13 December 2018

India Strategy

BSE Sensex: 35,390 | **S&P CNX: 10,792**

Crude turning from a headwind to a tailwind

Bodes well for Indian macros

Cooler oil provides a much-needed relief

Brent crude oil prices have corrected by 30% since Oct'18, while the INR has bounced back from the lows of INR74 per dollar to ~INR71.6 now. Petrol and diesel prices per liter have also come off from the peak of INR91 and 80.1 to INR75.8 and INR67.7, respectively, in two months in Mumbai. We believe that sustenance of oil prices at current levels can provide a welcome relief for India's external balance, sentiment and market valuations. In this note, we thus analyze implications of the oil price correction from a macro and micro perspective.

Macroeconomic impact: CAD, fiscal deficit and inflation

Crude oil prices have a serious bearing on the key macro variables like current account deficit (CAD), fiscal deficit and inflation. Overall, a USD10/barrel decrease in the price of crude oil pushes down the CAD by ~USD11b, which is equivalent to 0.4% of GDP. Ascertaining the impact of crude oil prices on fiscal deficit is complex as several factors are at play, primarily the level of pass-through of the change in crude oil prices to retail fuel products. Assuming a full pass-through of reduced oil prices to retail fuel prices, a USD10/barrel reduction in the price of crude oil would push down retail petrol and diesel prices by ~INR4/liter. Given the low weightage (2.38%) of fuel components in CPI, even a sharp change in the oil price does not result in significant movements in CPI inflation. However, it impacts WPI inflation numbers significantly: a 10% increase in crude oil price will lead to an impact of ~150-200bp on WPI (including indirect impact).

Sectoral earnings implications

The rise in crude oil prices has impacted the margins of sectors like Consumer/Auto/Cement in 1HFY19 and also raised the bogey of fuel price regulation for the OMCs, resulting in a sharp correction in the stock prices. Thus, cooling crude oil prices does provide a cushion for margins of companies in these sectors. It also precludes the need for any material price increase. Rising prices could have imperiled the steady but gradual demand recovery in the economy. Had crude prices sustained at USD85+, the possibility of further earnings downgrade for Consumer/Auto/OMCs/Cement sectors could not have been ruled out.

In this note, we look at the implications of crude price correction and other demand/cost variables for three sectors: (1) Oil & Gas, (2) Consumer and (3) Automobiles. These sectors are the direct beneficiaries of a deflationary crude oil price environment, in our view.

We believe that Financials also benefit indirectly from lower oil prices, given the cool off in bond yields, easing liquidity and potential lower inflation trajectory.

While OMCs do benefit from moderation in oil prices, we do not expect them to re-rate in the near term, given the imminent general elections in 1HCY19.

Key beneficiaries: OMCs, Pidilite, Asian Paints, HUL, GCPL, Maruti, Indigo, SH Kelkar and tyre companies.

Indirect Beneficiaries: Financials [Our top ideas: ICICI Bank, Federal Bank, HDFC, LIC HF, and MMFS]

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Macroeconomic impact of changes in crude oil prices

India's dependence on crude oil imports is well known. Almost ~85% of India's crude oil demand is imported, and thus, any change in the crude oil prices impacts the economy's various macroeconomic parameters. In this section, we analyze the impact of a change in crude oil prices on three major macroeconomic indicators, CAD, fiscal deficit and inflation.

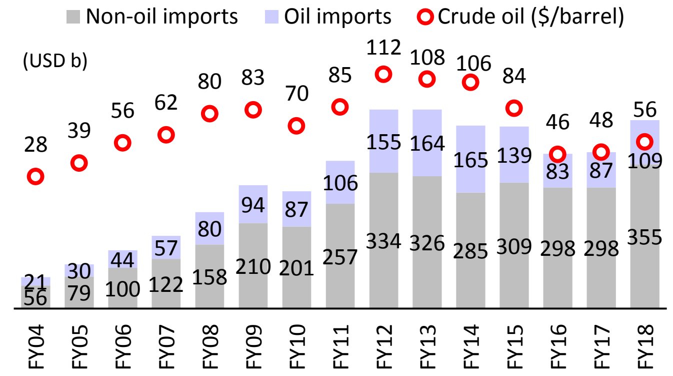
Exhibit 1: Summary table—Impact of change in crude oil prices on various macro parameters

	Absolute amount	Impact	Comments
Fiscal deficit	➢ Subsidies will change by ~INR180b ➢ A change of INR1 in excise duty = INR120-130b	0.09% of GDP 0.07% of GDP	➢ Assuming no change in retail prices of LPG and kerosene ➢ If the government provides some respite to petrol and diesel consumers
Current account deficit (CAD)	➢ Imports will change by ~$20b ➢ Exports will change by ~$6b ➢ Remittances will change by ~$3-4b	Net impact of 0.4% of GDP (~USD10-11b)	➢ Impact of higher/lower import bill will be partly offset by lower/higher oil exports and remittances
CPI inflation	➢ A change of $10/bbl in crude oil implies a change of ~INR4.1/liter in retail fuel	➢ Total impact of 20-25bp (equally spread between direct and indirect impact)	➢ Assuming full pass-through
WPI inflation	➢ Crude oil & natural gas and mineral oils account for ~10.4% of the Wholesale Price Index (WPI) basket	➢ A 10% hike in crude oil price will lead to an impact of about 150-200 bps on WPI	➢ Assuming full pass-through

1. Impact on Current Account Deficit (CAD): India imports ~85% of its crude oil requirements, making the country highly sensitive to movements in international crude oil prices. As seen in *Exhibit 2*, a high degree of correlation is visible between crude oil prices and India's net oil (crude and petroleum products) imports. The sharp fall in crude oil prices during FY13-16 helped India reduce its net oil import bill by ~50% during the same period, from USD103b in FY13 to USD53b in FY16. This (along with duty hikes and restrictions on gold imports) also helped bring down the CAD sharply during this period *(Exhibit 3)*.

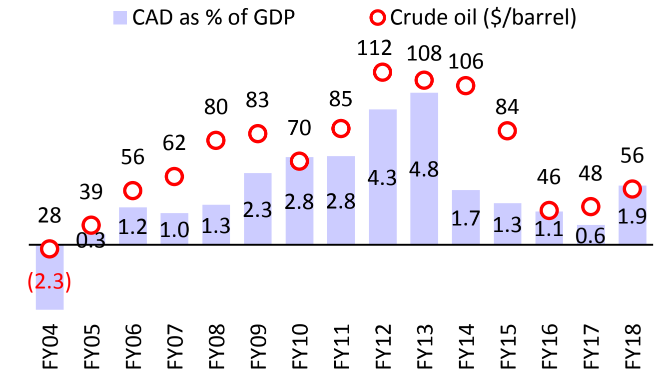
Our analysis suggests that a USD10/barrel increase in the price of crude oil pushes up the oil import bill by ~USD20b and increases oil export earnings by ~USD6b. Thus, the net oil import bill increases by ~USD14b. Besides, higher crude oil prices also result in an increase in remittances to India, given that ~50% of the remittance flow to India is from the heavily oil dependent Middle Eastern countries. Overall, a USD10/barrel increase/ decrease in the price of crude oil pushes up/down the CAD by ~USD11b, which is equivalent to 0.4% of the GDP.

Exhibit 2: Oil accounts for ~23% of India's imports



*(Imports-exports) Source: Commerce Ministry, Bloomberg, MOSL

Exhibit 3: Oil prices v/s Current Account Deficit



Source: RBI, Bloomberg, MOSL

2. Impact on fiscal deficit: The impact of crude oil prices on fiscal deficit is complicated and depends on several assumptions, primarily regarding the pass-through of change in crude oil prices to retail fuel products. The Center charges excise duty on fuel sales and provides for fuel subsidies. Movements in crude oil prices may affect excise collections and expenditure on fuel (LPG and kerosene) subsidies, thereby affecting the government's fiscal position. Our calculations suggest that an increase in the price of crude oil by USD10/barrel will push up the government's fuel subsidy bill by ~INR180b, assuming no change in the exchange rate *(Exhibit 4)*.

Further, the impact on tax collections would depend on the extent of pass-through of an increase in oil prices to retail fuel prices. There are two possible scenarios –

a. Assuming a full pass-through of increased oil prices to retail fuel prices, we estimate that a USD10/barrel increase in the crude oil price would push up retail fuel prices by ~INR4.1/liter (assuming no change in the exchange rate). This would not impact the Center's excise collections on fuel as the government charges a fixed amount in INR as excise duty; however, state governments stand to benefit from higher fuel prices, since they charge on an ad valorem basis.
b. Alternatively, if the Center chooses to cut excise duty to maintain retail fuel prices, INR1 change in excise duty would result in a change of ~INR120b in the Center's tax collections. Thus, a USD10/barrel increase in the price of crude oil, if countered by an excise duty cut to prevent any pass-through to the consumer, is expected to lead to a revenue loss of ~INR500b (or 0.3% of GDP). As crude oil prices fell in FY15-FY17, the government hiked excise duty, which led to a huge surge in excise tax collections *(Exhibit 5)*.

Overall, the impact of higher/lower crude oil prices would depend on the government's decision to cut/raise excise duty. In the worst case scenario (excise cut to prevent pass-through of an increase in oil prices), a USD10/barrel increase in crude oil prices would lead to a shortfall of ~INR700b (or 0.4% of GDP) on account of a higher subsidy burden and an excise duty cut. Given the sharp correction in crude oil prices over the last two months and the outcome of the state assembly elections held in Nov-Dec 2018, the government may choose to provide relief to consumers in the form of excise duty cuts.

Exhibit 4: Center's fuel subsidy bill moves in line with crude oil prices

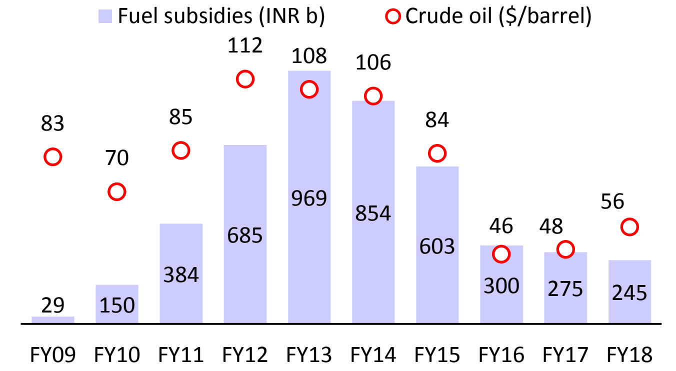
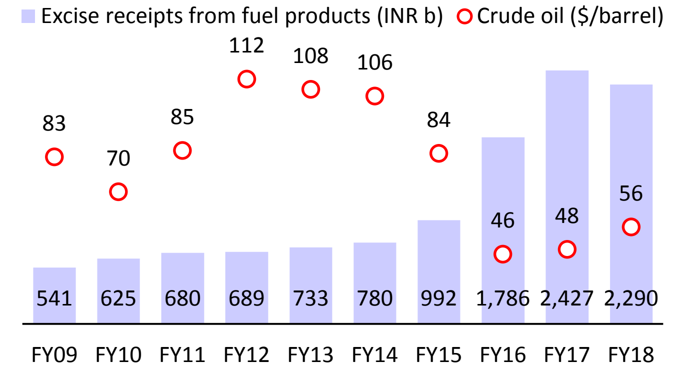


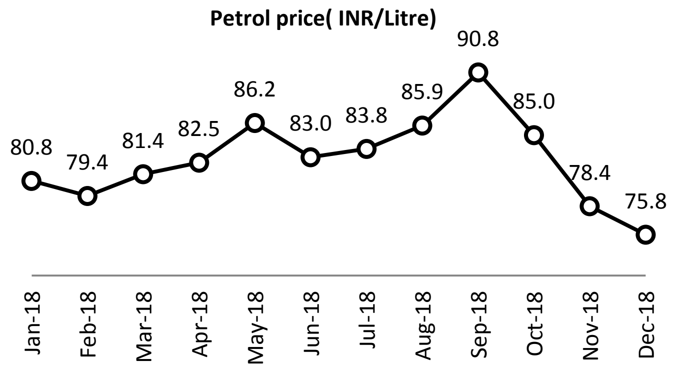
Exhibit 5: Excise receipts from fuel products increased in FY16-18 as lower oil prices were not passed on to consumers



Source: Union budget, PPAC, Bloomberg, MOSL

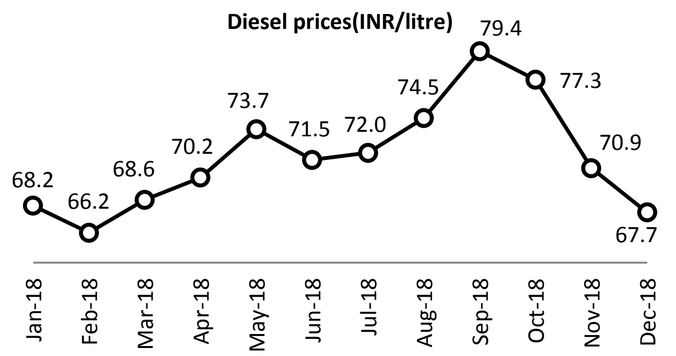
3. Impact on CPI-based inflation…: Petrol, diesel and lubricants, together, have a weight of just 2.38% in the Consumer Price Index (CPI). Given the low weightage, a sharp change in oil prices does not result in significant movements in the CPI inflation. Assuming a full pass-through of changes in oil prices to retail fuel prices, we estimate that a USD10/barrel increase in crude oil prices pushes up domestic retail fuel prices by INR4.1/liter, implying 4-5% YoY increase. It, thus, implies a direct impact of 10-12bp in the headline CPI inflation. Assuming an equivalent indirect impact, headline CPI inflation will move up by 20-25bp. If the higher oil prices, however, are not passed through to the end consumer, then it will have no impact on CPI inflation.

Exhibit 6: Petrol prices have tapered off lately



Mumbai Prices, Source: MOSL, Bloomberg

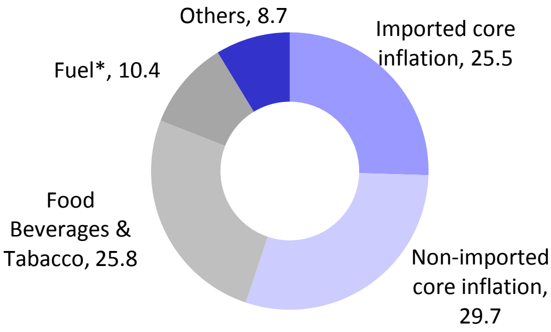
Exhibit 7: …as well as diesel



Mumbai Prices, Source: MOSL, Bloomberg

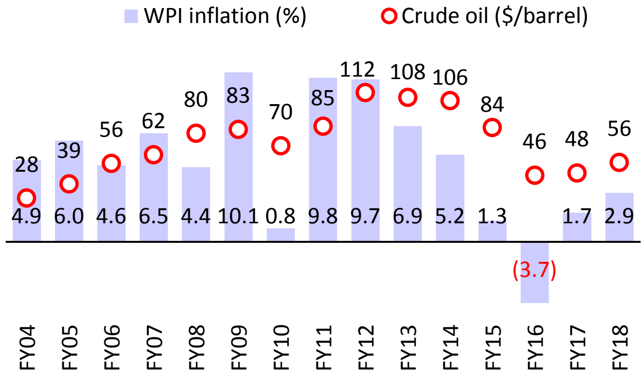
…and WPI-based inflation: Crude oil & natural gas and mineral oils, however, account for ~10.4% of the Wholesale Price Index (WPI) basket *(Exhibit 8)*. Further, since non-fuel imported items have a large share in WPI; there is also a significant indirect impact as higher crude oil prices lead to weaker INR. As seen in *exhibit 9,* a rise/fall in crude oil prices is generally associated with similar movements in headline WPI-inflation – implying a reasonable degree of correlation between the two. Thus, a 10% hike in crude oil price will lead to an impact of about 150-200 bps on WPI (including indirect impact).

Exhibit 8: Mineral oils and crude oil, together account for ~10.1% of WPI inflation basket



*Crude oil & Natural gas and fuel products

Exhibit 9: High correlation between crude oil prices and WPI inflation



Source: MOSPI, Bloomberg, MOSL

Strategy: Reversal of macro fortunes?

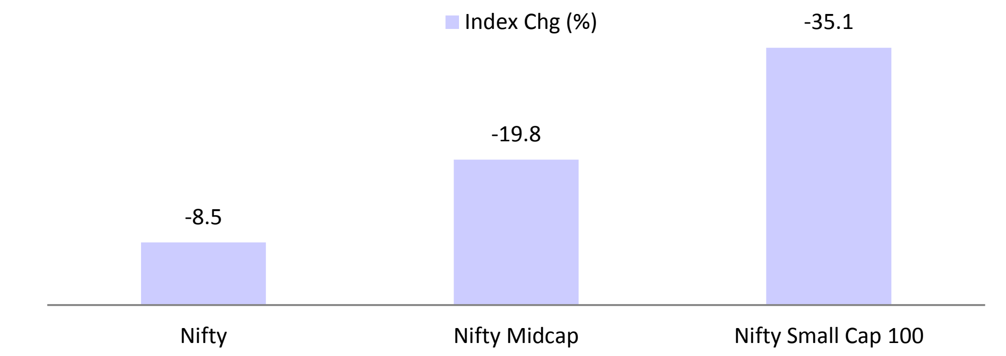
Improves the India narrative; augurs well for flows & valuations

Oil price correction a timely and welcome relief for Indian Macros

CY16 and CY17 would be characterized as years where India had a combination of good macros (low inflation, twin deficits in control and stable currency) and weak micros (weak earnings growth). CY18 was turning out to be an exact opposite of previous two years with macros turning decisively adverse (higher oil prices, depreciating currency, rising twin deficits) but improving micros (earnings growth has picked up to 12% for Nifty in 1HFY19).

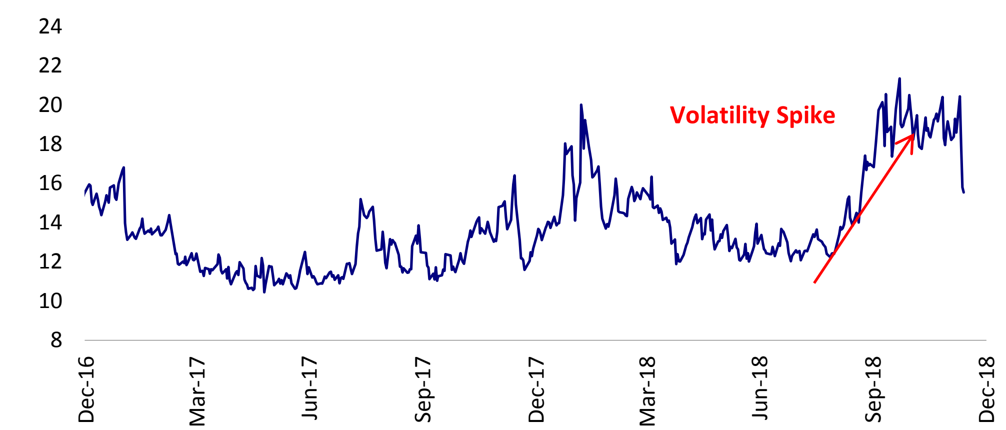
Adverse macro variables impacted the valuations and market returns in CY18 with Nifty, Nifty Midcap and Nifty Small Cap 100 correcting by -8.5%, -19.8% and -35.1% from its peak since Jan-18. Unlike CY17, CY18 has turned out to be a volatile year with VIX rising. It impacted the FII flows too with an outflow of US$ 0.6 b over Jan'18-Oct'18. Needless to say, the deterioration in macros also impacted the micros to some extent with continued downgrades in earnings.

Exhibit 10: Nifty has corrected by 8.5%, whereas mid cap and small cap have corrected by 19.8% and 35.1% from peak



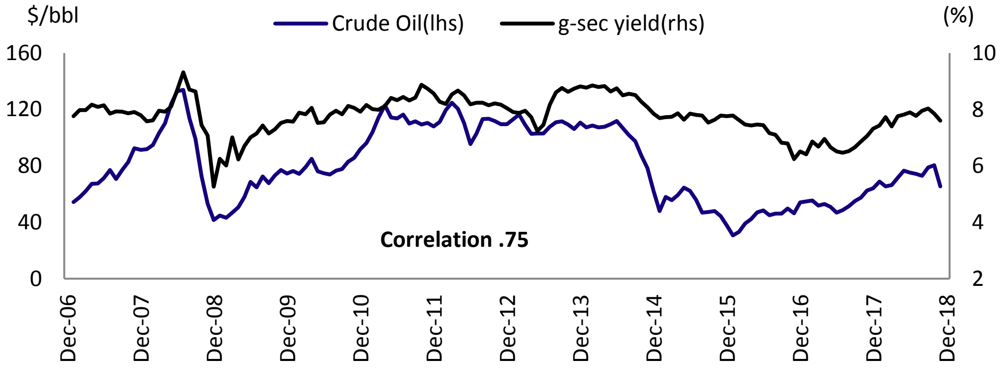
Source: Bloomberg, MOSL

Exhibit 11: Volatility has seen sharp uptick in last few months and has seen some moderation recently



Source: Bloomberg, MOSL

Exhibit 12: Crude oil prices share strong positive correlation with 10 year g-sec



Source: Company, Bloomberg, MOSL

Thus, the recent moderation in brent crude oil prices could not have come at a better time. The near US$30 pullback in brent oil price has resulted in sharp bounce-back in currency (appreciated from INR 74 to INR 71.6 in two months). Given the positive implications from inflation, twin deficits and external balance perspective, it has also helped in easing off ten year G-sec yields which corrected from 8.23% in Oct'18 to 7.41% now.

Comfortable macros, will, over a period of time, feed into the micros in our view. Lower fuel prices can provide a boost to consumption in the economy. It will also have positive margin implications for companies in Consumer Staples, Consumer Discretionary, Auto, OMC's and Cements. Overall, the core domestic oriented sectors will benefit from this easing off macro concerns.

OPEC decision to cut production hasn't altered the trajectory of Crude oil prices

In the recent OPEC meeting, OPEC+ decided to cut 1.2mnbopd of production. OPEC decided to contribute 0.8mnbopd, while the rest would come in from non-OPEC countries. Iran has been exempted from contributing to the cuts.

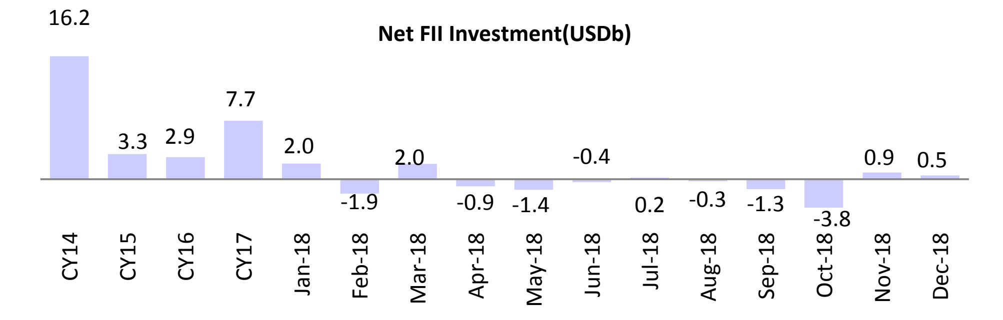
Dissensions among the OPEC members has widened greatly with Qatar pulling out of OPEC with effect from Jan'19. It remains to be seen how individual countries adhere to the production cuts. So far, although as a group, the data suggests strict compliance by OPEC+, details reveal an entirely different picture.

The production cut hasn't altered the trajectory of crude oil prices yet. Our Oil & Gas team expects the oil prices to range in US$ 60-70/barrel.

Stable macros raises India's standing in emerging market pack; +ve for flows

The other important positive pertains to flows and currency. Rising fuel prices and depreciating currency had hurt the standing of India relatively vs. other emerging markets. Indian currency was one of the worst performing currency in the emerging market pack with a depreciation of 8.6% till Oct'18. Improving macros help India stand out in an overall emerging market pack. We expect the stable macros now to augur well for India as far as allocations of global portfolio flows to India is concerned. In-fact, November'18 saw FII (Foreign Institutional Investor) inflows after three consecutive months of outflows wherein FIIs sold US$5.4b of Indian equities. Domestic equity flows meanwhile stayed resilient.

Exhibit 13: FIIs turned net buyers in Nov'18 after three consecutive months of selling



Source: Company, MOSL

Lower oil prices will also have positive repercussion for system liquidity given the easing of pressure on external balance.

Crude in USD50-65/barrel is India's sweet-spot

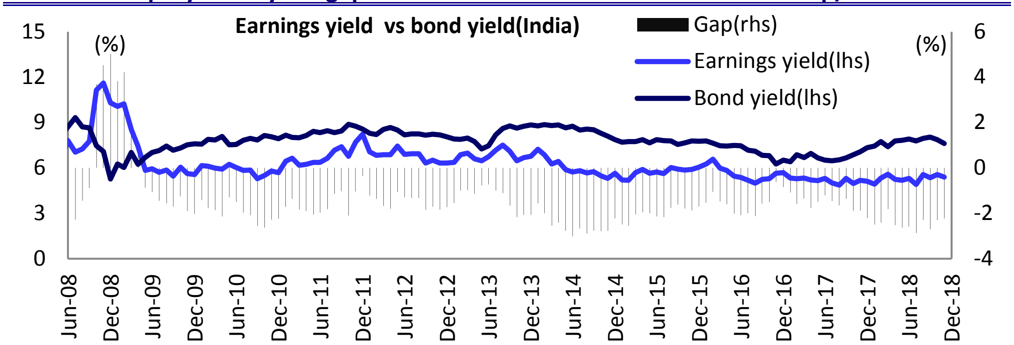
Lower crude oil prices augur well for India given its implications for external balances and several other macro variables as discussed above. However, we note that, crash in crude oil prices brings multiple factors at play. Severe crash in crude prices, like in CY16, when brent had fallen to ~US30/barrel, impacts global growth and has ramifications for emerging market sentiments and flows as well. Secondly, crash in crude prices underscore weak global demand and growth. Deceleration in global GDP growth invariably also implies dip in other commodity prices too. This has implications for corporate earnings in India as earnings of commodity/export oriented sectors like Oil & Gas, Metals take a hit. Lower global economic growth also implies weak earnings growth for Indian IT sector. Thus significant crash in crude oil prices (and appreciation in local currency) does not necessarily imply positive implications for Indian equity markets. We believe USD 50-65 is India's sweet spot as far as brent crude prices are concerned. At these levels of brent oil prices, our calculations suggest comfortable external balance

Equity valuations get a cushion; Bond-equity yield gap moderates

Higher oil prices coupled with depreciating currency and tight liquidity resulted in hardening of bond yields. At 8.2% G-sec yield, the gap between equity and bond yields had elevated to almost 3%. Since October, post the moderation in oil prices, the ten year G-sec yields have fallen to 7.41% and the bond-equity yield gap is at a reasonable 1.96% now.

While there is no one to one direct co-relation between equity valuations and crude oil prices, we believe moderate oil prices indirectly help the equity valuations and sentiments as concerns on Indian macros recede.

Exhibit 14: Equity bond yield gap has moderated to 1.96% from 3.3% in Sep/Oct



Source: Company, MOSL

Oil & Gas

What happened and why: Oil price correction can be attributed to host of factors, including (a) increase in production of 1.2mnbopd by OPEC since May'18, (b) global confidence in OPEC's spare capacity, which was put to test for the first time, (c) increased production from the US, (d) waivers to four large importers for import of Iranian crude, and (e) an expected slowdown in the global economy.

Refining and marketing margins: Refiners are basically converters and face the vagaries of demand and supply issues on both sides separately, products as well as crude. The recent rally in oil prices was more dependent on supply than demand, and therefore, refining margins did not keep pace with oil prices. In fact, over the past few weeks, we have been witnessing a slowdown in consumption growth, which is reflected in weaker crack spreads and refining margins. It is difficult to comment on whether the crude oil price decline will impact refining margins. Our assumption is that we would revert to a long-term average of USD6/bbl of Singapore GRM. Ceteris Paribus, oil price changes the fuel consumption and losses that a refinery witnesses. Impact of USD10/bbl change in oil price has been shown in Exhibit 18. Decline in oil prices has already helped the Oil Marketing Companies to normalize their marketing margins. However, these would also be accompanied by inventory losses in the quarter.

Realization of upstream companies would come down: We have already assumed an average Brent of USD70/bbl for FY20. We estimate that USD10/bbl of change in oil price would change the EPS of ONGC and Oil India by 13% and 23%, respectively, in FY20. However, note that USD60-70/bbl is a sweet spot for the company where we would not expect any levy of subsidy from the government. A change of just USD5/bbl in oil price, results in a change of ~INR90b in the gross under-recovery for FY20.

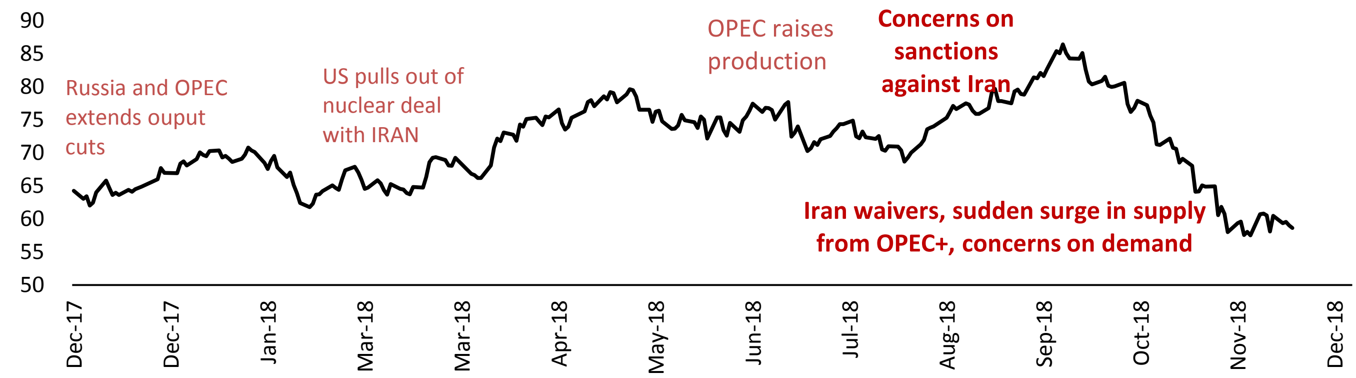
Petrochemical deltas: Product realizations would come off along with oil prices. Lower petrochemical prices would increase demand and product margins. Additionally, naphtha and LNG prices would also decline, which would benefit petrochemical margins. However, any slowdown in the global economy would negate expectations of an increase in product margins. To make things worse, we have seen Henry Hub prices sky-rocket to ~USD4.6/mmBtu in anticipation of a severe winter. This would adversely affect any savings from ethane imports of RIL from the US.

Gas consumption would remain unaffected largely: Along with oil prices, oil-linked LNG prices would also come off, but they would be distorted by LNG's supply and demand dynamics. Despite the decline in auto fuel prices, we continue to believe that CNG would provide a cheaper alternative. Industrial adoption of LNG will continue to grow as we expect LNG prices to also come off in tandem with oil-linked polluting fuels.

What we like?

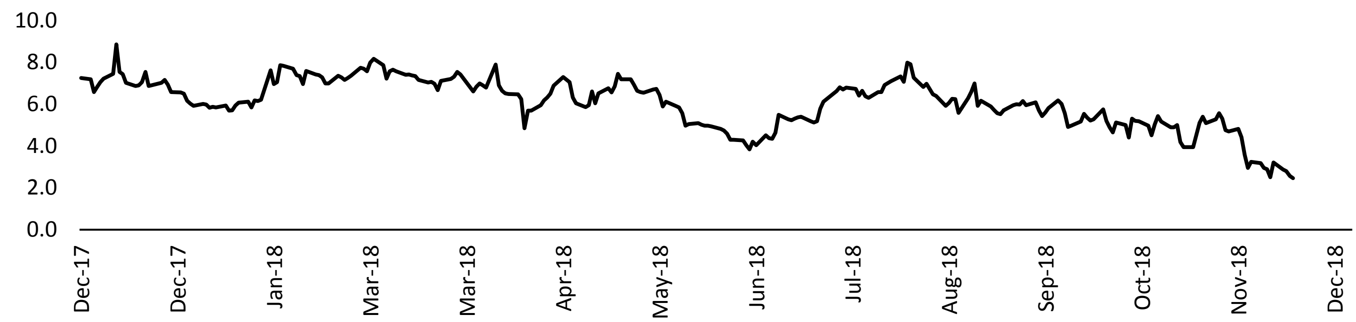
We continue to prefer gas stocks banking upon the strong focus on reducing pollution. Expansion of city gas distribution to more areas, low LNG prices would benefit stocks like Petronet and CGDs. Petronet and IGL remain our top picks. IGL would benefit from inter-city travel, more restrictions on diesel vehicles, implementation of BS-VI, green corridors and availability of domestic gas. Petronet would benefit from Kochi-Mangalore pipeline completion and Dahej expansion from 15mmtpa to 17.5mmtpa early CY19 and subsequently to 19.5mmtpa in another two years. Lack of credible competition would also aid Petronet in benefiting from the supply-demand gap of natural gas in the country.

Exhibit 15: Sharp decline in oil prices, Brent (USD/bbl)



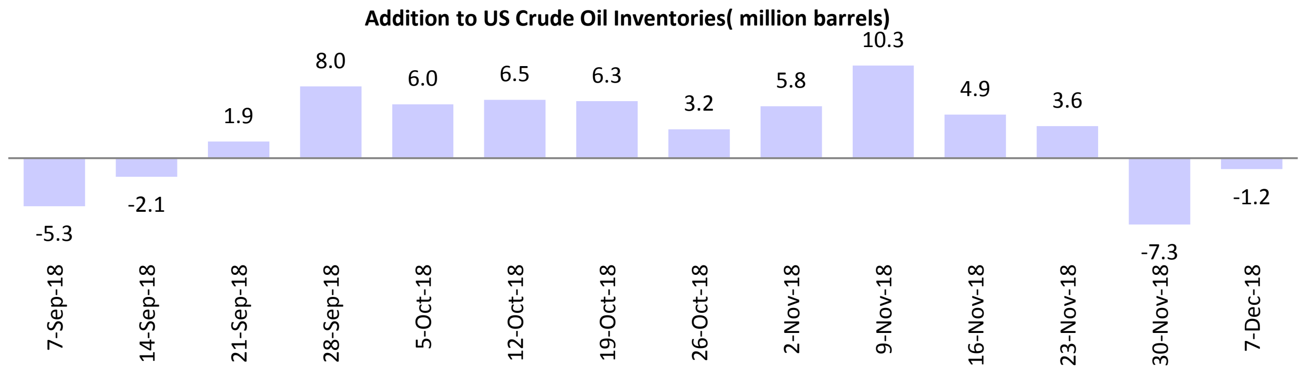
Source: Companies, MOSL Research

Exhibit 16: Recent oil rally was not demand led, as seen in the weakness of GRMs(Singapore GRM)



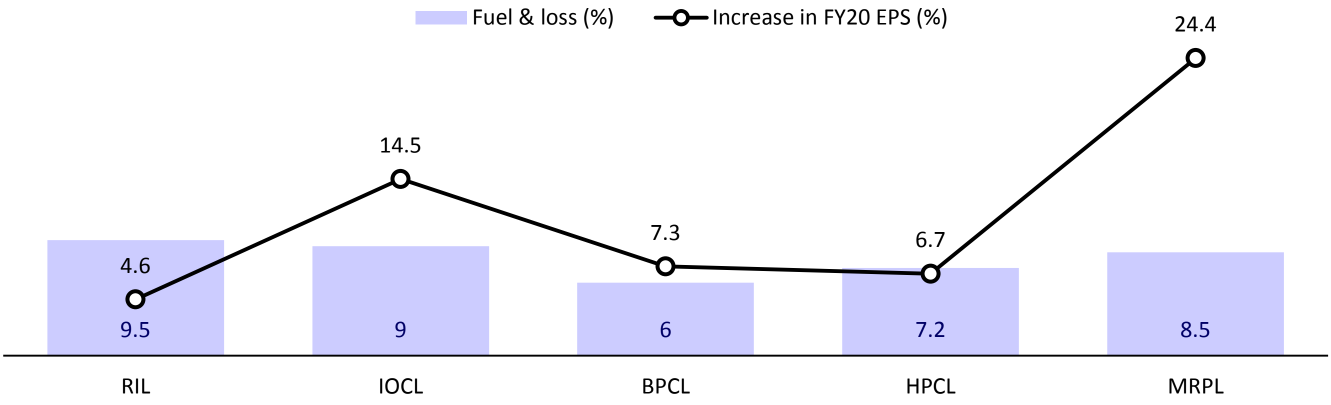
Source: Companies, MOSL Research

Exhibit 17: US crude oil inventories decreased by 1.208 million barrels (forecast of 2.990 million barrels) suggesting weak demand



Source: Companies, MOSL Research

Exhibit 18: Impact of USD10/bbl on refining margins and EPS of refiners



Source: Companies, MOSL Research

Exhibit 19: Sensitivity of EBITDA and EPS to Oil Prices for OMCs & Oil Producers

Oil Prices in FY20	USD60/bbl		USD70/bbl		USD80/bbl	
Company	EBITDA	EPS	EBITDA	EPS	EBITDA	EPS
OINL	44.9	23.7	57	30.8	69	37.9
ONGC	867	28.7	949	33	1,032	37.4
RIL	996	90.3	961	86.3	925	82.3
IOCL	374	19.2	339	16.7	305	14.3
BPCL	160	45.8	150	42.7	141	39.6
HPCL	108	46.6	101	43.7	94	40.8
MRPL	47	14	40	11.3	33	8.5

EBITDA in INR billion, Source: Companies, MOSL Research

Consumer

Pidilite and Asian Paints to be key beneficiaries

- The ongoing crude price correction, if sustained, is a relief for a few consumer companies from a point of view of margins. We believe the same will reflect in gross margins of consumer companies with a lag of a quarter or two, depending on the inventory and forward covers.
- In our coverage universe, Pidilite is one of the biggest beneficiaries of the crude price correction. Vinyl Acetate Monomer (VAM) is a key raw material for Pidilite, which is linked to crude oil. Asian Paints is another key beneficiary as Titanium Di-Oxide (TiO_2)—its key raw material—is linked directly to crude. Solvents and resins are also directly impacted by crude pricing. Even monomers are crude-based, but monomer pricing is more dependent on global demand/supply. The gradual increase in water-based paints (now over 50% of total), however, means that crude correlation has reduced to some extent compared to the previous decade.
- An observation of the last complete round of crude price inflation and deflation (a period of 18 quarters or four and half years) indicates that Pidilite's gross margins have the highest inverse correlation (as high as 0.8) to crude price movement. Even on EBITDA margins, correlation for Pidilite is reasonably significant at 0.66. In case of Asian Paints, material costs are more significant and so are the crude dependent material costs where demand/ supply situation plays as big a part as crude price fall. Thus, the inverse correlation of Gross and EBITDA margin at 0.46 and 0.48, respectively, while reasonable, are not as high as that of Pidilite.
- Correction in crude and crude derivatives is also positive for FMCG companies across the board given the implications it has on packaging costs and logistics costs, but it is difficult to determine its extent. In fact, in our coverage universe of stocks, excluding PIDI and APNT, inverse correlation to Gross and EBITDA margins is relatively low at 0.31 and 0.33, respectively. Our consumer universe also excludes FCON, PARAG, ITC, UBL and UNSP as we believe that usage of crude for these companies is limited to only logistics cost, and thus, is not relevant.
- Adspend intensity does not seem to vary significantly based on savings pertaining to crude-related costs over this period. This is true for APNT, PIDI and for the rest of the consumer pack put together. However, consumer companies, particularly APNT and PIDI do seem to pass on the benefits, either through realization reduction or promotions during certain short periods of the deflationary period. This is particularly true of APNT over a more sustained period, extending from 1QFY16 to 2QFY17. Paints, unlike adhesives, is an oligopoly, and therefore APNT, unlike PIDI, feels the need to pass on the benefits more.

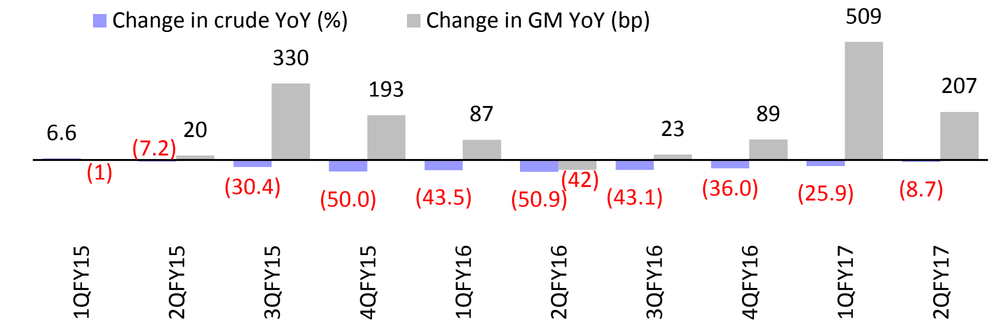
Extent of benefits for Pidilite and APNT

- Before we estimate the possible benefits it is important to note that crude prices YTD are already at USD73.9/bbl. Even if we assume crude at USD65/bbl for the remainder of the year, the FY19 average will be at USD71/bbl levels, well above the FY18 average of USD57.6/bbl and FY17 average of 49. Thus, crude prices need to decline greatly for APNT and PIDI to register huge gains.

- As part of the exercise we are assuming that:
  a) These companies will not pass on the crude cost reduction, and will thus, gain completely on margins. This may not pan out as they may take a price reduction. Nevertheless, it is also true that demand environment unlike the previous steep crude deflation between June'14-Jan'16, is still healthy, and if it remains so the passing on of benefits may not be huge. Companies may, however, use the gains to increase marketing and distribution spends.
  b) Some key raw material data given by both the companies are only for standalone numbers (Consolidated numbers are estimated) and even those detailed disclosures has stopped.
  c) There will be additional savings on Other Operating expenses (logistics costs, manufacturing costs, etc.), which are difficult to assume as we do not know the proportion of crude in these costs… and that is true for most companies, not just APNT and PIDI.
  d) Other points to note are:
     1. There may not be any major correction in non-crude raw materials unlike some of the previous cycles.
     2. An inflationary environment is usually good for certain sectors (Adhesives and Paints, in particular) to see some conversion from unorganized players. The pace of shift was even accelerated post GST implementation. With the current correction, the pace of shift might slow down.
  e) If we assume crude at USD60/bbl for the rest of the year and for full-year FY20, then for both APNT and PIDI, our Adjusted PAT estimates are likely to increase by 9-10% for FY19 and by 15-20% for FY20.
  f) If we assume crude at USD70/bbl for the rest of the year and for full-year FY20, then for both APNT and PIDI, our Adjusted PAT estimates are not likely to be impacted much and should increase by only 3-4% for FY19. There will be no change to our Adjusted PAT estimates for FY20 as our existing calculations are based on the assumption that crude will be at USD70/barrel.
  g) If we assume crude at USD80/bbl for the rest of the year and for full-year FY20, then for APNT and PIDI, our Adjusted PAT estimates are likely to decrease by 2-3% for FY19 and by 15-20% for FY20.

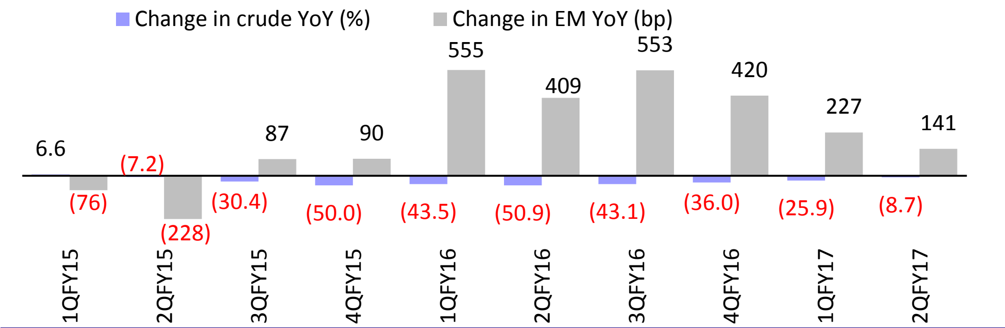
Relationship between APNT's margins and crude price during the last 18 quarters of inflationary and deflationary period:

Exhibit 20: Movement between APNT Gross margins and crude during the deflationary period



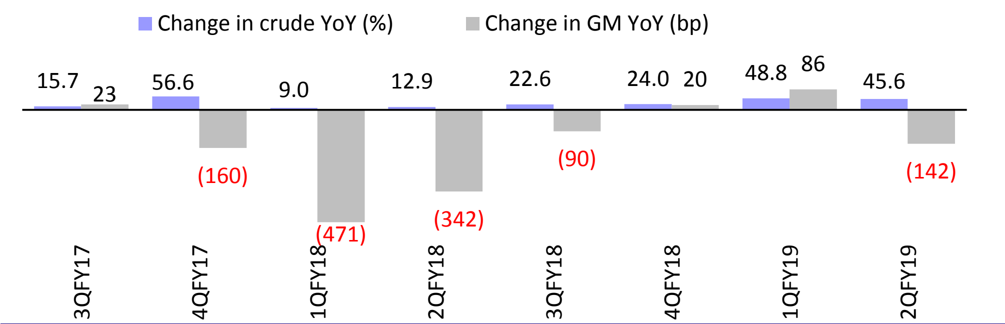
Source: Company, MOSL

Exhibit 21: Movement between APNT EBITDA margins and crude during the deflationary period



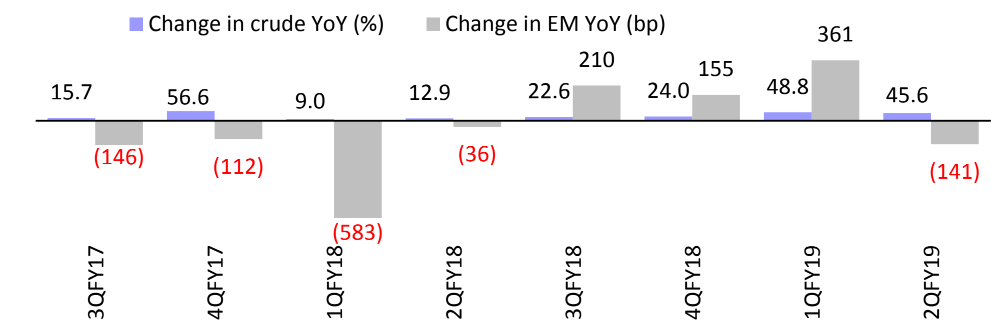
Source: Company, MOSL

Exhibit 22: Movement between APNT Gross margins and crude during the inflationary period



Source: Company, MOSL

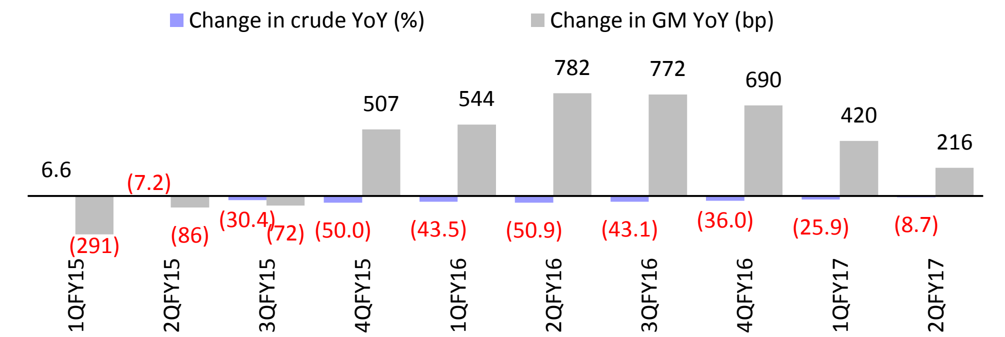
Exhibit 23: Movement between APNT EBITDA margins and crude during the inflationary period



Source: Company, MOSL

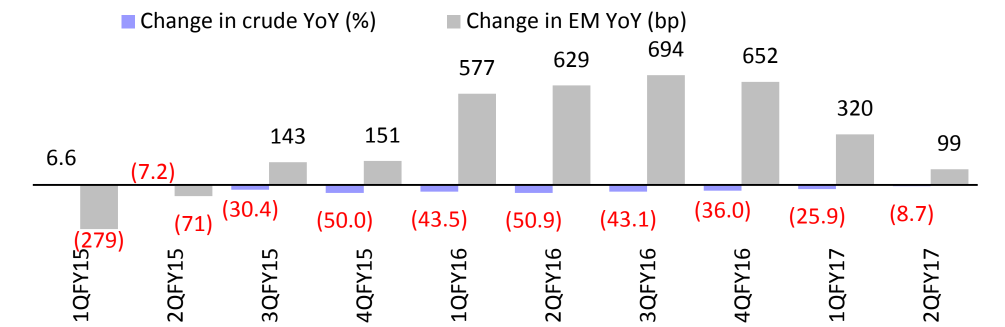
Relationship between PIDI's margins and crude price during the last 18 quarters of inflationary and deflationary period:

Exhibit 24: Movement between PIDI's Gross margins and crude during the deflationary period



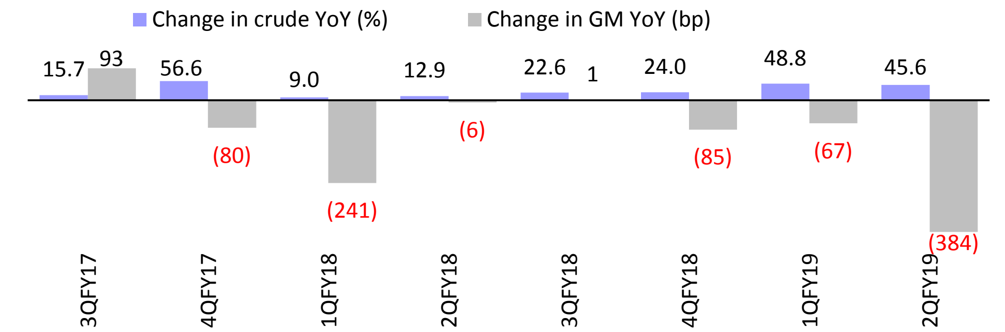
Source: Company, MOSL

Exhibit 25: Movement between PIDI's EBITDA margins and crude during the deflationary period



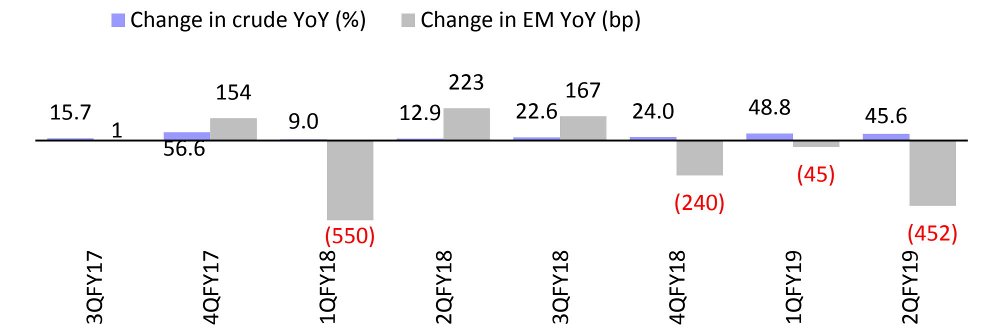
Source: Company, MOSL

Exhibit 26: Movement between PIDI's Gross margins and crude during the inflationary period



Source: Company, MOSL

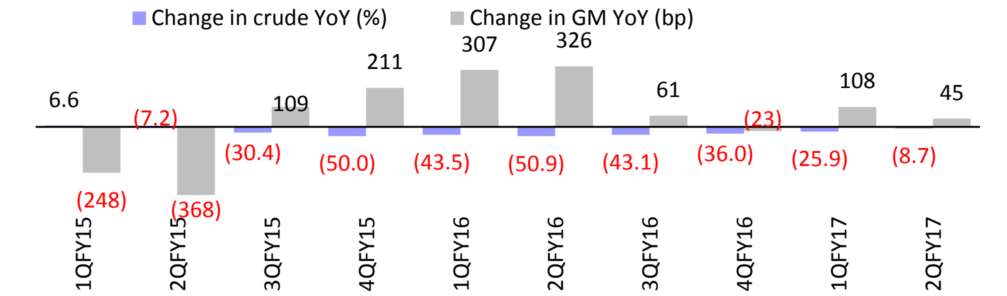
Exhibit 27: Movement between PIDI's EBITDA margins and crude during the inflationary period



Source: Company, MOSL

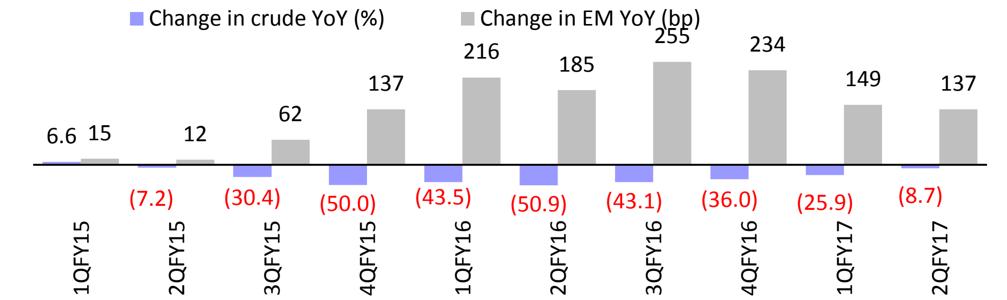
- Relationship between our consumer universe margins and crude prices during the last 18 quarters of inflationary and deflationary period. Our consumer universe excludes FCON, PARAG, ITC, UB, UNSP, APNT and PIDI. We have excluded FCON, PARAG, ITC, UB and UNSP as the usage of crude for these companies is limited to logistics cost only and therefore not relevant for this exercise.

Exhibit 28: Movement between our consumer universe Gross margins and crude during the deflationary period



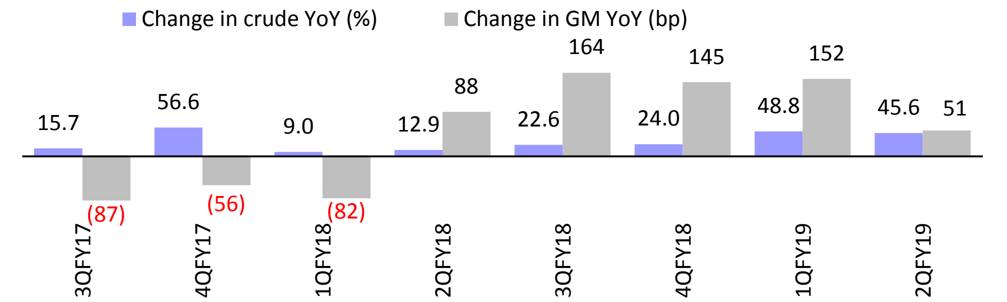
Source: Company, MOSL

Exhibit 29: Movement between our consumer universe EBITDA margins and crude during the deflationary period



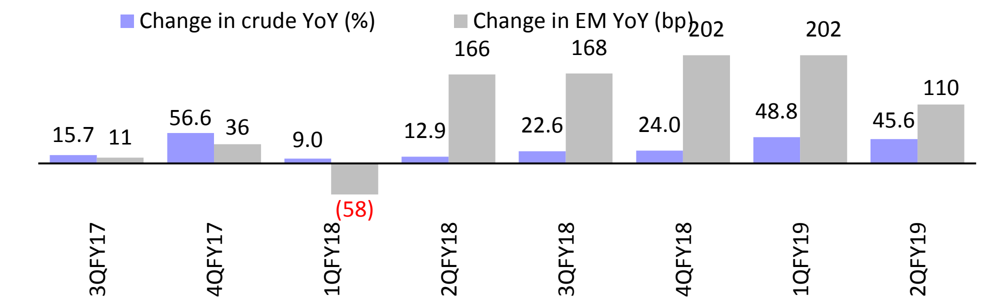
Source: Company, MOSL

Exhibit 30: Movement between our consumer universe Gross margins and crude during the inflationary period



Source: Company, MOSL

Exhibit 31: Movement between our consumer universe EBITDA margins and crude during the inflationary period



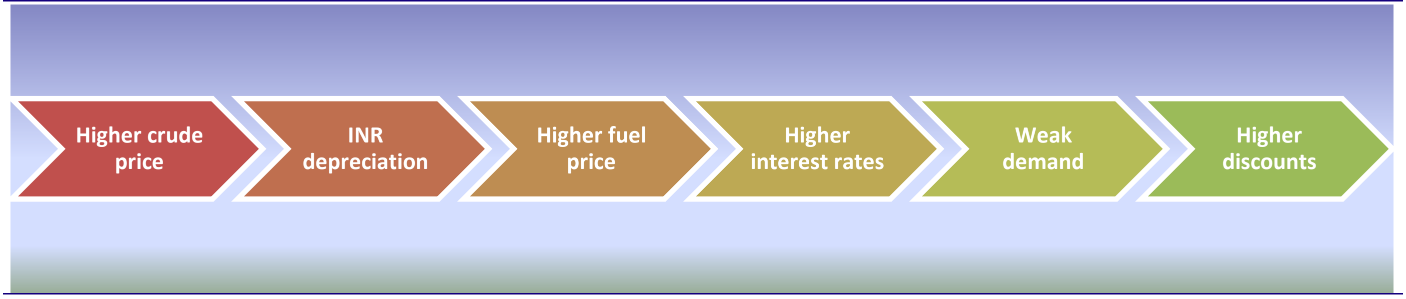
Source: Company, MOSL

Automobile

Crude volatility influences PV demand while it doesn't influence 2W/CV demand materially

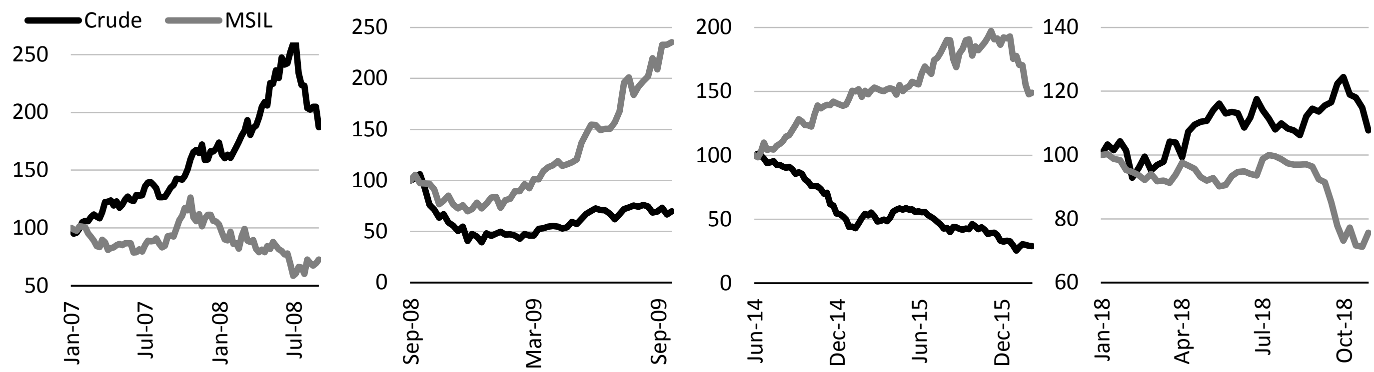
- Volatility in crude prices have influenced PV demand, however, impact of the same on 2Ws and CV demand remains negligible. For CVs, any increase/decrease in fuel price remains a pass-through.
- After remaining benign over Jan'15 to Jun'17 (USD45), oil prices increased ~62% from Jun'17 to early Oct'18. However, from its recent peak of USD84/bbl, crude oil price has corrected by ~30%.
- Domestic PV industry – and also MSIL – is highly influenced by the crude cycle, both in terms of demand and profitability. Inflationary crude prices trigger a chain reaction, ultimately resulting in weak earnings and under-performance of the stock.
- This was the first inflationary period under the Fuel Price Deregulation era, which resulted in near real-time transmission of higher crude prices (up 62% from lows of Jun'17) to fuel prices (petrol prices up 25%, diesel up 38%), denting auto consumer sentiment.
- Hence, impact of higher crude prices was realized far earlier on PV demand than in the past, culminating in a 3-4% decline in the domestic PV industry volumes over the last four months.

Exhibit 32: MSIL's performance is influenced by crude oil, albeit with a lag



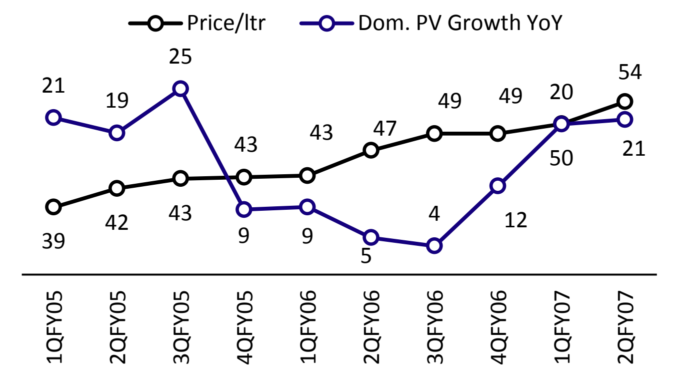
Source: Bloomberg, MOSL

Exhibit 33: MSIL's performance is influenced by crude oil, albeit with a lag



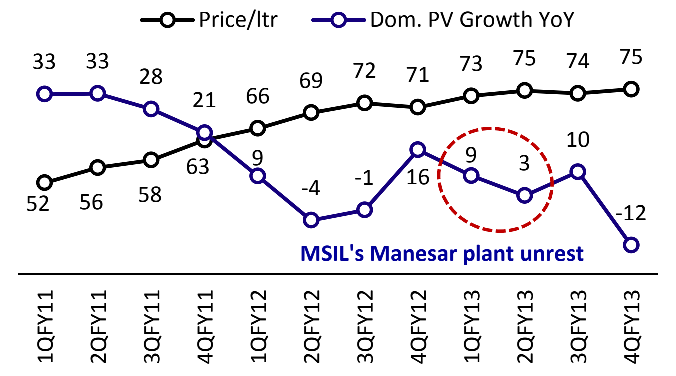
Source: Bloomberg, MOSL

Exhibit 34: Trend in petrol price and demand growth cycle-1



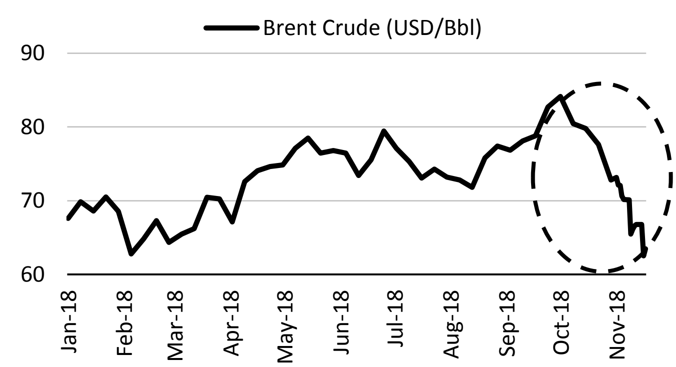
Source: SIAM, Bloomberg, MOSL

Exhibit 35: Trend in petrol price and demand growth cycle-2



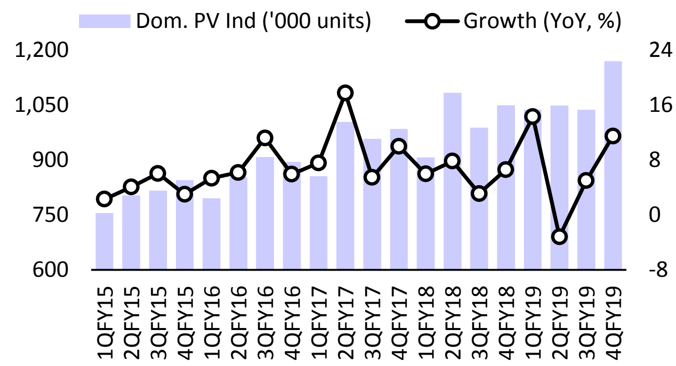
Source: SIAM, Bloomberg, MOSL

Exhibit 36: Oil inflationary cycle on a downtrend



Source: Bloomberg, MOSL

Exhibit 37: PV demand to recover with a lag



Source: SIAM, MOSL

MSIL's consolidated EPS sensitivity to INR/JPY and volume growth

- Volatility in currency materially influences MSIL's earnings. Hence, any significant increase/decrease in crude price would have its impact on currency, which in turn can influence or drive MSIL's earnings.

Exhibit 38: MSIL's stock price performance is highly correlated with crude oil prices (Indexed)

	Consol EPS (335 base case)	Volume Growth %					
Currency change(Rupee/Yen)	Crude(USD/barrel)	-5	0	5	8	10.8	15
0.701	77.1	253	273	294	307	318	336
0.684	75.2	259	281	302	315	327	345
0.667	73.4	266	288	309	323	**335**	353
0.651	71.6	272	294	317	330	343	361
0.634	69.8	278	301	324	338	350	370
0.618	68.0	284	308	331	345	358	377
0.588	64.6	296	320	344	359	372	393

Source: MOSL, Bloomberg:

NOTES

Explanation of Investment Rating	
Investment Rating	**Expected return (over 12-month)**
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NEUTRAL	> - 10 % to 15%
UNDER REVIEW	Rating may undergo a change
NOT RATED	We have forward looking estimates for the stock but we refrain from assigning recommendation

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