided by the prevailing low prices of titanium dioxide. Large and established players like Asian Paints, Berger Paints, Kansai Nerolac and Akzo Nobel have largely retained the gains from lower raw material prices. The organised market has been able to do so without losing volumes, largely supported by the increase in disposable incomes, which have led to higher demand for all consumer industries which utilise paints like housing, commercial buildings, automobiles etc. The increase in urbanisation, leading to a shift in buying preferences towards branded products is also a factor. Given the strong position of organised players in this industry, at soft crude prices, EBITDA margins are expected to remain high as in the case of FY 2015-16. As crude prices rise, margins could reduce from current levels as players absorb the cost increase to some extent in order to maintain volumes. In case crude prices were to rise significantly, the industry also has the ability to pass on price increases to consumers to maintain its margins.

Table 26: Aggregated Industry Financials for Listed Paint Manufacturing Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		12	11	11	9	9
Net Sales	Rs Bn	159.2	178.6	201.9	221.7	236.2
Raw Material Consumed	Rs Bn	90.1	98.8	109.0	114.0	114.3
Power & Fuel Cost	Rs Bn	1.6	2.0	2.5	2.5	-
Operating Profit (Excl OI)	Rs Bn	21.6	24.5	27.5	32.0	43.2
RM / OI %		**56.6%**	**55.3%**	**54.0%**	**51.4%**	**48.4%**
P & F / OI %		**1.0%**	**1.1%**	**1.2%**	**1.1%**	**-**
OPBDITA %		**13.5%**	**13.7%**	**13.6%**	**14.5%**	**18.3%**

Source: Company results and ICRA research

Tyres ***MODERATE POSITIVE***

The domestic tyre industry is broadly spread across the replacement segment (~60% of demand, in tonnage terms), OEM segment (~30%) and exports (~10%). Of this, a bulk of the volume demand comes from the motorcycle segment and the passenger vehicle (PV) segment, while the tonnage (and also value) is heavily skewed towards the much heavier truck and bus (T&B) and the tractor tyre segments. In the M&HCV segment, a pull from the replacement segment is high at ~69%, as compared to only 18% from the OEM segment; the rest represents exports. On the other hand, in the PV segment, demand is more evenly distributed between the replacement (50%) and the OEM segment (46%). Currently in India over 98% of the PV demand (both OEM and replacement) is for radial tyres (which are technically superior than cross ply tyres), while radial penetration in the T&B segment is low at ~34%, and is largely derived from the OEM segment.

The margins of the tyre manufacturers take significant cue from the movement in rubber prices. Rubber, along with a few petroleum derivatives, forms the major raw materials (RM) for manufacture of tyres. Of this, natural rubber (NR) and synthetic rubber (SR) adds to a sizeable portion of total RM costs (~43% and 15% respectively). The prices of raw materials have witnessed a steady decline in the last three years. Especially the NR prices, which have been declining in the last three years, are backed by surplus production. India is the world's fourth largest NR producer, but is a net importer as it stands second in rubber consumption. Apart from NR, the margins of tyre manufacturers are dependent on the price movement of other raw materials, namely carbon black, rubber chemicals and SR. These products are largely derivatives of crude and hence have a strong correlation to the crude price movements apart from the currency rates and their own supply-demand dynamics. Thus, the gross margins and the EBITDA margins have witnessed improvements in FY 2015 and FY 2016, as reflected by the significant drop in RM/OI% to 62.2% to 52.4% respectively on account of 1) Lower prices of NR; 2) Further, supported by lower prices of crude derivatives like carbon black, rubber chemicals and SR. Going forward, while the crude price increase could impact the EBITDA margins to some extent, an increase in NR prices would be more adverse to the cost structure of tyre companies.

Table 27: Aggregated Industry Financials for Listed Tyre Manufacturing Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		13	13	14	12	13
Net Sales	Rs Bn	348.8	382.0	406.1	414.9	404.5
Raw Material Consumed	Rs Bn	259.2	266.7	265.4	257.9	211.9
Power & Fuel Cost	Rs Bn	12.8	15.3	15.8	16.5	0.6
Operating Profit (Excl OI)	Rs Bn	28.1	39.8	53.8	57.3	83.4
RM / OI %		**74.3%**	**69.8%**	**65.3%**	**62.2%**	**52.4%**
P & F / OI %		**3.7%**	**4.0%**	**3.9%**	**4.0%**	**0.2%**
OPBDITA %		**8.0%**	**10.4%**	**13.3%**	**13.8%**	**20.6%**

Source: Company results and ICRA research

Aviation ***POSITIVE***

With annual passenger traffic of ~105 million, the Indian aviation industry is ranked the 6th largest globally and is highly competitive as is the case, globally. Currently, there are eight domestic air carriers with top four players accounting for over 90% of the market. Over the past few years, the market share stack has somewhat changed with Kingfisher Airlines phasing out operations and Indigo Airlines emerging as the leading player with a market share of 37% in FY2016 (and 30% in FY2014). Broadly, the market share of airlines has followed the trend in seat capacities. With new carriers launching operations, the competitive intensity is only expected to increase. Apart from Air Asia India and Vistara, three start-ups (i.e. Air Pegasus, True Jet and Air Costa) have also commenced operations recently.

Profitability of domestic airlines largely depends on jet fuel prices – the key cost element in the cost structure. Further, as the fuel prices and other expenses like financial/ operating lease payments and a significant portion of aircraft and engine maintenance expenses are denominated in US dollar, the sector's profitability is also exposed to foreign exchange risk. Accordingly, the profitability of the domestic airlines is highly susceptible to crude price movements and US$-INR exchange rate movement, as any increase in passenger ticket prices without adversely impacting passenger load factor. Jet fuel expenses represent the single largest cost element for airlines, accounting for ~40-50% of airline expenses. As such, the industry profitability is significantly impacted by changes in the cost of jet fuel, the prices of which have been subject to high volatility, fluctuating substantially over the past several years. Further, in India, the prices of jet fuel are ~45-50% higher than international benchmarks due to the high level of taxation. A sharp reduction in global crude prices, starting H2FY2015, has been a respite for domestic airlines. Overall, from an average of Rs. 75,749/ KL for FY 14, jet fuel prices reduced by 10.4% to an average ~Rs. 67,868/ KL for FY2015 and further by 29.5% to ~Rs. 47,857/ KL for FY2016. With fuel cost accounting for up to 50% of the operating cost for Indian airlines, this represents a ~17-18% reduction in total cost over the last two years. This is evident from the significant reduction in P&F/OI for from 44.9% in FY 2014 to 26.7% in FY 2016, which has resulted in higher EBITDA margins for the sector. An increase in crude prices beyond a certain level is likely to adversely impact the EBITDA margins as the same may not be recoverable from sold inventory or through fare hikes, given the high competition.

Table 28: Aggregated Industry Financials for Listed Aviation Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		7	7	6	5	5
Net Sales	Rs Bn	306.0	329.7	356.1	257.1	368.3
Raw Material Consumed	Rs Bn	0.4	0.6	0.7	0.1	0.2
Power & Fuel Cost	Rs Bn	147.0	145.6	159.9	91.3	98.4
Operating Profit (Excl OI)	Rs Bn	-25.6	-11.6	-20.3	-7.1	60.1
RM / OI %		**0.1%**	**0.2%**	**0.2%**	**0.0%**	**0.1%**
P & F / OI %		**48.0%**	**44.1%**	**44.9%**	**35.5%**	**26.7%**
OPBDITA %		**-8.4%**	**-3.5%**	**-5.7%**	**-2.8%**	**16.3%**

Source: Company results and ICRA research

Shipping ***MODERATE POSITIVE***

Domestically, the Indian shipping industry is highly fragmented with more than three hundred players operating a fleet of over 1200 shipping vessels with registered tonnage (GRT) of over 10.3 million as on December 2015. In terms of tonnage, oil tankers comprise nearly 63% of the total tonnage followed by 27% by dry bulk carriers and remaining 10% are other categories of vessels.

The operating cost of a vessel can be largely bifurcated into two components namely vessel related expenses and voyage-related expenses. Vessel-related expenses (crewing, maintenance costs, dry-docking, insurance, etc.) are largely affected by the age of the fleet, by regulations (for eg. nationality of crew, minimum security standards etc.) and by the preventive / scheduled maintenance of the vessel. These costs are typically borne by the shipping company. The other major component of expenses i.e. voyage-related costs (bunker fuel expenses, port and canal fees, brokerage commissions) are typically borne by the charterer. Bunker fuel prices have high correlation with crude prices. During 2009-2013, bunker prices had been very volatile and have contributed to the increase in operational cost for shipping companies. However, during the last 15-18 months, the bunker prices have reduced sharply by 50-60% which has reduced the operational costs for the shipping companies and enabled them to improve their profitability. Nevertheless, the improvement in margins is modest as freight rates remain subdued, especially in the dry bulk segment and are expected to exhibit limited recovery due to continued fleet capacity growth during the next 1-2 years and decline in demand for key commodities such as Coal and Iron Ore from China. On the other hand, the freight rates for the tanker segment remain somewhat buoyant at present following weak crude oil prices over the past few quarters, resulting in higher use of tankers as storage facility by oil producers and traders who expect to benefit from rebound in oil prices. With improved utilisation levels of tankers, loss levels have reduced for the companies which have a right mix of tanker and bulk fleet. Recovery in crude oil prices would lead to an increase in the operational cost for shipping companies, however, players operating their fleet on voyage charter or on spot market would be more impacted due to the rise in fuel costs. The tanker segment, would be further impacted as the incremental demand for being used as floating storage may diminish. Thus, overall, margins would be dependent on the mix of fleet and the mix of chartering strategy.

Table 29: Aggregated Industry Financials for Listed Shipping Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		18	17	18	16	16
Net Sales	Rs Bn	117.9	144.2	127.1	111.0	102.6
Raw Material Consumed	Rs Bn	16.9	24.6	13.2	5.5	1.8
Power & Fuel Cost	Rs Bn	24.7	27.6	26.1	22.8	12.5
Operating Profit (Excl OI)	Rs Bn	19.9	22.6	23.3	24.8	33.1
RM / OI %		**14.3%**	**17.1%**	**10.4%**	**5.0%**	**1.7%**
P & F / OI %		**20.9%**	**19.2%**	**20.6%**	**20.5%**	**12.2%**
OPBDITA %		**16.9%**	**15.7%**	**18.3%**	**22.3%**	**32.2%**

Source: Company results and ICRA research

Adhesives and Sealants ***POSITIVE***

Adhesives are derived from either natural or synthetic sources and are compounds used for bonding materials. Sealants are materials used to prevent some form of fluid from escaping its container or providing a leak proof barrier. Seven major end uses define the adhesives sealants industry: construction, packaging, transportation, rigid and non-rigid bonding, consumer products and tapes. The top three sectors represented by construction, packaging and transportation are the major market drivers. Pidilite Industries Ltd has been enjoying a leadership positioning with over 60% market share in the Indian adhesives market and faces very little competition. Apart from PIL, other noticeable players in the industry are 3M India, Huntsman, National Starch, Bostik Findley, etc. Woodwork and the furniture sector have been the major growth drivers for adhesives.

A significant portion of raw material (Vinyl Acetate Monomer, Solvents, Coatings, etc) and packaging cost (PP, HDPE, PET) in the adhesives and sealants industry are crude derivatives and their prices are a function of crude prices. Furthermore, the industry is dominated by one large player (Pidilite Industries Ltd), which has a strong ability to control product prices. The organised proportion of the industry is increasing and the unorganised portion has not grown even during current low RM cycle. Since a significant proportion of the raw materials are imported/ sourced at import parity pricing, rupee depreciation has a bearing on the margins of the sector. However, overall, prices to consumers have remained firm despite the significant reduction in cost structure on account of lower raw material/packaging costs following the fall in crude prices over the last two years. This is reflected in the improvement in the operating margins from 11% in FY 2014 to 14% in FY 2016. During this time, RM/OI has reduced from 51% to 43%. Retention of gains may affect volume growth prospects to some extent, however, the industry growth continues to be strong at about 10-11%; so loss of some volume growth is not a major concern. Also, adhesive and sealants industry growth is aided by new product introduction, premiumisation and focus on brand investments. Further, the industry has been witnessing higher growth from the rural segment as compared to the relatively matured urban market. There are also prospects of higher volume growth on account of the higher disposable income in the hands of consumers – which can create higher demand for construction, furniture, other applications of adhesives. Going forward, EBITDA margins could correct to some extent when crude prices recover, however, healthy margins would continue to be retained by the established players.

Table 30: Aggregated Industry Financials for Listed Adhesive & Sealant Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		1	1	1	1	1
Net Sales	Rs Bn	31.3	36.8	42.8	48.4	53.7
Raw Material Consumed	Rs Bn	16.0	18.4	21.8	24.7	23.0
Power & Fuel Cost	Rs Bn	-	-	-	-	-
Operating Profit (Excl OI)	Rs Bn	3.2	4.2	4.5	5.1	7.6
RM / OI %		**51.2%**	**50.1%**	**50.9%**	**51.1%**	**42.8%**
P & F / OI %		**-**	**-**	**-**	**-**	**-**
OPBDITA %		**10.4%**	**11.5%**	**10.5%**	**10.6%**	**14.1%**

Source: Company results and ICRA research

Chemicals (Dyes & Pigments) ***POSITIVE***

There are two types of colorant chemicals – dyes and pigments. There are several types of dyes, however, in India disperse, reactive and direct dyes are most commonly used. Dyes can be broadly classified as organic and inorganic. However, within this broad classification, there are various segments within dyes based on the nature of the chemical constitution, application class, end-use. Pigments are also broadly classified as organic and inorganic. The main categories of pigments used in coatings are inorganic, organic, metallic, and pearlescent. The Indian dyestuffs industry has over 1000 small scale units and 50 large units manufacturing dyes, dyestuffs and pigments, with a total capacity of 240,000 ton. Of this, production capacity of pigments is estimated at 100, 000 ton per annum (tpa), half of which is in the small scale sector. Some major industries that use dyes are textiles, leather, paper, printing inks and food processing. In fact, the textiles and leather processing industries consume over 85% of total dyes manufactured. Pigments find applications in coatings (includes paints), plastics, inks, textiles, etc. Coatings, inks and plastics constitute nearly 80% of the total requirements of pigments.

As dyes and pigments are prepared from various chemicals which are mostly derived from basic petrochemicals and the prices of the feedstock are dependent on the demand-supply and rise in prices of crude oil. The raw material cost, accounts for about 55-60% of the net sales. The players' contribution levels had been under pressure during FY2012-2014, on account of increased cost of imports and inability to pass on the price rises due to a surplus demand-supply position. The slowdown in demand continued for large part of FY2013, however, despite the decline in volumes overall, the industry registered an improvement in EBITDA margins as the players were able to pass on the higher prices. Demand started to recover in FY2014 and raw material prices have also witnessed moderation since H2FY2015 as naphtha prices corrected following a decline in crude prices. Lower raw material costs have resulted in higher profitability since product prices have remained relatively firm in the initial months post the sharp fall in crude prices. While product prices have corrected since, to factor in the lower feedstock prices, higher contribution margins have been retained by players. Going forward, with positive outlook on textile industry, Indian D&P companies are expected to achieve healthy volume growth and continue to maintain healthy EBITDA margins at soft crude prices ($40-60/barrel).

Table 31: Aggregated Industry Financials for Listed Dyes & Pigments Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		31	33	32	32	30
Net Sales	Rs Bn	46.7	49.0	62.2	66.3	61.7
Raw Material Consumed	Rs Bn	31.5	33.7	40.1	43.1	36.3
Power & Fuel Cost	Rs Bn	2.8	2.9	3.3	3.5	0.9
Operating Profit (Excl OI)	Rs Bn	4.7	3.9	7.3	7.0	11.2
RM / OI %		**67.5%**	**68.7%**	**64.5%**	**65.0%**	**58.9%**
P & F / OI %		**6.0%**	**5.9%**	**5.2%**	**5.3%**	**1.4%**
OPBDITA %		**10.1%**	**8.0%**	**11.7%**	**10.6%**	**18.1%**

Source: Company results and ICRA research

Chemicals (Others) ***POSITIVE***

The chemical industry is the mainstay of industrial and agricultural development of the country and provides building blocks for several downstream industries, such as textiles, papers, paints, soaps, detergents, pharmaceuticals, varnish etc. Chemicals can be broadly divided into the following sub-groups: 1) Basic Chemicals - Chemicals such as organic and inorganic chemicals, bulk petrochemicals, other chemical intermediates, plastic resins, synthetic rubber, man-made fibers, dyes and pigments, printing inks are basic chemicals. These are also known as commodity chemicals. 2) Specialty Chemicals - Specialty Chemicals, also known as performance chemicals, are low-volume but high-value compounds. These chemicals are derived from basic chemicals and are sold on the basis of their function. For example, paint, adhesives, electronic chemicals, water management chemicals, oilfield chemicals, flavours and fragrances, rubber processing additives, paper additives, industrial cleaners and fine chemical. Sealants, coatings, catalysts also come under this category. And 3) Agro - Chemicals - Chemicals which essentially are meant for protecting agriculture crops against insects and pests are covered under this sub-group.

As many chemicals are derived from basic petrochemicals or are substitutes of petrochemical-based products, the product prices have strong linkages to the movement in prices of crude oil. Typically, in any chemical synthesis industry, the raw material cost, accounts for 50-80% of the net sales, depending on the complexity and the energy intensive nature of the process. Raw material prices have witnessed a moderation since H2FY2015 as crude prices witnessed a correction and accordingly, naphtha prices also moderated. Due to the sharp decline of over 50% in crude prices since Q3FY2015, companies with large inventory levels were exposed to price risks for this period on inventory held, however, lower raw material costs resulted in higher profitability since product prices corrected to a relatively lower extent in the initial months post the sharp fall to ~$40/barrel levels. Product prices have corrected as crude prices continued to remain at low levels; however, the retained contribution margins on an industry level improved significantly over FY2015-2016. Going forward, chemical companies are expected to achieve healthy volume growth and maintain healthy EBITDA margins at soft crude prices ($40-60/barrel). However, when crude prices recover, EBITDA margins could gradually recede to relatively lower levels as compared to the high levels witnessed in FY 2016.

Table 32: Aggregated Industry Financials for Listed Chemicals Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		155	149	146	133	129
Net Sales	Rs Bn	423.6	477.5	493.9	500.5	476.3
Raw Material Consumed	Rs Bn	252.9	291.7	304.2	301.1	259.9
Power & Fuel Cost	Rs Bn	34.1	38.6	43.0	43.9	32.8
Operating Profit (Excl OI)	Rs Bn	56.0	63.5	52.3	51.4	73.5
RM / OI %		**59.7%**	**61.1%**	**61.6%**	**60.2%**	**54.6%**
P & F / OI %		**8.0%**	**8.1%**	**8.7%**	**8.8%**	**6.9%**
OPBDITA %		**13.2%**	**13.3%**	**10.6%**	**10.3%**	**15.4%**

Source: Company results and ICRA research

Consumer Durables ***MODERATELY POSITIVE***

The Indian consumer durables market is divided in to two segments: 1) Consumer Electronics (Brown goods) which consists of TVs, mobile phones, laptops, digital cameras, audio systems, camcorders and accessories and 2) Consumer Appliances (white goods), which consists of air-conditioners, refrigerators, washing machines, sewing machines, electric fans, microwave ovens and other domestic appliances. Urban markets accounted for the major share (67%) of total revenues of the sector in FY2015. Demand in urban markets has been increasing for non-essential products such as LED TVs, laptops, split ACs and, beauty and wellness products. India stands at the 4th position in the top ten global smart phones market. In rural markets, durables like refrigerators as well as consumer electronic goods have witnessed a growing demand with the GoI investing in rural electrification. Rural and semi-urban markets are likely to contribute increasingly to consumer sales going forward. The rural consumer durables market is growing at the annual growth (CAGR) of 25%.

Lower crude prices in the last two years have resulted in lower prices of many necessity/semi-luxury items and allowed the consumers to utilise the higher disposable incomes to purchase capital consumer goods. Demand for consumer durables in India has been growing on the back of rising incomes; and this trend is set to continue even as other factors like rising rural incomes, increasing urbanisation, a growing middle class, and changing lifestyles aid demand growth in the sector. Significant increase in discretionary income and easy financing schemes have led to shortened product replacement cycles and evolving lifestyles where consumer durables, such as ACs and LCD TVs, are perceived as utility items rather than luxury possessions. In addition, during the last four to five years, growth in online retailing has been a key factor to penetrate the market further and reach out as a newer channel for buyers. The RM/OI for the industry has reduced significantly in FY2015 to 35% as compared to 35% in FY 2016. Some part of this reduction is on account of the reduction in the cost of plastic moulded components in consumer durables which have been increasingly replacing the metal composition of the items. Further, the reduction would also take into account the reduction in metal prices in this period, which has helped to further improve the cost structure. Going forward, margins would be dependent on the movement in metal and crude commodity prices. However, when commodity prices recover, given the price sensitive nature of the products, initially, companies are likely to absorb the recovery in raw material prices, at the cost of fall in the EBITDA margins.

Table 33: Aggregated Industry Financials for Listed Consumer Durables Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		14	13	15	14	13
Net Sales	Rs Bn	318.0	199.3	393.1	414.4	345.9
Raw Material Consumed	Rs Bn	215.9	142.4	263.2	272.1	205.7
Power & Fuel Cost	Rs Bn	2.2	1.5	3.1	3.1	-
Operating Profit (Excl OI)	Rs Bn	39.2	15.0	45.1	51.7	50.9
RM / OI %		**67.9%**	**71.4%**	**66.9%**	**65.6%**	**59.5%**
P & F / OI %		**0.7%**	**0.8%**	**0.8%**	**0.7%**	**-**
OPBDITA %		**12.3%**	**7.5%**	**11.5%**	**12.5%**	**14.7%**

Source: Company results and ICRA research

Automobiles: ***MODERATE POSITIVE***

The Indian automobile industry can largely be divided into two categories – 1) Passenger Vehicles (two and four-wheelers): With sales volumes of 2.8 million units in FY2016, the Indian Passenger Vehicle (PV) industry ranks amongst the top-six markets for PVs globally. In value terms, the Indian PV industry size at Rs. 1750 billion is the largest contributor to India's Rs. 3500 billion automobile industry, which in turn contributes roughly 5% to India's GDP. The Indian two-wheeler (2W) industry, with a sales volumes of 16.5 million units in FY2016 (16.0 million units in FY2015), is the largest two-wheeler industry in the world and is trailed by China (~9.8 million units in CY2015) and Indonesia (~6.6 million units in CY2015). In value terms, the industry size in India is estimated at ~Rs. 700 billion, being the third largest segment within the automobile industry behind Passenger Vehicles (PVs) and Commercial Vehicles (CVs). 2) Commercial Vehicles (3+ wheelers): With sales volumes of ~0.8 million units in FY2016, India is ranked among the top-sven markets for commercial vehicles, globally. It is also positioned among the top four markets for heavy duty trucks, by volumes. In value terms (Rs. 750 billion), the Indian CV industry is the second-largest contributor to India's Rs. 3,500 billion automobile industry, following passenger vehicles, which contribute nearly 50% to industry size.

The crude price fall, which has been passed on to the consumers by way of lower MS/HSD has reduced the overall cost of ownership of vehicles and thus helped in boosting demand for automobiles, especially in the PV segment. PV makers have benefitted from the reduction in polymer prices, given that polymers have replaced metal parts to a large extent in the design of automobiles nowadays. In addition to the above, the two-wheeler segment, which is the most sensitive market in terms of cost of ownership, directly benefits from higher disposable income. The CV owners also benefited as they held transportation rates firm and passed-on a lower benefit from lower prices to their customers. This in turn has supported the demand growth for commercial vehicles. In addition to the support for volume growth, CV-makers have benefited from the lower input costs on account of the low commodity prices which form a significant proportion of their total manufacturing costs. Thus, overall, the automobile manufacturing industry has seen a significant jump in operating margins in FY2016 to 17.1% as compared to 11.4% and this is largely driven by higher volumes and reduction in raw material prices from 69.2% in FY2015 to 57.6% in FY2016.

Table 34: Aggregated Industry Financials for Listed Automobile Manufacturing Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		14	14	14	14	14
Net Sales	Rs Bn	2182.3	2301.4	2206.0	2433.7	2642.7
Raw Material Consumed	Rs Bn	1607.7	1656.0	1545.6	1685.1	1522.7
Power & Fuel Cost	Rs Bn	25.0	30.5	30.5	34.0	NA
Operating Profit (Excl OI)	Rs Bn	243.8	246.2	240.8	277.3	451.7
RM / OI %		**73.7%**	**72.0%**	**70.1%**	**69.2%**	**57.6%**
P & F / OI %		**1.1%**	**1.3%**	**1.4%**	**1.4%**	**NA**
OPBDITA %		**11.2%**	**10.7%**	**10.9%**	**11.4%**	**17.1%**

Source: Company results and ICRA research

Cement *MODERATE POSITIVE*

The Indian cement industry is the second largest in the world, with a total installed capacity of around 400 million tonnes per annum (MTPA) as on March 31, 2016 and cement production of 283 million metric tonnes (MMT) in FY2016. The cement industry occupies an important place in the national economy because of its strong linkages to other sectors such as construction, transportation, power, and coal, besides the financial markets. The industry is also one of the major contributors to the exchequer by way of indirect taxes. Cement being a bulky low-value commodity is highly freight sensitive, and a bulk of the cement produced within a region is usually consumed within the region itself, with excess being transported to the adjacent regions. Thus, price trends and capacity utilisation levels are determined more by regional supply-demand dynamics than by the national supply-demand balance. Most of the cement produced is sold within a 500-kilometer radius. Hence the industry dynamics are highly localised.

While the elements in the cost structure for cement manufacturing do not have a direct linkage to crude prices, it indirectly results in savings for the sector since lower prices of crude also eventually result in lower prices of fuels like coal and petcoke. Cement manufacturing is an energy intensive process and requires coal/petcoke an energy source for generation of heat as well as power. Together, power and fuel constitute about 30-40% of the cost structure. Coal is used as a fuel for the heating of the kiln in the manufacturing process and also as a fuel for power generation in captive power plants. Decline in crude prices has also resulted in a decline in prices of coal/coke and this has indirectly helped cement companies as it has allowed them to reduce their energy cost significantly. A significant proportion of this benefit has been retained by the cement players, which resulted in an improvement in the contribution margins for the companies in FY2015 and FY2016. Further, higher disposable income, on account of the lower commodity prices, also supported new demand creation for cement volumes. Going forward, a recovery in crude prices could be followed by a recovery in coal prices as well, which would adversely impact the cost structure of cement companies. The ability of the players to maintain EBITDA margins would be dependent on their ability to pass on the prices by way of price hikes to the end consumers.

Table 35: Aggregated Industry Financials for Listed Cement Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		52	52	50	48	45
Net Sales	Rs Bn	849.4	1020.0	1003.8	1075.3	1067.3
Raw Material Consumed	Rs Bn	144.5	181.5	180.6	206.5	206.3
Power & Fuel Cost	Rs Bn	174.2	211.3	204.8	220.6	185.0
Operating Profit (Excl OI)	Rs Bn	168.5	203.9	158.1	167.3	174.8
RM / OI %		**17.0%**	**17.8%**	**18.0%**	**19.2%**	**19.3%**
P & F / OI %		**20.5%**	**20.7%**	**20.4%**	**20.5%**	**17.3%**
OPBDITA %		**19.8%**	**20.0%**	**15.7%**	**15.6%**	**16.4%**

Source: Company results and ICRA research

Road Construction and Infrastructure ***MODERATE POSITIVE***

The Indian road network is one of the largest in the world with over 4.7 million km comprising national highways (NH), expressways (E-way), state highways (SHs), major district roads (MDRs), other district roads and village roads. While the NH and E-way network is only about 79,116 km or 1.7% of the total length of roads in India, it carries over 40% of the total road traffic across the country. The secondary road transportation network, comprising SHs with about 0.15 million km and MDRs with about 0.3 million km, also carry about 40% of the total road traffic, however, intensity of traffic ranges from low to medium. Road infrastructure is of prime importance for the growth of the economy, since around 60% of freight and 85% of passenger traffic moves by road in India. The GoI has set a massive target for doubling investment in infrastructure from Rs. 20.5 trillion to Rs. 40.9 trillion during the Twelfth Plan period, i.e., 2012–2017. The Twelfth Plan proposes to increase the total investment in infrastructure, including roads, railways, ports, airports, electricity, telecommunications, oil gas pipelines and irrigation, was expected to increase from 8.3% of India's GDP in the last year of the Eleventh Plan to around 10.5% by the end of the Plan period. Planned investments in the road sector alone stand at 4.91 trillion for the period 2012-17.

Bitumen, wet mix macadam and aggregates are the major construction materials used in road construction. Of this, Bitumen is the costliest, accounting for more than 60% of material cost and the price is linked to crude oil. Projects for which bitumen layer is being laid in the current year will get benefited from the fall in crude prices as a result of savings on bituminous concrete costs. The average prices for bitumen (VG-30, ex-Mumbai) fell by 22% from Rs. 37,450/MT in FY2015 to Rs. 28,498/MT in FY2016. Given the long tenure of the construction (2-2.5 years), there is high risk of cost overrun. Further, a variety of equipment like excavators, tippers, dumpers, pavers, road rollers and graders are used and any resource idling at the site, owing to RoW-related issues, would further increase the cost. However, many of the projects enter into fixed-time fixed-price agreements with the EPC contractor, thereby mitigating the cost over-run risk arising out of the increase in material prices. Another major input is labour and shortage of labour had adversely affected the execution of some road projects in the past. Profitability of the industry has witnessed an improvement in FY2016, as reflected by the improvement in operating margins to 30.7%, compared to 24.6% in FY2015, The same is attributable to the lower raw material and energy costs incurred by the companies.

Table 36: Aggregated Industry Financials for Listed Road Construction and Infra Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		25	25	25	25	25
Net Sales	Rs Bn	3435.0	3613.7	3766.6	3863.8	3932.0
Raw Material Consumed	Rs Bn	621.9	592.7	532.1	527.7	369.9
Power & Fuel Cost	Rs Bn	757.9	814.2	905.5	975.1	696.5
Operating Profit (Excl OI)	Rs Bn	793.6	838.1	908.5	949.0	1207.9
RM / OI %		**18.1%**	**16.4%**	**14.1%**	**13.7%**	**9.4%**
P & F / OI %		**22.1%**	**22.5%**	**24.0%**	**25.2%**	**17.7%**
OPBDITA %		**23.1%**	**23.2%**	**24.1%**	**24.6%**	**30.7%**

Source: Company results and ICRA research

Power Generation *MODERATE POSITIVE*

The Indian Power Sector is classified into three separate functions namely – generation, transmission and distribution. While the transmission and distribution segments are primarily owned by the Central and the State sector, ownership share of the private sector in the generation segment has increased considerably in the last Plan period and is now significant. The overall installed power generation capacity in the country has increased from 132,239 MW as on March 31, 2007 to 271,722 MW as on March 31, 2015, and further to 298,060 MW as on March 31, 2016, aided by large investments during the 11th Plan period (2007-2012) and the ongoing 12th Plan period (2012-2017), especially from the private sector. The share of private power generating companies in the overall installed power generation capacity has increased from 13% as on March 31, 2007 to 40% as on March 31, 2016. In terms of fuel mix, the overall installed capacity constitutes 62.1% coal-based, 8.2% gas-based, 0.3% liquid-based, 1.9% nuclear-based, 14.4% hydro-based and 13.0% renewable energy-based capacity as on March 31, 2016.

The Indian power sector is largely dominated by fossil fuel energy sources – coal and gas. Together, they form over 70% of the total power generation of the country. The fall in domestic gas and spot LNG prices have also been beneficial for stranded power plants with implementation of the gas pooling mechanism. Further, while crude prices do have a strong correlation with gas prices, they also indirectly impact the trend in coal prices, being alternative sources of energy for several applications. With declining crude prices, international coal prices have also remained subdued. This has come as a relief to the players, largely dependent on imported coal and under pressure on account of the rising international prices of coal (up to 2014) in addition to the depreciation in the rupee/$ exchange rate. Also, the increasing production of petroleum products, given the increased supply of crude and the growing demand at the lower rates, has resulted in higher generation of petroleum coke, which has been available in abundant supply in the recent months. Given the relatively lower number of consumers that can consume pet-coke in large quantities, pet-coke prices have undergone a significant correction and this has indirectly reduced the demand for coal, driving coal prices further down. Thus, while entities that operate with linkage coal available from Coal India Limited have been less affected, given that they pay based on prices decided by Coal India Limited, players sourcing coal from the auction market/international coal have largely benefited by way of reduced cost of power generation.

Table 37: Aggregated Industry Financials for Listed Power Generation Companies

	Units	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No of Companies		41	44	44	39	37
Net Sales	Rs Bn	1454.0	1566.4	1698.5	1803.9	1845.3
Raw Material Consumed	Rs Bn	-	-	-	-	-
Power & Fuel Cost	Rs Bn	735.7	798.6	884.5	964.7	737.0
Operating Profit (Excl OI)	Rs Bn	429.9	477.0	544.8	571.6	730.5
RM / OI %		-	-	-	-	-
P & F / OI %		**50.6%**	**51.0%**	**52.1%**	**53.5%**	**39.9%**
OPBDITA %		**29.6%**	**30.5%**	**32.1%**	**31.7%**	**39.6%**

Source: Company results and ICRA research

Table 38: Impact of Lower Crude Oil Prices on Industries - Summary

Industry	Impact of low crude oil prices
Petrochemicals	**Positive:** Except the losses faced initially due to inventory related losses in a falling crude price scenario, lower prices of feedstock allowed companies to retain higher margins. Lower prices for consumers created additional demand for petrochemical products, driving up volumes. Resulted in improved margins
Paints	**Positive:** Low cost of key raw materials, which are crude derivatives, was retained due to the dominant market position of key paint players in Indian market and the relatively lower price sensitivity of paint sales. Further, prices of other key raw material – Titanium dioxide are also at low levels. Resulted in improved margins
Tyres	**Moderate Positive:** Tyre industry has also been supported by low Natural Rubber (NR) prices in the last two years, however, lower cost of crude-based raw materials like synthetic rubber and carbon black has further reduced manufacturing cost. Boost in automobile demand and higher disposable income are also a positive for new/replacement growth
Aviation	**Positive:** Aviation sector has benefited significantly from the reduction in fuel prices, which form a major proportion of the overall costs. A significant proportion of the gains have been retained by the airline operators, especially on account of the reducing number of strong operators in the sector
Shipping	**Moderate Positive:** Lower crude prices have allowed shipping players operating on voyage charters and contract of affreightment to improve margins. Further, it was a positive for oil-tanker operators as the higher supply of crude has resulted in significant increase in demand for tankers
Adhesives	**Positive:** Lower cost of raw materials and higher disposable income are significant positives for the adhesives and sealants industry, where there are a few dominant players controlling a significant market share
Chemicals (D&P)	**Positive:** Low cost of key raw materials, which are crude derivatives reduces the cost and allows the players to retain higher contribution margins
Chemicals (Others)	**Positive:** Low cost of key raw materials, which are crude derivatives reduces the cost and allows the players to retain higher contribution margins
Automobiles	**Positive:** Lower prices of MS/Diesel have resulted in reduced cost of ownership for the automobile buyers and supported demand growth for the industry
Consumer Durables	**Moderate Positive:** Lower cost of polymers resulted in lower costs and higher disposable income with consumers supported sales volumes
Cement	**Moderate Positive:** While cement does not have crude derivative inputs, it is an energy intensive business and has indirectly benefited from crude price fall since there has been an impact on prices of fuels like coal/pet coke
Road Construction	**Moderate Positive:** Bitumen, which is one of the key factors in the cost structure of road construction players has witnessed a decline in prices and has helped players operating on fixed cost contract basis. In case of variable price contract, a significant portion of the benefit has been passed on
Power	**Moderate Positive:** Resulting softening of coal prices have reduced the cost of generation of thermal power plants and eased the pressure faced by them in maintaining their margins while pricing power to their consumers

**Source: ICRA research*

8.2 Retail Consumers

Benefits passed to the retail consumers on account of auto fuels and impact on consumer spending:

The reduction in cost of crude resulted in the benefit being gradually passed on to retail consumers as OMCs reduced retail prices of petrol and diesel. However, the other costs like excise duty and VAT have been raised by Central and State Governments respectively. Besides, OMCs increased their marketing margins apart from the rise in dealer margins. These additional costs resulted in materially lower benefit that was passed on to the consumers. Depreciation of the Indian rupee against the US dollar has also impacted the overall benefit which could be passed on.

Table 39: Price build-up of MS between October 2014 and June 2016 at Delhi.

Sr No	Elements	Unit	Oct'14	Dec'14	Jul'15	Oct'15	Jun'16	% Variation between Oct'14 and Jun'16
1	C&F (Cost & Freight) Price of MS	$/bbl	108.8	87.2	82.0	63.52	58.5	-46%
2	Average Exchange rate	Rs/$	61.0	61.8	63.8	65.1	67.1	10%
3	**Refinery Transfer Price (RTP) on landed cost basis for MS (Price Paid by the OMCs to Refineries)**	**Rs/Ltr**	**42.5**	**34.6**	**33.6**	**26.7**	**25.3**	**-40%**
4	OMC Marketing Cost + Freight cost + OMC Marketing Margin	Rs/Ltr	2.6	2.9	2.4	2.6	2.6	-3%
5	**Price Charged to Dealers (excluding Excise Duty and VAT)**	**Rs/Ltr**	**45.1**	**37.4**	**36.0**	**29.2**	**27.9**	**-38%**
6	Add : Specific Excise Duty @ Rs/Ltr	Rs/Ltr	9.5	13.3	17.5	17.5	21.5	127%
7	Add : Dealer Commission	Rs/Ltr	2.0	2.0	2.1	2.3	2.3	**17%**
8	Add : VAT (including VAT on Dealer Commission) applicable for Delhi + Pollution Cess of Rs 0.25/Ltr	Rs/Ltr	11.3	10.6	11.1	12.2	14.0	23%
9	**Retail Selling Price at Delhi- (Rounded)**	**Rs/Ltr**	**67.9**	**63.4**	**66.6**	**61.2**	**65.6**	**-3%**

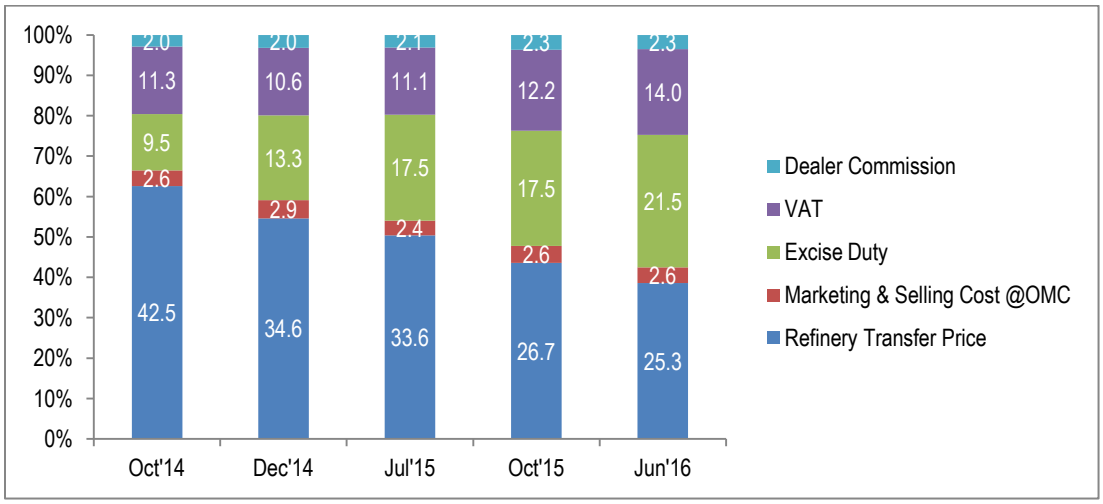
Source: PPAC and ICRA research

As can be seen from the table, for calculation of the retail price of MS,

1. The rupee has depreciated from Rs 61/$ to Rs 67/$, a depreciation of 10% which adds to the rupee cost payable by retail consumers
2. The GoI has increased the excise duty from Rs 9.5/Ltr to Rs 21.5/Ltr, between October 2014 and June 2016, a significant increase of 127%. Thus, the benefit of the lower Refinery Transfer Price has not been fully transferred to the retail consumers
3. State government of Delhi has increased the VAT from 20% to 27% on MS, which results in an absolute increase of 23% from Rs 11.3/Ltr to Rs 14/Ltr. Some other state governments have retained higher benefits by charging VAT as high as 31-32%
4. Marketing and selling cost along with margins charged by the OMCs went down in some periods, however, compared to Rs 2.6/Ltr October 2014, it remains the same in June 2016

5. Dealer commission has been revised upwards from Rs 2.0/Ltr to Rs 2.3/Ltr during this period, primarily to compensate for inflationary pressures on expenses of dealers

Chart 48: Increasing Proportion of Excise Duty and VAT on MS Price at Delhi



Source: PPAC and ICRA research

A similar change in the buildup of retail diesel prices can be observed in the table below.

Table 40: Price Build-up of Diesel Between October 2014 and June 2016 at Delhi

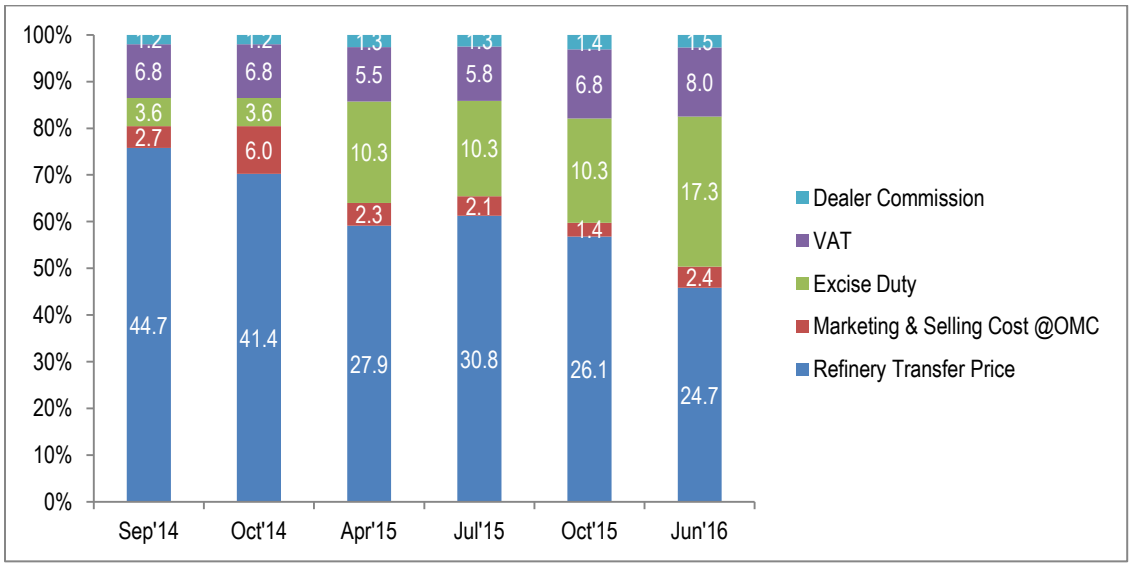
Sr. No.	Elements	Unit	Sep'14	Oct'14	Apr'15	Jul'15	Oct'15	Jun'16	% Variation between Oct'14 and Jun'16
1	C&F (Cost & Freight) Price of Diesel	$/bbl	115.9	105.9	69.8	75.0	61.9	57.1	-51%
2	Average Exchange rate	Rs/$	61.0	61.0	62.4	63.8	65.3	67.1	10%
3	**Refinery Transfer Price (RTP) on landed cost basis for BS IV Diesel (Price Paid by the OMCs to Refineries)**	**Rs/Ltr**	**44.7**	**41.4**	**27.9**	**30.8**	**26.1**	**24.7**	**-45%**
4	OMC Marketing Cost + Freight cost	Rs/Ltr	2.7	6.0	2.3	2.1	1.4	2.4	**-10%**
5	**Price Charged to Dealers (excluding Excise Duty and VAT)**	**Rs/Ltr**	**47.4**	**47.4**	**30.2**	**32.9**	**27.4**	**27.2**	**-43%**
6	Add : Specific Excise Duty @ Rs/Ltr	Rs/Ltr	3.6	3.6	10.3	10.3	10.3	17.3	**387%**
7	Add : Dealer Commission	Rs/Ltr	1.2	1.2	1.3	1.3	1.4	1.5	**22%**
8	Add : VAT (including VAT on Dealer Commission) applicable for Delhi @ 12.5% + Pollution Cess of Rs 0.25/Ltr	Rs/Ltr	6.8	6.8	5.5	5.8	6.8	8.0	**18%**
9	**Retail Selling Price at Delhi-**	**Rs/Ltr**	**57.8**	**59.0**	**47.2**	**50.2**	**45.9**	**53.9**	**-7%**

Source: PPAC and ICRA research

As can be seen from the table, for calculation of the retail price of diesel,

1. The rupee has depreciated from Rs 61/$ to Rs 67/$, a depreciation of 10%, which adds to the rupee cost payable by retail consumers
2. The GoI has increased the excise duty from Rs 3.6/Ltr to Rs 17.3/Ltr, between September 2014 and June 2016, a significant increase of 387%. Thus, the benefit of the lower Refinery Transfer Price has not been fully transferred to the retail consumers
3. The State government of Delhi has increased the VAT from 16.6% in September 2014 to 16.75% in June 2016 on Diesel, which results in an absolute increase of 18% from Rs 6.8/Ltr to Rs 8/Ltr. Some state governments have a higher rate of VAT as compared to Delhi
4. Marketing and selling cost, along with margins charged by the OMCs, has gone down in some periods, however, compared to Rs 2.7/Ltr September 2014, it is 10% lower at Rs 2.4/Ltr in June 2016
5. Dealer commission has been revised upwards from Rs 1.2/Ltr to Rs 1.5/Ltr during this period, but that's primarily to compensate for inflationary pressures on expenses of dealers

Chart 49: Increasing Proportion of Excise Duty and VAT on Diesel Price at Delhi



Source: PPAC and ICRA research

Thus, while the C&F prices of MS and diesel have reduced by 46% and 51% each during this period, their retail prices have come down by just 3% and 7% respectively. The overall direct benefit to the consumer from the fall in global oil prices has been significantly lower than expected, largely because of the depreciation of the Indian rupee and the increase in government duties. The indirect benefit of higher duty collections, however, has been the source of additional government revenues. To the extent of benefits passed on, it has increased the disposable income in the hands of the consumers and increases consumer spending on other goods, increasing demand for those products/services.

Benefits passed to retail consumers of cooking fuels (LPG & SKO) and impact on consumer spending

Both LPG and SKO are highly subsidised fuel categories and thus, there was no pass on of the lower cost of production of these products to the OMCs. However, in case of non-subsidised LPG, there has been a reduction in costs. The commercial consumers sourcing LPG benefited from the reduction in rates. While the government has not reduced the prices of these products, given that they are already heavily subsidised, as can be seen in the buildup of cost for LPG and SKO, there is a massive reduction in the under-recoveries of the OMCs and indirectly the subsidy requirement from the government on account of the reduction in input cost. In case of SKOs, under-recoveries have reduced from Rs 31.2/Ltr in October 2014 to Rs 9.1/ Ltr in June 2016.

Table 41: Price Build-up of SKO Between October 2014 and June 2016 at Delhi

Sr. No.	Elements	Unit	Oct'14	Oct'15	Jun'16	% Variation between Oct'14 and Jun'16
1	C&F (Cost & Freight) Price of SKO	**Rs/Ltr**	43.1	24.7	20.4	-53%
2	Import Charges (Insurance/Ocean Loss/ LC Charge/Port Dues)	**Rs/Ltr**	0.3	0.2	0.2	-41%
	Custom Duty		0.0	0.0	0.0	-
3	**Refinery Transfer Price (RTP) on landed cost basis for BS IV Diesel (Price Paid by the Oil Marketing Companies to Refineries)**	**Rs/Ltr**	**43.4**	**24.9**	**20.6**	**-53%**
4	Marketing Cost + Transportation cost	Rs/Ltr	1.6	2.1	2.1	27%
5	**Total desired price (before Excise Duty and VAT)**	**Rs/Ltr**	**45.0**	**27.0**	**22.6**	**-50%**
6	Less: Subsidy by GoI		0.8	0.0	0.0	
7	**Less: Underrecoveries to OMCs**		**31.2**	**13.5**	**9.1**	**-71%**
8	**Price Charged to Dealers (Depot price - before Excise and VAT)**		**12.9**	**13.6**	**13.5**	**5%**
9	Add : Specific Excise Duty @/Ltr	Rs/Ltr	0.0	0.0	0.0	-
10	Add : Wholesale/Retailer Commission	Rs/Ltr	1.3	1.2	1.2	-4%
11	Add : VAT applicable for Delhi	Rs/Ltr	0.7	0.4	0.4	-38%
12	**Retail Selling Price at Delhi- (Rounded)**	**Rs/Ltr**	**14.9**	**15.2**	**15.2**	2%

Source: PPAC and ICRA research

In case of subsidised LPG, while the price/cylinder to retail consumer has changed marginally from Rs 414 to Rs 419 between October 2014 and June 2016 at Delhi, the total under-recoveries have reduced significantly. In October 2014, the total subsidy and under-recoveries were at Rs 427.2/cylinder (Rs 404.6+Rs 22.6). However, with the introduction of the Direct Benefit Transfer of LPG (DBTL) scheme, the overall cash compensation to which the government has to pay to consumers and OMCs had reduced to Rs. 99.7/cylinder (Rs 65.5+Rs 34.2) in October 2015 and has increased to Rs 108.4/cylinder (Rs 65.5+Rs/42.6) in June 2016. However, the total combined subsidy/under-recovery for the government has reduced significantly from Rs 427.2/cylinder in October 2014 to Rs 108.4/cylinder in June 2016. Thus, there is a significant saving for the government in terms of the subsidy payout towards LPG subsidy.

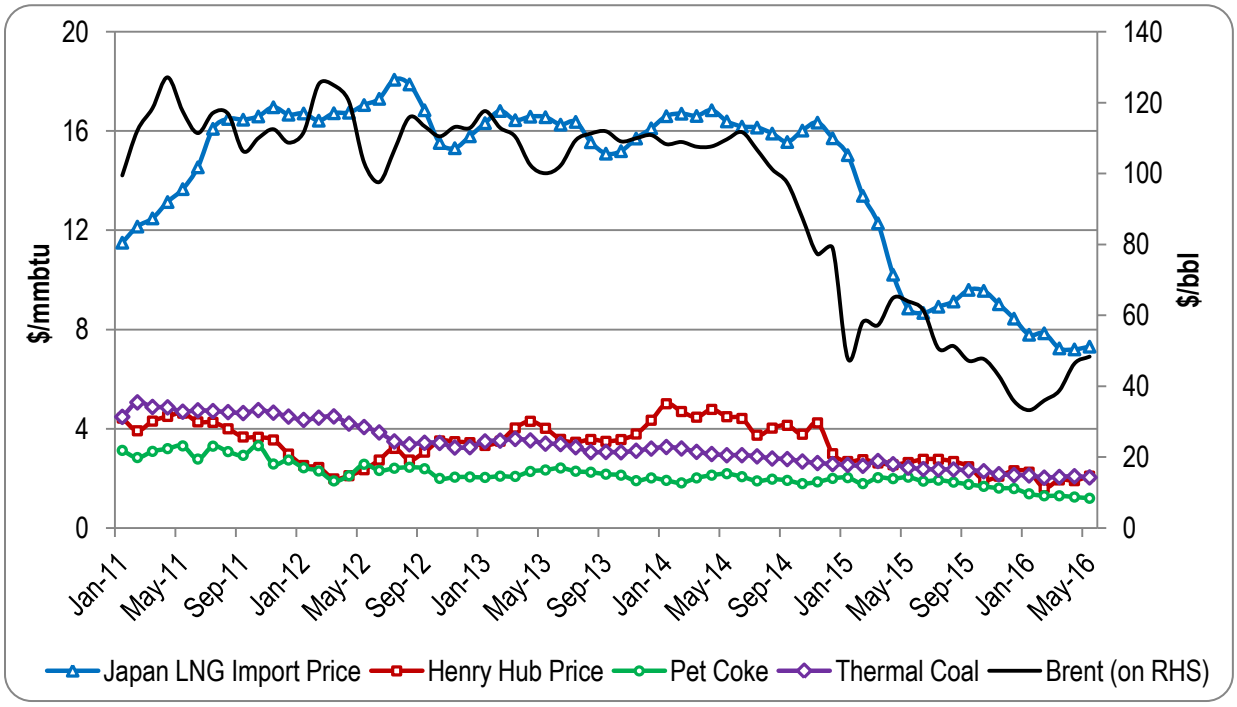
Table 42: Price Build-up of LPG Between October 2014 and June 2016 at Delhi

Sr. No.	Elements	Unit	Oct'14	Oct'15	Jun'16	% Variation between Oct'14 and Jun'16
1	C&F (Cost & Freight) Price of LPG	Rs/Ltr	699.0	340.9	341.8	-51%
2	Import Charges (Insurance/Ocean Loss/ LC Charge/Port Dues)	Rs/Ltr	5.9	4.0	4.0	-33%
3	**Refinery Transfer Price (RTP) on landed cost basis for BS IV Diesel (Price Paid by the OMCs to Refineries)**	Rs/Ltr	**705.0**	**344.9**	**345.8**	-51%
4	Storage/Bottling/Distribution/RoI charges	Rs/Ltr	95.7	83.9	83.6	-13%
5	**Market determined price**	Rs/Ltr	**800.6**	**428.8**	**429.4**	-46%
6	Less: Subsidy by GoI		22.6	0.0	0.0	
7	Less: Underrecoveries to OMCs		404.6	34.2	42.6	-89%
8	**Price Charged to Dealers (Depot price - before Excise and VAT)**		**373.4**	**462.9**	**471.9**	26%
9	Add : Specific Excise Duty @/Ltr	Rs/Ltr	0.0	0.0	0.0	
10	Add : Distributor Commission+ Delivery charges	Rs/Ltr	40.7	54.9	56.0	38%
11	Add : VAT applicable for Delhi	Rs/Ltr	0.0	0.0	0.0	
12	**Retail Selling Price at Delhi**		**414.1**	**517.8**	**527.9**	27%
13	**Retail Selling Price at Delhi- (Rounded)**		**-**	**517.5**	**527.5**	
14	Less: Subsidy by GoI (Cash Compensation to consumers under DBTL)		**-**	65.5	65.8	
15	Less: Subsidy by GoI (Cash Compensation to OMCs)		**-**	34.2	42.6	
16	**Effective Cost to Consumer after Subsidy**	Rs/Ltr	**414.1**	**417.8**	**419.2**	1%

Source: PPAC and ICRA research

8.3 Impact of prices and usage of competing fuels – Natural Gas, Coal and Pet coke

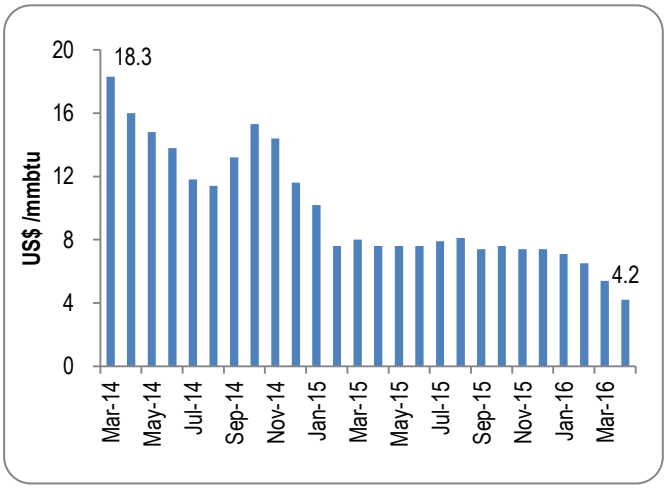
Chart 50: Price Trends of Brent, Coal, LNG Indices and Pet Coke



**Thermal Coal prices are in $/MT for Indonesian Coal at 6322 Kcal/Kg; Pet Coke prices are in $/mmbtu*
Source: Bloomberg; ICRA research

The trend of fall in crude prices from peak levels of about $110-120/barrel levels in April 2014 to $40/barrel levels in January 2016 has also had a ripple effect on the prices of alternate sources of energy like LNG and coal. Further, higher production of crude has resulted in higher generation of Pet Coke and in a low energy price scenario; the prices of Pet Coke have also witnessed a softening from about $2/mmbtu to $1.25/mmbtu in recent times. Thermal coal prices have also declined, given that players using coal earlier could switch to alternative crude products like furnace oil and LDO, which are available in abundance. Similarly, LNG prices have mimicked the trend in crude and have seen a sharp correction in prices as well. Henry Hub and Japan LNG import prices have corrected by almost 50% in this period to reflect the fall in crude prices.

Chart 51: Spot LNG Price Trends



Source: Industry and ICRA analysis

Spot LNG prices have corrected from $18.3/mmbtu in March 2014 to $4.2/mmbtu (Source: Japan LNG) in April 2016, indicating a sharper correction as compared to crude oil. This is because the fall in crude prices has been concurrent with the commencement of LNG supply from various sources, including USA, Russia, Ukraine, etc. Thus, energy cost for various users of LNG in India, like CGD players, who in turn supply to industries, has come down. The CGD players have gradually passed on the benefit to their end consumers to somewhat revive the falling demand for PNG consumed by industries, which had been witnessing sharp decline in the last few years as LNG prices had remained high. Even with the reduction in prices of PNG, players with the ability to switch between PNG and coal as their energy source have continued to operate on coal due to the flexibility associated with coal purchase and the near term control on their cost structures. Further, with the gas pooling mechanism in place, lower LNG prices mean several stranded power plants are able to function, albeit at lower PLFs and supply power.

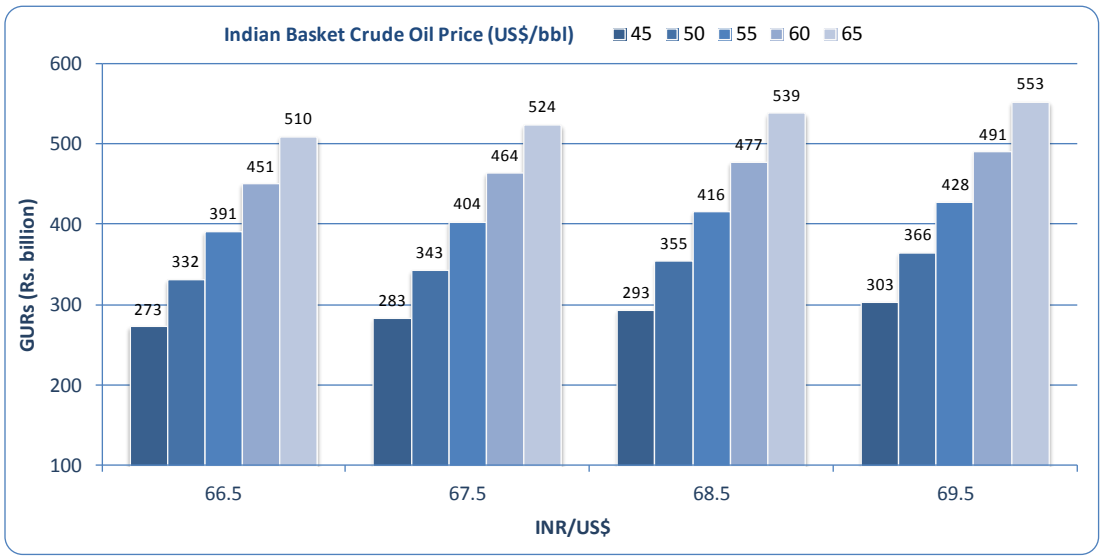
In terms of usage, a significant proportion of the coal has been getting replaced by imported pet coke since its availability has improved significantly in recent months and the fact that it is cheaper on energy equivalent basis as compared to imported coal from Indonesia, South Africa or Australia. Players who have the flexibility to switch to pet coke have done so to save on energy costs further.

9 Sensitivity Analysis of Different Crude Prices and Exchange Rates

Sensitivities of GURs to crude oil prices and foreign exchange rates: As the purchases and sales of OMCs are dollar denominated, depreciation of INR makes both crude oil and refined products costlier in INR. However, as the prices of sensitive products are regulated, the rupee selling prices of these remain either unchanged or increase marginally, thereby increasing the GUR burden of OMCs. GURs for FY2017 are estimated to increase to the extent of ~Rs.10 billion for every one rupee (INR) depreciation against the US dollar (US$), while the GURs could increase by around ~Rs. 12-12.5 billion with every US$ 1/bbl increase in crude oil prices.

As per the ICRA estimates, for every US$ 1 /bbl increase in Indian Basket crude oil prices, the under-recovery on PDS kerosene is expected to increase by ~Rs. 0.42 /litre each while the domestic LPG subsidy would decrease by ~Rs. 7.5 /cylinder. Further, with every one rupee depreciation against the US dollar, the under-recovery on kerosene is projected to increase by ~Rs. 0.41 /litre, while the direct LPG subsidy could increase by ~Rs. 6-7 /cylinder. Overall, total GURs in FY2017 may vary from Rs. 270 billion to Rs. 500 billion, depending upon the average Indian Basket crude oil price ranging from US$45/bbl to US$60/bbl and INR/US$ fluctuating at around 66-70. The total GURs at various levels of crude oil prices and forex rate are shown in the following exhibit:

Chart 52: Projected Product-wise Under-recovery for FY2017



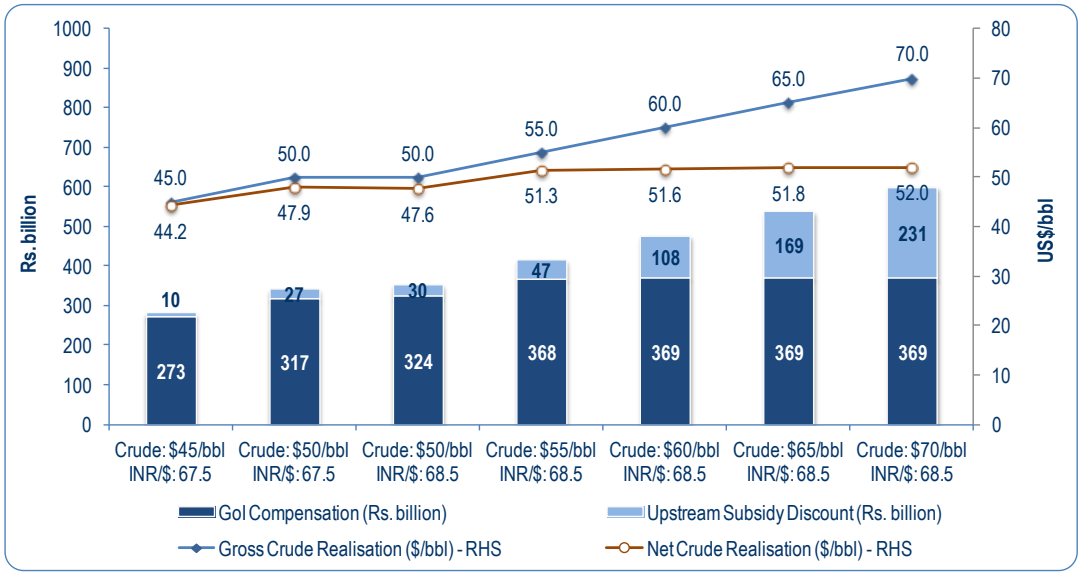
Source: ICRA research

Under-recovery sharing formula and low crude prices, if sustained, may lead to low to moderate burden for the PSU upstream companies in FY2017: The GoI has capped its share under-recovery burden up to Rs. 12 /litre (against the current under-recovery of Rs. 11.73 /litre for June 2016) on SKO (PDS) and Rs. 18/kg (~Rs. 255 per cylinder) under the Direct Benefit Transfer for Domestic LPG (DBTL) LPG (domestic), while the balance for would be shared by upstream oil companies for kerosene. However,

for LPG, there is lack of clarity as to whether the PSU oil companies will bear the subsidy or it will be passed on to the consumers in case global crude oil and LPG prices increase significantly from the current levels.

While projecting sharing of the under-recovery burden, we have assumed that the GoI would share the burden only up to the caps defined in the existing formula and the balance under-recovery burden will be borne by upstream companies as those are expected to benefit from higher gross crude oil realisations if global crude oil prices increase. In a scenario of crude oil prices up to US$55/bbl, the under-recovery burden on the PSU upstream companies is expected to remain low (US$1-4/bbl) in FY2017. However, as the GoI has capped its subsidy share, any significant rise in crude oil prices could lead to disproportionate increase in burden on upstream companies thereby limiting any upside from increase in crude oil prices. ICRA projects the net realisations of upstream companies – post subsidy burden, to vary from US$44/bbl to US$52/bbl (excluding the impact of rise in cess burden) for global crude oil prices of US$45/bbl to US$70/bbl. Even beyond US$70/bbl, the net crude oil realisations of upstream companies may not increase materially, unless GoI revises the formula to increase its own burden or downstream burden. Further, the cess burden on upstream companies may increase due to ad-valorem cess applicable on crude oil realisation.

Chart 53: Under-recovery Burden on GoI / Upstream Along With Projected Net Realisations



Source: ICRA research

Impact on upstream and downstream companies: In a scenario of rise in crude oil prices or depreciation in INR/US$, the private upstream companies would benefit from the rise in crude oil prices (leading to probable increase in global gas indices and consequent rise in domestic gas prices). However, PSU upstream companies may not benefit beyond crude oil price of US$55/bbl as discussed above.

With rise in crude oil prices or depreciation in INR/US$, the increase in GURs would lead to higher working capital borrowings and interest burden. However, with subsidy sharing formula in place and LPG subsidy

pool account being in surplus, the delay in subsidy reimbursement from the GoI may be limited. Besides, the more steps from the GoI are possible to reduce GURs, which may partly offset the impact of increase in crude oil prices.

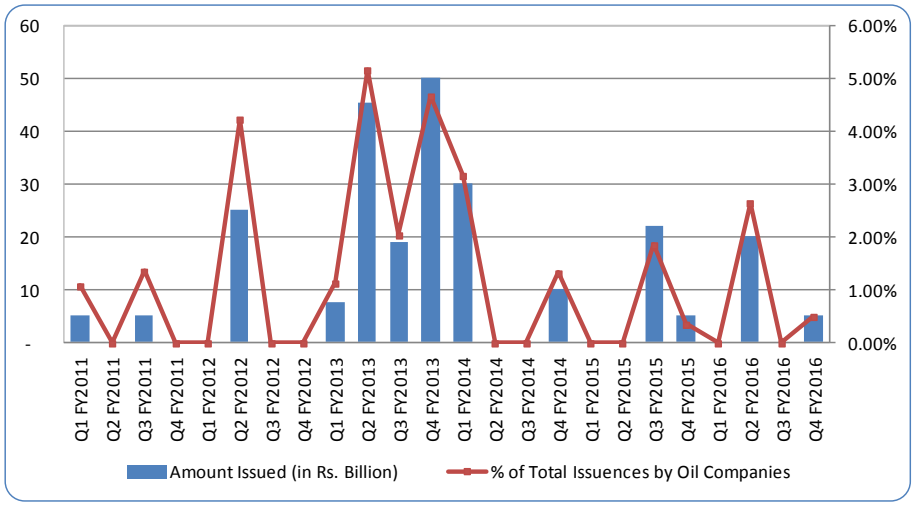
The sensitivities for macro parameters like fiscal balance and inflation have already been covered in Sections 2 and 3.

10 Impact on Debt Capital Markets and Lenders

10.1 Debt Capital Markets

Debt Market Issuances: The debt market issuances for select oil companies dried up considerably post the beginning of the slide in crude oil prices. The proportion of issuances by these companies has remained below 0.5% (of total issuances during the quarter) for four out of the last five quarters (Q4 FY2015 to Q4 FY2016). This subdued level of issuances is largely on account of the sharp decline in the funding requirements due to lower crude oil prices and healthier cash flow generation (of downstream companies).

Chart 54: Debt Market Issuances by Oil Companies

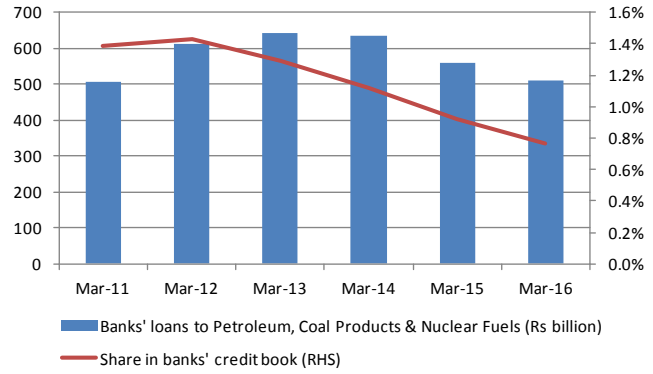


Source: Bloomberg, ICRA research

10.2 Lenders

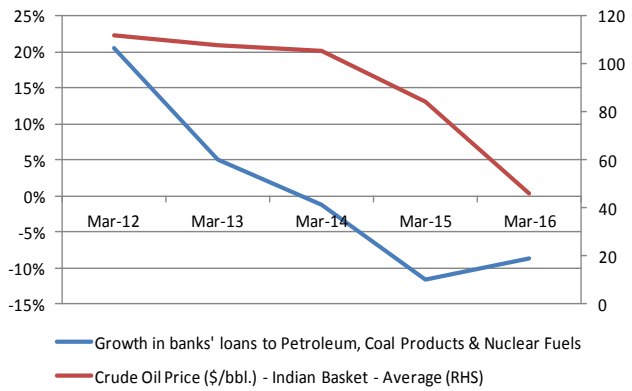
Indian banks' domestic credit book has grown at a CAGR of 13% over last five-year period (FY2012-FY2016) however, the growth in banks' credit towards petroleum, coal products and nuclear fuels sector was much lower, at only 0.2% over the same period. As a result of the lower credit growth to the petroleum sector, share of loans to petroleum, coal products and nuclear fuel sectors in banks' total domestic loan book declined from 1.4% as on March 2011 to 0.8% as on March 2016. The impact of banks' credit growth to the sector was more severe in recent period (last two financial years, FY2015-FY2016), banks' exposure to this sector has declined by 19% from Rs 635 billion as on March 2014 to Rs 512 billion as on March 2016.

Chart 55: Trend in Growth of Banks' loans to Petroleum, Coal Products & Nuclear Fuel Sectors



Note: Amount in Rs billion
Source: RBI, ICRA research

Chart 56: Trend in Crude Prices vs. Growth in Banks loans to Petroleum, Coal Products & Nuclear Fuel Sectors



Note: Amount in Rs billion
Source: RBI, ICRA research estimates

The decline in banks' exposure to the sector was on account of a meltdown in oil prices (average crude oil prices Indian basket declined by 20% in FY2015 and further 45% in FY2016) which lowered working capital requirement of oil marketing companies (OMCs) considerably. In addition, the release of subsidy by GoI to OMCs also led to the lowering of funding requirement of these entities.

In ICRA's estimate most of the bank's exposure (more than 3/4th of total exposure) to the sector was towards oil marketing companies as on March 2016.

OMCs enjoy strong financial flexibility from banking system; exposure norms were also relaxed for lending to OMCs in May 2008: Historically, OMCs have enjoyed strong financial flexibility on the back of majority sovereign ownership, strong financial flexibility and their dominant and strategically important position in the Indian energy sector. The RBI had also prescribed relaxed single party concentration norms for OMC. Effective May 29, 2008, the exposure limit in respect of single borrower has been raised to 25% of the capital funds[6] only in respect of oil companies (vs. 15% for other entities). In addition to this, banks are allowed, in exceptional circumstances, to consider enhancement of the exposure to the OMCs up to a further 5% percent of capital funds.

Vulnerability of banks' exposure to the sector remains low: In ICRA's estimate most of the banks' exposure to the sector was towards OMCs as on March 2016. Despite the significant volatility in oil prices, vulnerability of the banks' exposure to the sector remains low as credit profile of OMCs remains strong (rated at the highest level i.e. AAA) on the back of majority sovereign ownership as well as strong financial flexibility and their dominant and strategically important position in the Indian energy sector.

[6] Tier 1 capital + Tier 2 capital

Lower vulnerability of the banks' exposure to the petroleum sector is also reflected in banks' lower Gross NPA % in the sector vs. their overall Gross NPA %. India's largest lender, SBI[7] has reported Gross NPA % of 2.2% in exposure to petroleum sector, which is much lower vs. SBI's overall Gross NPA % of 6.5% as on March 2016, however, gross NPA % in the petroleum sector has increased in FY2016 to some extent from the levels of 0.8% as on March 2015.

[7] Data is not available for entire banking sector

11 RECOMMENDATIONS FOR CRUDE OIL PRICE RISE/VOLATILITY

11.1 Suggested Policy Measures

Domestic gas prices at low levels discourage production and future exploration of potential reserves; a floor on domestic price is recommended to incentivise upstream players: The GoI linked domestic gas prices with international gas price hubs in October 2014, which led to increase in gas prices to US$5.05/mmbtu (on GCV basis) for the period November 1, 2014 to March 31, 2015 from the earlier price of US$3.8/mmbtu (GCV basis). However, domestic gas prices steadily declined over the last 1.5 years to US$3.06/mmbtu (GCV basis) for H1 FY2017, which is ~39% lower than initial price of US$5.05/mmbtu. Further, the domestic gas prices are expected to decline further by 15% for H2 FY2017. The domestic gas prices were deregulated to encourage investment in upstream sector to exploit the potential gas reserves of the country. However, a consistent decline in domestic gas prices has led to adverse impact on the sentiments apart from lower revenues and cash generation from natural gas for upstream companies. To protect the interest of domestic upstream companies and incentivise future exploration and production, the GoI may consider to keep a floor in the domestic gas pricing formula. The floor may be decided based upon the gas price in the country before the deregulation, which was US$3.8/mmbu, higher by 25% than the current prices.

Lowering income threshold for LPG (domestic) subsidy or targeting subsidy to only BPL consumers: On December 28, 2015, the GoI announced that the benefit of the LPG subsidy will not be available for LPG consumers if the consumer or his/her spouse had taxable income of more than Rs. 1 million during the previous financial year. The move is intended to stop subsidy for high income consumers who can afford LPG at unsubsidised prices, while the relatively poor consumers would continue to get direct subsidy in their accounts. There could be material savings in LPG subsidies if the plan is implemented on a larger scale with a lower income threshold, as LPG is used highly in urban areas, which have large population of consumers who can afford unsubsidised LPG prices. ICRA believes that low crude oil price scenario may be an opportune time to stop LPG subsidy for the high income consumers [and target only below poverty line (BPL) consumers] as the current subsidy levels on LPG are low (~Rs. 80-150 / cylinder over the last six months) and thus, the step may not have any adverse monetary impact for LPG consumers, being a politically sensitive product. Assuming that with the consumption of one cylinder every 45 days, the impact on the household budget could be limited to ~Rs. 100 per month at the current level of global crude oil and LPG prices, although the outgo could be higher if the oil prices were to recover to elevated levels in future.

Based on the taxable income criteria of Rs. 1 million and above, a small population would not receive the subsidy as of now. Although the quantum of subsidy savings is minuscule compared to the overall LPG under-recovery, this is a step in the right direction and *the subsidy could decrease materially once the taxable income slab for availing LPG subsidy is reduced progressively or the LPG subsidy is provided to only BPL consumers*. DBTL is initially implemented on self-declaration basis and the GoI plans to enforce it with income details derived from PAN of consumers. However, identification of households only based on I-T return income could leave out a large share of households as few people file I-T returns (~4% of

population) in India due to poor tax compliance. Thus, other criteria to identify wealthy consumers, such as owners of a car or a house, may be more meaningful. Further, the benefit of such steps would be more visible over the medium term in a scenario of rise in crude oil prices as the subsidy savings level would be materially higher, especially when crude oil prices are recovering from the low level of ~US$40/bbl.

Monthly rise in subsidised kerosene prices to reduce subsidies; the step is positive for upstream companies and should be continued in the future: The GoI has recently directed OMCs to increase the retail prices of subsidised superior kerosene oil (SKO or kerosene) by 25 paisa (Rs. 0.25) per litre every month for the next 10 months, as per media sources. The step to gradually increase SKO prices every month is a major reform considering the politically sensitive nature of the product. As per ICRA estimates, the move to increase retail prices of subsidised kerosene by Rs. 0.25/litre per month for ten months (from July 2016 to April 2017) would lead to overall reduction in gross under-recoveries on kerosene by ~Rs 7.6 billion in FY2017 and ~Rs. 20.4 billion in FY2018. As kerosene under-recoveries beyond Rs. 12/litre are expected to be borne by PSU upstream companies, the upstream companies would be major beneficiaries of the reform especially at current or higher level of crude oil prices. At an Indian Basket crude oil price of US$44-45/bbl, the kerosene subsidy tends to be around Rs. 12/litre, implying no subsidy burden on PSU upstream companies. At crude oil prices beyond US$45/bbl, the upstream companies would have had to bear the kerosene under-recoveries. Post the total planned hike of Rs. 2.5/litre in kerosene prices over the next 10 months, the PSU upstream companies may not have to bear under-recovery on account of SKO upto crude oil price of US$50-52/bbl. With monthly price revisions, the burden on PSU upstream companies is expected to be lower by Rs.7-7.6 billion in FY2017, which may be 2.5% of combined profits (profit before tax and exceptional items) of ONGC and OIL reported in FY2016. Thus, at prevailing crude oil price (US$46/bbl) or higher, the upstream companies' net realisation and cash accruals will improve modestly. The GoI should consider to extend the monthly price hike beyond April 2017 till the under-recovery on kerosene reduces to nil or low levels, which the GoI may bear on its own. Thus, the increase in SKO prices, if continued, could help the upstream companies to come out of purview of under-recovery burden of kerosene.

Direct benefit transfer for kerosene could materially reduce subsidies; however, implementation a major challenge: On January 1, 2016, the GoI announced that the subsidy on SKO distributed through the Public Distribution System (PDS) will be directly transferred to the bank accounts of consumers under the Direct Benefit Transfer for Kerosene (DBTK) in line with DBT for LPG. The DBTK, on a pilot basis in 26 districts, is aimed at reducing the leakage of kerosene, which is widely believed to be high as it is used for adulteration of auto-fuels (especially diesel) due to significant price differential between auto-fuels and subsidised kerosene prices (for instance, retail selling price of SKO (PDS) and HSD are currently at Rs 15.02 /litre and Rs. 59.21 /litre respectively in Mumbai effective from June 1, 2016; whereas retail price of unsubsidised kerosene is Rs. 57.45 /litre, which is close to the diesel price). The scheme was planned to be implemented with effect from April 1, 2016; however, the same has faced delays due to issues related to bank accounts of beneficiaries and linking of the same with Aadhar numbers.

The estimated savings from DBT for kerosene could be sizeable with country-wide implementation; however, the implementation of the same is a major challenge as the kerosene distribution has been

through PDS handled by the respective state governments, unlike LPG, which is directly sold by Central Government-owned OMCs.

Impact on oil companies: The GoI, in August 2015, had announced that it would share an under-recovery of up to Rs. 12 /litre on SKO (PDS) while the balance under-recovery on kerosene will be borne by the PSU upstream companies. For last few months, as the total under-recovery on kerosene was lower than Rs. 12 /litre, the PSU upstream companies did not require to bear any subsidy. As per ICRA estimates, the PSU upstream companies would have to bear kerosene subsidy for Indian Basket crude oil price of ~US$45/bbl and above; thus, the impact on PSU upstream companies' profitability and cash accruals could be positive due to subsidy savings achieved through DBTK after pan-India implementation of the scheme. The positive impact of the step on PSU oil companies would be even more apparent in a scenario of elevated crude oil prices.

Allocation of the part of additional excise revenues and subsidy savings towards development of Indian Oil & Gas sector: The GoI had net savings on account of lower petroleum subsidy outgo of Rs. 251 billion and Rs. 303 billion, respectively in FY2015 and FY2016 RE. Moreover, it aggregated incremental gross revenues from excise hikes of Rs. 212 billion in FY2015 and Rs. 794 billion FY2016. A portion of the excise revenues collected on POL products are in the form of road cess that is meant to be utilised for the development and maintenance of national highways, development of rural roads etc. Of the balance, a portion of the basic excise duty is mandated to be shared with the State Governments (32% during FY2011 to FY2015 and 42% during FY2016 to FY2020). The GoI may consider ring fencing some of the remaining excise revenues (balance basic excise duty and surcharge) accruing to it from the POL sector as well as subsidy savings on account of the fall in crude oil prices, for development of the oil and gas sector. The funds allocated for development of domestic oil & gas sector could be utilised for faster exploration by PSU upstream companies as they lost upside in their cash accruals during higher crude oil prices. Further, there may be budgetary allocation for viability gap funding of new gas transmission pipelines, which are important to develop the national gas grid as per the vision of the GoI; however, without that support, it may not be viable because of low gas availability in the next few years.

Reduction in cess levied on crude oil production: In the Union Budget 2016-17, the GoI changed "cess" levied on crude oil production to 20% ad-valorem on crude oil price from Rs. 4500 /MT (~US9/bbl) at that time. Although the development is positive for upstream companies up to the gross crude oil realisation of ~US$45/bbl, the same would be negative at relatively higher crude oil prices. As the country significantly relies on imports to meet crude oil consumption, it is imperative to encourage domestic production of crude oil. The ad-valorem cess of 20% is high and would be materially higher from previous fixed cess of Rs. 4500 /MT (~ US$9/bbl) in a scenario of crude oil price above US$45/bbl. The level may be brought down to 10 to 15% of the crude oil realisation to reduce the impact of cess on the profits and cash generation of upstream companies.

Cut in excise duties and VAT on auto-fuels: As crude oil price declined during H2 FY2015 and FY2016, the GoI steadily increased excise duties (in Rs./litre) on auto-fuels to garner the additional resources for improvement in infrastructure of the country (like roads & highways etc.). The additional excise duties also

acted as a deterrent for the consumers to rely on low prices of auto-fuels in a low crude oil price environment. Similarly, most of the State Governments increased VAT (usually ad-valorem to prices) to protect or increase their share of revenues from taxation on fuel prices. The GoI's excise collection has increased to by ~Rs. 700 billion in FY2016 over and above the increased amount for FY2015. The hikes in excise duties also acted as a cushion for the GoI to protect the consumers from the effect of material increase in global crude oil prices. If recovery in crude oil prices continues, the GoI may consider reducing the excise duties on auto-fuels to relieve the consumers from the increasing burden and also to moderate the impact on inflation. Besides, as the VAT rates are ad-valorem, the States may reduce the VAT rates and yet protect their VAT collection due to higher prices. Overall, this would ensure that the increase in global crude oil and petroleum products' prices does not have a material impact on prices of auto-fuels and not significantly dent consumers' disposable income, which may lead to slowdown in the consumer goods and durable segments.

In case of material increase in retail prices, the growth of petroleum products could be adversely impacted which would be negative for downstream companies. Further, as liquid auto-fuels are priced higher than CNG due to high excise duties, there is significant risk of losing the volumes to CNG, especially in a scenario of recovery in crude oil prices. This, however, would be positive from the perspective of concerns related to environment.

Differential between excise duties on petrol and diesel may be reduced: Currently, there is significant difference in excise duties on petrol (Rs. 21.48/litre) and diesel (Rs. 17.33/litre), which is possibly aimed at containing inflation (diesel prices have higher impact on inflation being important component in freights for most commodities). Further, the retail prices of diesel are also lower due to lower VAT rates on diesel in most of the states. However, the differential may be brought down to lower levels so that the price differential between retail prices of petrol and diesel do not affect the preference of passenger vehicle buyers. This could encourage the use of petrol (relatively cleaner fuel) for passenger vehicles and have a moderately positive impact on environmental challenges being faced by most metro cities in the country. This may be achieved through a relatively larger cut in excise duty and VAT on petrol as compared to diesel, in a rising crude oil price scenario.

Exempt PSU upstream companies from subsidy sharing: The PSU upstream companies have not been able to benefit from the rise in global crude oil prices in the last couple of up-cycles, thereby restricting their ability to generate "potential" cash accruals to increase capital expenditure and investments in acquisitions. Further, the exploration and production of oil is a high business risk segment and the global companies, along with the private ones in India, generate materially high cash accruals in times of high crude oil prices so as to sail through down-cycles. As the PSU upstream companies had to share the burden of under-recoveries in the past, their net crude oil realisations have been less than US$50/bbl in most of the times, even when gross crude realisations were above US$100/bbl. As the GoI has tried to utilise the additional cash generation of upstream companies to meet its socio-economic objectives to protect the consumers, the PSU upstream companies and their investors have been unable to tap the benefit brought about by the high global crude oil prices. Low crude oil prices along with other GoI's initiatives (like DBTL) provide opportunity

to the GoI to exempt PSU upstream companies from under-recovery sharing burden or gradually reduce it to low levels as benefits of DBT schemes increase over the years.

Incentivise domestic procurement of supplies/services so that the entire eco-system develops for the upstream industry: The Indian upstream industry is significantly dependent upon imported equipment / consumables along with services from abroad. The domestic suppliers of goods and services may be incentivised to encourage manufacturing and services in India, which would increase local employment and restrict forex outgo. In this regard, in Jan-2016, the MoPNG invited comments on a consultation paper on "Policy to Provide Purchase Preference Linked with Local Content in all PSUs". The consultation paper suggests providing preference for domestic procurement of goods/services, where the domestic supplier quote is within the 10% range of the lower price (L1), other things being equal. The policy could be applicable for goods, services and EPC contracts for domestic manufacturers, service providers and EPC contractors. The paper also has set item-wise targets to increase the local sourcing of goods/services as proportion of total procurements in Indian oil and gas sector. For instance, in goods, tubular requirements through domestic manufacturers are targeted to be increased from 50% in 2015-17 to 80% in 2023-25; while in services, domestic chartering of offshore rigs is targeted to increase from 20% in 2015-17 to 40% in 2023-25. The MoPNG, in consultation with PSUs under its administrative control, is also examining the possibility of adopting the National Competitive Bidding Route instead of the International Competitive Bidding for certain items and services where sufficient capacity, quality and competition is available within the country. Such steps are expected to improve the overall eco-system for the whole chain of the upstream industry in India over the long-term.

11.2 Recommendations for Oil and Gas Sector

Crude oil procurement policy of PSU downstream companies: The PSU downstream companies largely follow the tender route to import crude oil for their refining operations. Almost 80% of crude oil is imported through term contracts and the balance from spot tenders. This does not allow OMCs to have meaningful negotiations on price and thus the purchase prices of crude oil for state-owned refiners are higher as compared to their private sector counterparts who negotiate with their suppliers. The GoI is planning to allow OMCs to import crude oil through the trading desk than the tender route, which could improve the cost competitiveness of state-owned refineries. The active trading desk may also help the PSU refineries to hedge crude oil and product prices (as discussed in the next paragraph) to deal with crude oil price volatility.

Hedging crude oil and petroleum product prices to protect crack spreads/GRMs: Many global and some private sector refineries in India have been actively hedging crude oil and petroleum product prices to protect their crack spreads / GRMs, which protect these players from extreme volatility in crude oil and product prices. The refineries, with established risk management skills to hedge commodity prices, have reported relatively stable GRMs (and lower inventory losses/gains) in a scenario of high volatility. Most PSU refiners, except BPCL, however, hedge negligible or very low proportion of their product slate, which have impacted their performance in times of volatile crude oil prices. Going forward, the increased hedging efforts by PSU refineries may lead to relatively stable profit and cash generation even in volatile crude oil price scenario. However, adoption of hedging should be accompanied by empowerment of the risk management

department with suitable controls so that their bona fide decisions are not questioned on a post facto basis, by the vigilance and other supervisory authorities when their decisions go against market trends. Upgradation of skill sets of the trading desk/risk management department personnel is also imperative as energy risk management is a sophisticated task which calls for cutting edge knowledge.

New long-term contracts or renegotiation of older contracts of rigs / oil field services by upstream companies: In line with significant fall in crude oil prices, the rates of rigs and other oil field services decreased significantly over H2 FY2015 and FY2016. This has created opportunities for upstream oil & gas producers to enter into long-term contracts at current rates, which are at historically low levels. Besides, many global oil upstream companies like Shell, ExxonMobil have been in the process of renegotiating the rates with suppliers of rigs, vessels, oil tools and other oil field services. The domestic upstream companies may try to explore the opportunities to renegotiate contracts at the lower rates to reduce cost of production and support cash generation levels. The cost initiatives at the global industry level include reducing staff and improving efficiencies (like reducing idle days for rigs), which to some extent can be implemented by Indian upstream companies as well. Although the renegotiation of old contracts or signing new contracts at lower rates would be positive for the upstream oil & gas companies, the same will weaken the profits of oil field services players.

11.3 Recommendation for Major Consuming Sectors

11.3.1 Aviation Sector

The Indian airline industry has gained significantly from the fall in crude prices, achieving net profits after remaining in losses for many years as fuel costs are nearly 40%-50% of the cost structure of the industry. In line with lower costs and competitive pressure, domestic ticket prices have remained low leading to robust passenger growth of 22.1% (YoY) in FY2016. Going forward, the price of ATF may increase with recovery in crude oil prices. In such a scenario airline companies will have to take certain actions to preserve their profitability. Some of the actions that have become common among global players to protect profitability are enumerated below:

- **Hedging of fuel costs:** A number of airlines across the globe like Southwest Airlines, Delta Airlines and United Airlines hedge their fuel costs to overcome the volatility in crude oil prices. However, some Indian airlines do not resort to hedging of fuel prices. Though hedging has always been considered as a double edged sword, considering the risk of sharp fall in crude oil and ATF prices, adoption of prudent practices can result in predictability in ATF costs.

- **Improvement in operational efficiency**: Cost per Available Seat Kilometers (CASKM) is a common metric used to measure the operational efficiency of the airline companies calculated as total operating costs divided by the Available Seat Kilometers (ASKM). The CASKM for the airline industry has declined in FY2016 vis-à-vis FY2015 due to a fall in crude oil and ATF prices. However, CASKM ex-fuel expense has deteriorated for most of the airlines, which indicate that inefficiencies have partly offset the savings of fuel cost. Thus, the Indian Airlines may focus on improving operational efficiencies in terms

of lower turnaround time, manpower rationalisation, uniform fleet composition, and focusing on inducting fuel efficient airplanes.

11.3.2 Shipping Sector

Crude oil prices affect profit margins of the shipping industry as the fuel costs is one of the major cost of running a ship. In the last 18-24 months, the bunker prices for the shipping companies have dropped by nearly 50-60% due to falling crude prices; however the same has been offset by lower freight rates in the dry bulk and container segment, although tankers players have benefited. The Baltic Dry Index, which is a measure of the rates paid for moving international bulk cargo, has witnessed multi year low rates due to slowdown in international trade. The freight rates for the tanker segments have been on an uptrend on account of low crude oil prices, contango in futures prices and increasing surplus of crude oil vs demand leading to strategic storage and commercial storage (onshore and offshore) and increase in the crude processed due to strong refining margins.

Recovery in crude oil prices would have led to an increase in the operational cost for shipping companies, however, players operating their fleet on voyage charter or on spot market would be more impacted due to rise in fuel costs. The tanker segment would be further impacted as the incremental demand for being used as floating storage may diminish. The shipping industry globally resorts to the following ways to hedge against volatility in crude oil prices or overcome lower charter rates to some extent:

- Hedging for fuel costs leading to relative stability in cost structure
- Slow steaming of the vessels to the extent the sailing schedules permit so as to save on the fuel as well as reduce the availability of ships resulting in improved supply-demand balance in an oversupplied market
- Route rationalisation (in case of container segment) to cut down on less profitable routes
- Entering multi-carrier alliances, especially in container lines, to introduce consolidation services
- Deployment of more efficient vessels and better monitoring of the ship equipment like hull and propeller to reduce resistance and thus reduce fuel consumption

11.3.3 Petrochemicals Sector

The Indian petrochemicals industry has been growing on the back of increased demand from healthcare, packaging and automotive industry. Additional demand push is coming from government initiatives like the “Swachch Bharat Abhiyaan” (Clean India Movement) which requires the building of cluster toilets (usually made of plastics/polymers) to discourage open defecation. Global petrochemicals demand has also got boost due to relatively lower prices. Improved demand coupled with lower feedstock (naphtha) prices has helped in improving the profit margins for the global and domestic petrochemicals players. Lower crude oil prices have materially improved cost competitiveness of naphtha-based crackers against gas-based crackers across the world.

Going forward the demand for the petrochemical products is expected to remain robust in the Indian market on account of the aforementioned reasons. However, recovery in crude oil prices, as seen in last few months, could put pressure on the profitability. The petrochemical industry is a cyclical one and has been witness to several volatilities in the past. Some of the practices global companies like SABIC, RIL etc follow are as given below:

- **Cost rationalisation and improving plant efficiencies:** In order to counter the volatility of oil price and build sustainable operations, domestic companies could focus on improving efficiencies of the plant and equipment and improve utilisation levels. Additionally, cost rationalisation through manpower rationalisation and automation of tasks can help in improve operational efficiencies in the system.

- **Increasing contribution of value-added grades and flexibility to switch grades:** Petrochemical players could put efforts to increase contribution of higher value-added grades to deal with volatility in prices of feedstock (naphtha or RLNG) and finished products, especially with current high margins and cash accruals which may support the capital expenditure. The players may also improve the flexibility of the plant to switch between different grades of petrochemicals. Also, forward integration projects from the cracker/aromatics streams can reduce the overall volatility, although it would increase the capital intensity of the companies concerned.

- **Hedging of feedstock:** Hedging of the feedstock has been one of the most common practices global companies have followed to combat oil price volatility. Though hedging can be a double-edged sword but with oil prices at lower levels (around US$45-50/bbl), hedging could be instrumental in protecting profitability in a volatile environment.

12 Opportunities and Challenges due to Low Crude Oil Prices

12.1 Major Opportunities

Lower CAD and improvement in foreign exchange reserve: India depends heavily on imports to meet its crude oil requirements, importing nearly 80% of its annual demand. Thus, crude oil import bill accounted for nearly one-third of its total imports in FY2015. The decline in crude oil price has helped in reducing the current account deficit and reduced the demand for U.S. dollars. Improvement in sentiment towards net commodity importers like India has also attracted FII flows. To an extent, this has helped build up foreign exchange reserves, which have risen to ~$360 billion in recent months. The improvement in foreign exchange reserve levels reduces the vulnerability of India's external account, and is likely to provide a buffer to volatility generated by events such as the upcoming redemption of FCNR(B) deposits (due in Sep-Nov 2016), increase in interest rates by the U.S. Fed etc.

Inflation cool down which led to rate cuts by the central bank: Lower crude prices have contributed to the fall in WPI inflation and to a smaller extent to the moderation in CPI inflation. With the decline in the latter, the RBI has reduced the policy repo rate by 150 bps since January 2015. The prevailing CPI inflation is, however, higher (at 5.47% for Apr-2016 and 5.76% for May-2016) than the RBI's target of 5% for Jan-2017. Nevertheless, if crude oil prices don't increase further from current levels (at ~US$50/bbl), a favourable base effect, in conjunction with the above-normal rainfall expected in the second half of the monsoon season, would dampen food inflation, muting the impact of the upcoming pay revision on CPI inflation. Nevertheless, additional easing in 2016 is unlikely to exceed 25 bps.

Signing favourable deals with crude oil suppliers: As the global crude oil market is over supplied, it has thrown open opportunities for India to extract favourable terms from crude suppliers. The crude oil market turned from the suppliers' market to a buyers' market since the beginning of CY2015 due to rising oversupply and the suppliers provided better terms to refineries such as indirect discounts on crude oil price like providing crude at CIF basis than FOB basis earlier, at lower freight cost, higher credit period etc. Besides, the refineries also bargained on the day on which crude oil price has to be taken into account; i.e. to factor in the price of crude on the day a cargo arrives at Indian ports, rather than when it's loaded on to the tankers. Such favourable deals from crude oil suppliers have helped Indian refineries improve their GRMs in FY2016.

Oil diplomacy likely to get sweetened deals: The oversupplied crude oil market and the resultant low crude oil prices, have enabled the GoI to engage in oil diplomacy, to get favourable deals for supplies of crude oil and LNG and for acquisitions. The effective diplomatic efforts have been reflected in renegotiation of RasGas contract with Qatar, which has not only brought down LNG prices but also relieved Indian LNG offtakers from the "take or pay" liability. Besides, in September 2015, OVL signed definitive agreements to acquire up to 15% shares in CSJC Vankorneft, which is the owner of Vankor Field and North Vankor licence in Russia. Among other factors, lower crude oil prices and diplomatic efforts led to competitive valuation of the deal at about US$ 1.9/boe against a valuation of US$ 2.28/boe for OVL's Imperial energy acquisition. Further, the GoI has been trying to bag investment opportunities and service contracts in Iran such as in

Farsi offshore block. High growth in India's crude oil and natural gas consumption is also enhancing its influence on the global energy trade. India has also reportedly entered into a deal with Nigeria for crude oil imports at competitive prices.

Improved profitability for downstream oil companies and end-user industries: Industries using crude oil or its derivatives as input or power and fuel witnessed an increase in their margins as the input price fell while the output prices declined to a lower degree, leading to expansion of contribution margins and improved profitability. GRM of the refiners reached high levels owing to fall in input prices and strong product crack spreads. The fertiliser sector also witnessed a fall in input price i.e. gas, which decreased in tandem with oil prices. This resulted in improved margins and record profitability for some of the fertiliser companies in India. Flexible packaging industry, which uses crude oil derivatives like PET, had to witness inventory losses during the start of crude oil price slide, but now they are also benefiting from the lower input prices. Thus, the decline in crude oil price has helped improve profitability of a number of end-user industries in India.

Fuel pricing reforms: The GoI has utilised the opportunity brought by lower crude oil prices to initiate some reforms like DBT in LPG and kersoene to reduce leakage. The diesel price deregulation by increasing its retail price with Rs. 0.5/litre every month was initiated before the crude oil price fall started; however, the price fall, starting from August-2014, helped the GoI to continue with the reform and deregulate the prices. Post which, DBT for LPG has been a key reform, which resulted in the cancellation of a significant number of fake connections along with reported 10 million consumers voluntarily giving up LPG subsidy under the GoI campaign of Give It Up. However, the current soft prices provide a scope for the GoI to increase prices of sensitive fuels like LPG and SKO along with moving fast on DBT schemes for these products.

Low crude oil prices provide good opportunity for strategic crude oil storage; simplification of taxation for foreign companies to attract investments: The fall in crude oil prices provides an opportunity for the country to implement strategic crude oil storage. Steps could be taken for faster completion of storage capacity and filling the same before material increase in crude oil prices. The Union Budget 2016-17 also stated that any income accruing or arising to a foreign company on account of storage of crude oil in a facility in India and the sale of such crude oil to any person resident in India shall not be included in the total income of foreign national oil companies and multinational companies storing crude oil in India. This step could help the GoI attract foreign companies to store crude oil as per Indian Strategic Petroleum Reserves Limited (ISPRL), part of which could be used by India in case of an emergency.

Cost of capital equipment and oil field services are down, enabling creditworthy companies from taking advantage of the same and continuing with capex: The prices of capital equipment and charter rates on rigs/offshore vessels to explore and produce crude oil and natural have come down significantly over last 1.5 years due to fall in demand. Further, the cost of oil field services has also decreased materially. Thus, E&P players with long-term presence in the segment have had the opportunity to continue with or even increase their capital expenditure plans to effectively utilise the current lower cost of equipment as well oil field services. Among upstream players, the companies with healthy credit profile and financial flexibility

stand to gain from lower cost, as the entities with limited financial flexibility due to high leverage and / or low cash balance/generation are not in the position to continue with high level of capex required in the industry.

12.2 Major Challenges

Fall in exports, especially to oil-producing countries: India's exports have fallen by 15.6% (YoY) in FY2016 due to lower product prices coupled with a fall in demand from some struggling economies. The fall is also attributable to lower purchase power of oil-producing economies as they are heavily dependent on crude oil for their revenues. If crude oil prices remain low, exports to such economies may get further impacted. One of the examples could be Nigeria, which has witnessed depreciation of its currency naira due to its reliance on oil as a source of revenue for the economy and its imports from India decreased by 17.1% (YoY) in FY2016. Though the Current Account Deficit (CAD) of India has benefited to some extent from the fall in crude oil prices, sustained low crude oil prices at current levels may have higher adverse impact on exports as well as remittances, leading to deterioration in CAD.

Fall in remittances as a source of foreign exchange: Remittances from Indians living in foreign nations are an important source of foreign exchange for the country. Gulf countries are an important source of remittance, contributing nearly 50% of the total remittances. However, due to a decline in crude oil prices the region has come under duress and the remittances fell in FY2016, first time in nearly six years. With sustained lower crude oil prices, the remittances may fall further and more severely as the oil companies in the Middle East try to cut staff or reduce salaries to cut cost of oil and gas production. Besides, the job loss in such companies may force people to return to India, leading to socio-economic concerns.

Low crude oil price adversely impacts attractiveness of cleaner bio-fuels and recycling: India set a 5% ethanol blending target in petrol. However, with the fall in crude oil prices, ethanol, at Rs. 40-42 per litre, is costlier than the refinery-transfer price of petrol at Rs. 25.3 per litre. Similarly, use of re-cycled plastics will become less attractive to use when compared with virgin polymers such as PET resins as its prices have declined significantly. All these factors though may play out economically well but will pose a big challenge for the economy environmentally.

Private investment in E&P sector to witness slowdown; profitability of oil field services entities to be subdued: Cairn and RIL are the biggest private players in the E&P sector in India. Cairn is only focused in the E&P space in India while RIL has interests in domestic E&P and U.S. shale production. While ONGC and OIL were able to largely achieve similar net crude oil realisations due to reduced subsidy burden, private sector players have been negatively impacted due to the decline in crude oil and natural gas prices. Low oil and gas prices have adversely impacted the economics of exploration for the private players, which are directly dependent on crude prices. Though E&P concentrated players like Cairn have been significantly impacted, players with presence across the value chain like RIL have been able to mitigate some portion of the negative impact due to higher GRMs and improved petrochemicals margins. However, the decline in E&P activities may have a long-term impact on production in India due to delay in investments and material lag in investments and production coming onstream. In absence of material increase in production of

domestic oil, import dependence and consequent foreign exchange outgo burden may increase over the medium to long term.

Many oil services companies have witnessed significant pressure on their profitability as day rates for rig hiring and other equipment have been under pressure due to the decline in E&P activity. Recent renegotiations initiated by ONGC for day rates paid for Anchor Handling Tug Cum Supply Vessels (AHTSVs) and Platform Supply Vessels (PSVs) hired nearly an year ago is an indicator of the stress in the sector. ONGC is expecting a renegotiation of the contracted rates to nearly half of the originally contracted prices after getting similar rates in recently concluded contracts for similar equipment. Day rates for jack-up rigs deployed in India have fallen nearly 30% since December 2014 and the impact has been felt in the recently-concluded ONGC contracts. Jack-up rigs of 2015 built were chartered for ~$75,000 per day which used to fetch nearly ~$110,000-120,000 per day in contracts concluded in 2013 and 2014. Thus, due to low crude oil price environment, a number of oil field services companies in India are facing pressure on profitability, which may continue in the near to medium term.

13 Concluding Remarks

- Global crude oil prices are expected to remain at moderate levels in the near term because of high supplies, modest global demand and the decision of OPEC to defend its market share. Owing to the weak outlook for crude oil prices, the prices of the crude derivatives and alternate fuels like LNG and coal are also expected to remain subdued.

- With respect to macroeconomic parameters, in our base case scenario we expect India's current account deficit to widen to US$ 30 billion in FY2017 from US$ 21 billion in FY2016, partly on account of higher net oil imports. Following the deregulation of diesel price and other measures taken by the GoI, the petroleum subsidy bill would not pose much of a risk to the GoI's fiscal balances, even in a scenario of crude oil prices beyond US$55/bbl due to cap in subsidy burden of the GoI. In our base case scenario, if higher crude oil prices in INR terms are passed through to retail prices without any change in excise duty, state sales tax collections on POL products are expected to record an improved growth in FY2017. However, to contain inflationary pressures, if the GoI chooses to reverse some of the earlier excise hikes, its revenue receipt and fiscal deficit would be adversely impacted.

- The impact of low crude oil prices on PSU upstream companies would be limited as their crude oil realisations would be supported by low to moderate under-recovery sharing burden. However, the performance of private upstream companies may remain under pressure in line with low realisations of oil and gas. With the low oil price scenario upstream companies are undertaking various optimisation measures apart from scaling down of capex by private upstream companies. Due to capex cuts by E&P companies globally, the demand for oil field services is expected to remain subdued which may keep the profitability of oil field services at moderate levels.

- With regard to the downstream sector, soft crude oil prices are expected to push demand, which along with limited supply addition, could keep GRMs at healthy levels in the medium term. Any recovery in crude oil prices should lead to inventory gains, which may be partly offset by a decrease in crack spreads. For marketers of crude derivatives, low crude oil prices provide scope for higher margins on liquid fuels. Increase in crude oil prices will lead to increased working capital requirements and GURs levels, resulting in higher borrowings and interest burden.