

Impact of Slashing Oil Prices on the Natural Gas Market

Husain Ahmad

Abstract The epitome of this chapter is to discuss the challenges faced by natural gas due to proverbial freefall in the prices of crude oil during the year 2014–15. This chapter also includes a recapitulation of the key drivers that has slumped the global crude oil prices. Further, it discusses about the macroeconomic and financial propositions and impact on Indian economy due to plummeting oil prices and thereof.

Keywords Natural gas • Crude oil slump • Factors affecting gas prices • Challenges ahead

1 Natural Gas: Background in Indian Perspective

The global energy landscape is presently undergoing considerable changes. Nearly all countries are significantly affected by growth in the oil market, either as a producer or consumer or may be both. Efficient, unswerving and competitively determined price of energy supplies which are rudiments for boosting fiscal development. For any emerging nation, the policy to obtain and meet the energy supplies and energy developments are the crucial ingredients of the overall economic strategy. Proficient use of resources and long-standing sustainability in its utilization is of key significance for economic development. Sustainability would take into consideration not only existing natural resources but also to ensure that the related ecological and social aspects meets the priority requirements of the economy. Concurrent and synchronized action is, thus, needed to make certain that the interim concerns do not detract the nation away from the long-term goals.

H. Ahmad (✉)
EPIC (Engineering, Procurement,
Installation and Commissioning) Company, Doha, Qatar
e-mail: husainsinbox@gmail.com

Given India's growth, its fuel requirements are likely to expand at a substantial rate. The requirement for energy in India, the economic augmentation, and the resulting prosperity of the country have amplified substantially in the recent years. For India, crude oil forms an important proportion of the country's energy basket, next only to coal and natural gas. Given 17% of the world's population and 2.4% of globe's geographical area, India has meager known liquid fuel reserves. The per capita energy consumption for India is anticipated to be of a very small amount, i.e. ~530 kg of oil equivalent (Kgoe) in contrast of the world's average of 1800 Kgoe (Ahmad 2011).

Natural gas is cleanest burning fuel among the competitive fuels, enhancing its desirability as a fuel choice in a carbon-constrained environment. Natural gas is rising as the most significant energy source having huge potentials for the future. The profusion of natural gas, globally as well as nationally, coupled with its green soundness and manifold applications across varied industries, entails that natural gas is going to register and mark a gradually more vital role in meeting the demand for energy across the globe (Ahmad 2011).

In India, natural gas has picked up as a fuel of significance in the last few decades when Indian Government started to set up separate public sector, undertaking to be in charge the gas distribution business. Until that time, ONGC and OIL were up keeping production as well as natural gas distribution. Since last ten years, natural gas started discovering various usages as environmental friendly fuel and as a rattling efficient fuel. The demand for transport fuels in India is growing by leaps and bounds owing to the surge in vehicular population. Transport sector accounts for almost all the petrol, and about 60% of the diesel is consumed in India (Ahmad 2011). Hence, the deployment of natural gas in the form of compressed natural gas (natural gas compressed to high pressure to make it compatible for the usage in automotive sector) would serve as a much cheaper and highly cost-effective fuel for automotive purpose, resulting in huge saving and thereof, thus helping India to bridge the fiscal deficit.

2 Environmental and Safety Aspects

Demystifying, the conundrum arising out of the usage of natural gas particularly on safety aspect, Natural gas is a safer fuel owing to its inherent characteristics which takes into account the low-specific gravity of fuel. In other words, it means natural gas is lighter than air and in the event of leakage, natural gas will rise and escape into the atmosphere. Hence, it does not pose any threat of fire or explosion. Another vital innate feature of natural gas is its high autoignition temperature which further minimizes the hazards (Ahmad 2011).

Furthermore, global warming has intensified the debate on various energy sources and their usage across the globe. Natural gas is the cleanest of all the fossil fuels which mainly comprises of methane. The key end products produced by burning natural gas are carbon dioxide and water vapor. Coal and oil comprises of

much more intricate molecules, with a higher carbon ratio and higher nitrogen and sulfur contents. This implies that when burnt, coal and oil release higher levels of hazardous emissions, together with a higher ratio of carbon emissions, nitrogen oxides and sulfur dioxide all being catastrophic to health and environment (Ahmad 2011).

Harmful coal and fuel oil used for various industrial applications also discharges ash particles into the atmosphere, substance which do not burn up but instead are carried into the environment and add up to effluence. The burning of natural gas, on the contrary, releases negligible quantity of sulfur dioxide and nitrogen oxides, almost no ash, lower levels of carbon dioxide, carbon monoxide, etc.

3 Key Factors Distressing the Prices of Natural Gas

Price of natural gas is primarily determined by market demand and supply. As there are restricted short-term substitutes available to natural gas as a fuel for heating and power generation during peak demand phases, changes in supply or demand over a short time period may upshot in large price variation. Price itself often act to stabilize demand and supply.

There are various factors on the supply side which influence the price of natural gas such as gas production, imports, international sanctions, geopolitical situations, and underground storage levels. Boost in supply is likely to reduce prices, while drop in supply is possibly going to increase prices. Increase in prices has a propensity to push production, imports, and sales from storage inventories. Decreasing prices are inclined to have the turnaround effects.

The demand side also has various factors which affect natural gas pricing such as temperatures, economic situations, and liquid fuel prices. Low temperatures increments the demand for heating, while high temperatures amplifies the demand for cooling, which in turn increases the gas demand by electric power plants. Economic situations influence the demand for natural gas, in particular by manufacturers. Demand may be moderated by liquid fuel prices, which may be a cheap alternative for natural gas for power generation, manufacturers, and others. Higher demand is likely to guide to increased prices, while lower demand can result in decreased prices. Increase and decrease in prices have a propensity to lessen or boost demand.

The major supply-side factors that may influence natural gas price are as follows:

- changes in the quantity of natural gas being produced;
- quantity of natural gas being imported and/or exported;
- international sanctions and geopolitical situations; and
- amount of gas available in storage facilities.

Increase in supply has a propensity to lead to lower prices and decrease in supply is likely to increase prices. The major demand-side factors which may have an effect on price are as follows:

- level of economic development;
- changes in weather conditions; and
- prices of other competing fuels.

Higher demand leads to demonstrate the way to escalated prices, whereas dropped demand has a tendency to direct to decreased prices.

4 Tale of Falling Crude Oil Prices

Oil prices chopped down stridently between second quarter and third quarter of financial year 2014, bringing the four-year episode of permanence around \$105 per barrel to a conclusion. The turn down, which is much bigger than that of then other commodity price indices weighed against early 2011 crests, may point out an end to a price which is often referred as super cycle. The oil prices had fallen to about one third to \$36 per barrel during December 2015 and even after almost a year, as of November 2016, the oil price remain only at \$47 per barrel. The prices are expected to ascend slightly in the year 2017. The sources and repercussions of the spiky reduction in oil prices have led to serious debate.

Recapitulation:

Since 2010, the oil prices were high bouncing more or less \$100 per barrel. Due to high oil consumption by nations such as India, China, and clash in chief oil nations like Iraq, oil production could not meet the demand which led to increase in prices. Interestingly, underneath the earth's surface, many of the dynamics kept swiftly changing. High prices urged firms in the USA and Canada to start exploring for new-fangled, shale reserves in North Dakota and oil sands in the area of Alberta. Simultaneously, demand for liquid fuels in nations of Europe (EU), Asia, and the USA started dwindling, credit to deteriorating economies and latest efficiency measures. On top of that, nations like Iraq and Russia began producing more oil (Ahmad 2015b).

By late 2014, global oil supply was heading in the right direction, increasing much higher than genuine demand, and from September onwards, the prices started declining piercingly.

Following are the key drivers that had led to the slump in the global crude oil prices:

The foremost reason is the Shale Oil Boom in North America. As the crude oil was hovering above \$100 per barrel in between 2011 and 2014, many energy companies based in North America which found it lucrative began extracting oil from difficult hard to drill areas. In the USA, firms began using methods such as fracking, i.e. hydraulic fracturing and horizontal drilling to extract oil from shale structures in North Dakota and Texas. In Canada, firms were heating oil sands in

Alberta with vapors to take out usable crude which resulted in an increased “Light Tight Oil” yield (Ahmad 2015b). Since 2008, US itself has added 4 million barrels per day (mbpd). For the record in last 30 years, US imports from OPEC have been cut in more than half.

Light tight oil (LTO) is unconventional oil stored in shale and needs modern drilling and techniques for recovery to get it out. Extra requirement of water for fracking process adds to the costs. Unconventional oil reserves are located in geologically aloof environments, requiring sophisticated technologies adding further to exploration costs. This unconventional oil becomes profitable only if the crude oil stays above \$60 a barrel. Also the refining cost of heavy and extra-heavy oils is high since it can contain up to three times more carbon and high concentrations of sulfur and heavy metals. Bitumen, being the petroleum component in unconventional oil requires it to be pre-processed into synthetic crude oil before refining (Ahmad 2015b).

Secondly, Geopolitical clashes were roaring up in main oil producing nations. A civil war broke in Libya. Iraq was a complete muddle. The US and EU clouded oil sanctions on Iran and strained its oil selling to other countries. Those clashes took more than 3 mbpd from the market. But a lot has changed by middle of 2014 (Ahmad 2015b). A lot of those disturbances started settling. In July, Libyan fought back and opened up two key export terminals, Es Sider and Ras Lanuf, which were shut down for almost more than year which rose Libyan’s export out of the blue.

Thirdly and most important reason is due to OPEC internal strife, there have been several articles, tales as regards the conflict amid OPEC member nations themselves, resulting in to let the market to think that OPEC shall not be able to control production like it has done so in the earlier period. OPEC faced internal battles, since the member countries are petro-states heavily reliant on oil revenue. The proverbial “let us try to catch the falling dagger but I’m not going to try it,” expounds the ongoing situation among the cartel members (Outlook India 2015). The cartel has for almost a third of global oil production with its authorization to synchronize and bring together the petroleum policies of its member nations and to make sure stabilization of oil markets so as to secure an well-organized, profitable, and standard supply of petroleum to customers, a stable income to producers, and a fair return on capital for those investing in the petroleum industry (Outlook India 2015). Although, the cartel’s objective is now appearing less believable than earlier and insinuates to have been destroyed in the domestic tussle of defending their respective market shares regardless of prevailing low prices.

Though OPEC officially maintained its production target of 30 mbpd, the actual oil production has been over and above 31.5 mbpd in the preceding months. Consequently, global oil prices have been dwindling thus hemorrhaging the economies of the nations who are cartel members of OPEC which are counting heavy losses with massive budget deficits and anemic economic growth.

Fourthly, the Iranian Nuclear deal, Iran has reached a historic nuclear deal that is likely to result in easing of sanctions in return for limiting Tehran’s nuclear program. The comprehensive agreement has clinched between Iran and P5+1—the US, Britain, France, China, Russia, and Germany. The agreement essentially

prevents Iran from getting a nuclear bomb. In exchange, many other nations will remove a lot of the economic sanctions placed on Iran (Ahmad 2015a). Iran looks to double its crude exports to over 2 mbpd in the next six months or so. Subsequently, more oil production means prices of oil will plummet further. Cash-strapped Tehran may decide to offload this stock and run with whatever price it gets, even though the global market is oversupplied by 2.6 mbpd. Iran would also likely accept lower prices in return for income and as a means to rebuild its share in the global oil market (Ahmad 2015a).

The front runner of OPEC, Saudi Arab which produces approximately 30% of the total OPEC's production lowered its official selling prices to Asia and the US. Saudi oil minister made it clear that Saudi Arabia prefers keeping its market share rather than cut production, and that the low price of oil could restrain future drilling elsewhere including the production of shale oil in North America. Apart from it, other Middle East OPEC crude producers are competing with counterparts in Latin America, North Africa, and Russia for buyers in Asia. They have lowered price differentials and maintained output in order to defend market share. Also, the reason that why OPEC is uncertain to cut the production thus a creating the demand–supply gap so as to increase the price is that if they will still keep the prices of the crude on the higher side, it shall incentivize further the investment in shale oil technology and production which could sway away the remaining command of OPEC to govern the crude prices.

Even more significantly, slowing economic activity in regions such as Europe, Japan, and China has begun deteriorating, mainly credit to slowdowns in China and Germany. Largely, oil demand has been slugging in lot of other countries across the globe. Simultaneously, countries such as Indonesia and Iran have been reducing on fuel subsidies.

5 Low Oil Are Challenging Natural Gas Markets

After three years of stability, oil prices have fallen piercingly since middle of 2014. The effects of this price fall on a wide range of energy firms have been material wherein many of the firms have been pushed to rethink their investments, cost structures, and even business models. A high degree of uncertainty regarding oil prices still remains. Will prices bounce back, as historical records hint that they will? Or have we cross the threshold and entered a “new normal” comprising of a mostly different pricing milieu?

International natural gas markets have already felt some shock from the uncontrolled oil prices. But these markets shall be affected to a much greater extent, if the oil prices stayed amid \$40–\$50 per barrel range for an extended episode, given the relation that exists between the two fuels. Gas prices in some markets are still contractually linked to oil prices. There are also substitution effects, i.e. users switch between oil and gas as a result when fuel price changes (The Energy and Resources Institute 2014).

Asia has had the world's fastest growth in demand for natural gas in the recent times with demand increasing over 6% per annum for the past five years, exceeding 600 billion cubic meters (bcm) in 2014. In the past, Asia has been reliant on heavy imports to stabilize the gap between the huge demand and comparatively inadequate local production. To make certain security of supply, Asian consumers have been dependent primarily on long-term contracts, essentially indexed to oil prices. The relation to oil prices also replicates the region's escalating switch to natural gas from liquid based fuels.

Given the relationship of Asian gas contracts to oil prices, the drop in oil prices will unswervingly bang Asian gas prices, pushing them considerably lower. This will be ever more apparent in the upcoming months ahead, as present long-term gas import contracts are indexed to oil with a time lag that ranges between 6 and 12 months.

It may be anticipated that if prices of oil stay at existing levels, Asian LNG import prices will decrease to approximately \$5 per mmbtu by middle of 2016, signifying the fact that long-term contracts' oil indexation is usually derived from oil's average price over the last 6–12 months. Indeed, present future price is already discounting this probable price reduction.

Another important factor that will weigh down the Asian LNG market are planned LNG projects in Australia and Papua New Guinea which may introduce about 90 bcm per annum to the marketplace. This additional quantity will raise downward force on prices. It will also lessen Asian buyers' motivation to amalgamate upstream (Rogers 2015).

Over the past few years, Asian buyers have been looking to expand the basket of indices they use while securing LNG supply, with a particular push to back off from oil in support of Henry Hub—indexed quantity, whose prices became ever more striking, compared with prices for oil indexed quantity when oil was approx \$100 per barrel. As oil prices currently are fine and with more ambiguity over the competitiveness of the US LNG, Asian buyers have to evaluate their diversification strategies. Over the medium to longer term, there appears possibility that if the current oil price situation persists, it will augment the sustainable development of the natural gas market in Asia (Rogers 2015).

6 Macroeconomic and Fiscal Propositions

Oil prices nosh into development and price rises mainly through three channels:

- **Input costs:** Reduced oil prices lessen energy outlay usually, as prices of alternate and competing energy resources are pushed down too. As oil is feedstock for various segments in the industry, alongside petrochemicals, paper, and aluminum, the decrease in price unswervingly affects an extensive array of processed or partially processed inputs. The automobile, petrochemicals, and agricultural industries and some manufacturing sector would be foremost recipient from stumpy prices.

- Real income shifts: Plummeting prices of oil causes changes in real income thus benefiting oil importers and hammering oil exporters. The shift in income from oil exporting nations with greater average saving rates to net importers with a larger proclivity to splurge should by and fat upshot in sturdy international demand over the medium term. Nevertheless, the effects could show a discrepancy considerably across various economies in due course. Some exporting nations may be pushed by economic constrictions to adjust both government expenses and imports hastily in the short duration, while payback for importing nations could scatter and equalize by greater defensive savings if poise in recovery stays low.
- Fiscal and economic policies: In oil importing nations where waning prices of oil may decrease medium-term inflation potential lower than target, central banks could counter with other economic and fiscal policy relaxing, which, consecutively, can sustain development. The blend of lower inflation and higher productivity entails a positive short run strategy as an end result. In oil exporting nations, nonetheless, reduced oil prices might set off compressing economic policy actions, if not shock absorbers are available to shield outlays from the turn down in tax revenues from the oil sector.

This channel functions with diverse potency and covers the whole nation. Though, it seems apparent that oil price turn downs usually have less significant yield effects on oil importing economies than oil price increases. This lopsidedness could be caused by the resistance and adjustment costs coupled with variations in oil prices.

The impacts of oil price changes on yield may also change amid emerging and developed nations. Output in developing economies may be moderately more energy intensive and therefore, may have an advantage more from reduction in energy input costs. Domestic inflation outlook in emerging nations may also be more reactive to changes in fuel prices than in developed nations, to a certain extent on account of a larger weight of fuel and food in consumption baskets. This is reflected in sturdier effects of commodity price shocks on inflation in emerging nations than in highly developed countries.

7 Impact on the Indian Economy

India is a major importer of oil in the world and meets about 70% of its crude oil demands through imports. This hefty reliance on oil-producing countries makes it extremely vulnerable to price inconsistencies. With oil prices tumbling to less than half in 2014, the Indian financial system has been subject to both constructive and depressing phases from the international oil market.

Positive effects of oil prices on the Indian economy:

- The reduction in oil prices leads to a direct savings. Hence the capital, which was earlier used for either working capital or raw material, can at present be

used for spending in long term assets that have a fine market return. This could lead to increased income of a good amount.

- Oil is a major constituent of the Consumer Price Index, a gauge of inflation in India. The decrease in oil price has caused inflation to fall since January 2014. Lower inflation leads to lower interest rates as the holding cost of money decreases and lower interest rates consecutively lead to higher investments as debt servicing becomes more reasonable. The flexibility in investment boosts the gross domestic product (GDP) of the nation and induces higher foreign direct and indirect Investments as the economy becomes a feasible investing destination due to its growth pace. This gives rise to a multiplier effect for the growth of the country.
- Oil and gas subsidies had weighed down the Indian budget with debt to shield marginalized households from soaring crude oil and gas prices. With the reduction in prices of petrol, diesel and gas subsidies have either been decreased or removed totally. This has freed a good amount capital for investments in important industries like roads, power, education, health, and telecommunication. Thus, instead of being used as consumption expenditure, this amount can be set out to fuel growth in the economy.

Negative effects of oil prices on the Indian economy:

- Oil-producing countries are chief markets for India's investors and products. A decline in their imports or currency valuation may have a repulsive effect on Indian companies which have investments and market share in various foreign oil-producing countries.
- India is the sixth largest petroleum product exporter in the world. The suppressing demand will cut unit prices and emaciate margins hence negatively striking the petroleum product manufacturers.
- Whenever oil revenues take a hit, oil-producing nations in the Gulf emphasize on local manufacturing and production and cut back on their foreign labor force. Since huge parts of the labor force in the Gulf are Indians, which are greatly reliant on remittances. Downsizing of labor force in the Gulf countries may take a significant toll. As remittances contribute more to the Indian GDP than the flagship information sector exports, halving oil prices would be correspondent to downsizing the IT sector by half.

8 Conclusion

Subsequent to four years of firmness at about \$105 per barrel, oil prices have chopped aggressively after mid of 2014. When compared to the early 2011 commodity price peaks, the turn down in oil prices was a lot bigger than that in other commodity price indices. The turn down in oil prices was rather noteworthy compared with the previous occurrences of oil price declines all through the earlier decades.

There have been numerous long- and short-term factors in the wake of the latest thrust in oil prices: Quite a few years of huge rising revelations in oil supply, some downward unexpected changes in demand; slowing down of geopolitical situations which had threatened production changes in policy objectives of OPEC and appreciation of the US dollar. Supply linked drivers have evidently played a chief role, with the new OPEC policy intended at market share eliciting a further prickly decline.

The decrease in oil prices has considerable macroeconomic, fiscal, and policy connotations. If continued, it will shore up commotion and decrease inflationary, external, and economic forces in oil-importing nations. But then, it would affect oil exporting economies detrimentally by abating fiscal and external situations and reducing economic activities. Stumpy oil prices influences investor's sentiments about oil exporting up-and-coming market economies and can cause sizeable unpredictability in financial markets, as previously occurred in some of the nations in 2014. Still, waning oil prices also introduces a major window of prospects to restructure energy taxes and fuel subsidies, which are important in quite a lot of developing nations, and reinvigorate reforms to diversify oil-dependent economies.

References

- Ahmad H (2011) Use more natural gas, it can be an Instrument of sustainable economy and a way to save the environment. Guest column, Daily edn. Sakaaltimes
- Ahmad H (2015a) Policy proposals for India, Iran nuclear deal: a sanguine and scintillating breakthrough for Indian oil and gas sector. New Delhi
- Ahmad H (2015b) Policy proposals for India, an insight in to the falling crude oil price. New Delhi
- Outlook India—Web Edition (2015) Husain Ahmad, business, opinion, good and bad news about crude oil. New Delhi
- Rogers HV (2015) The impact of lower gas and oil prices on global gas and LNG markets. OIES Pap 99
- The Energy and Resources Institute (2014) Global oil markets and india's vulnerability to oil shocks. New Delhi

Natural Gas Markets in India
Opportunities and Challenges

Kar, S.K.; Gupta, A.K. (Eds.)

2017, XX, 385 p. 70 illus., 61 illus. in color., Hardcover

ISBN: 978-981-10-3116-8