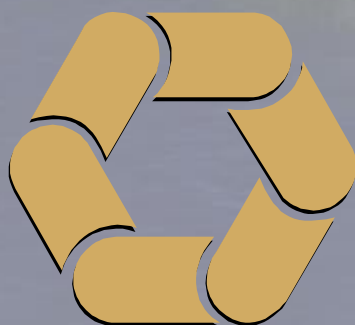


CRUDE OIL

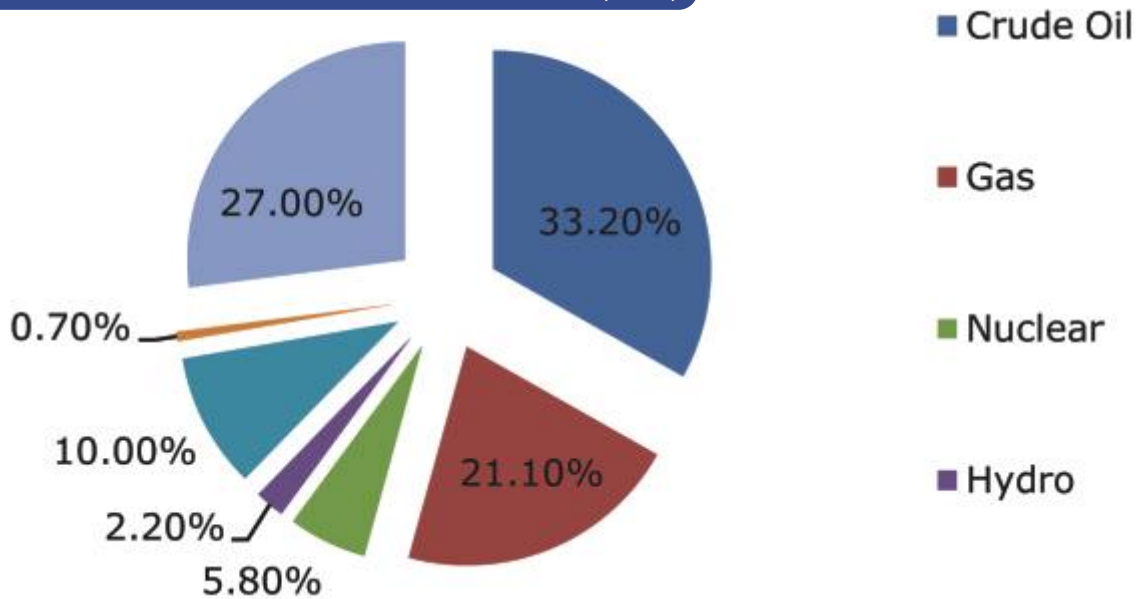


NCDEX

INTRODUCTION

Crude oil holds prominence as input to the global growth engine since it is the most important source of energy accounting for more than two fifth of the global energy consumption. Crude oil dominates the total energy supply with 33% share (Figure 1).

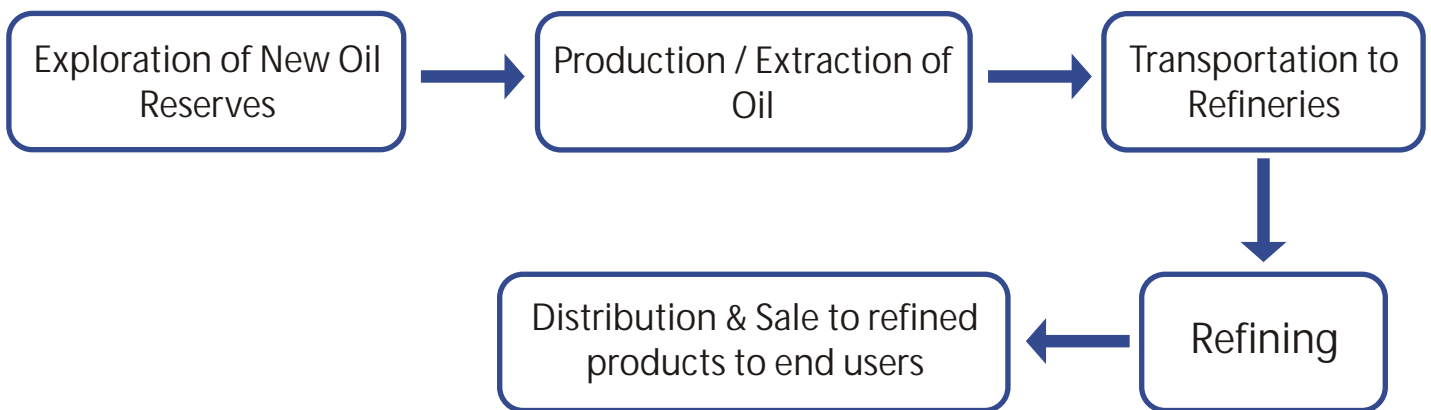
FIGURE 1: FUEL SHARE IN TOTAL PRIMARY ENERGY SUPPLY (2008)



Source: IEA

The value of crude oil is entirely determined by the petroleum products (such as gasoline) which are derived through refining crude and its use as a feedstock for production of petrochemical products such as fertiliser and PVC. Crude oil is refined to make petroleum products grouped under three categories: light distillates (liquefied petroleum gas, gasoline/petrol), middle distillates (kerosene, diesel) and heavy distillates (heavy fuel oil, lubricating oil, wax).

FIGURE 2: CRUDE OIL - VALUE CHAIN PARTICIPANTS



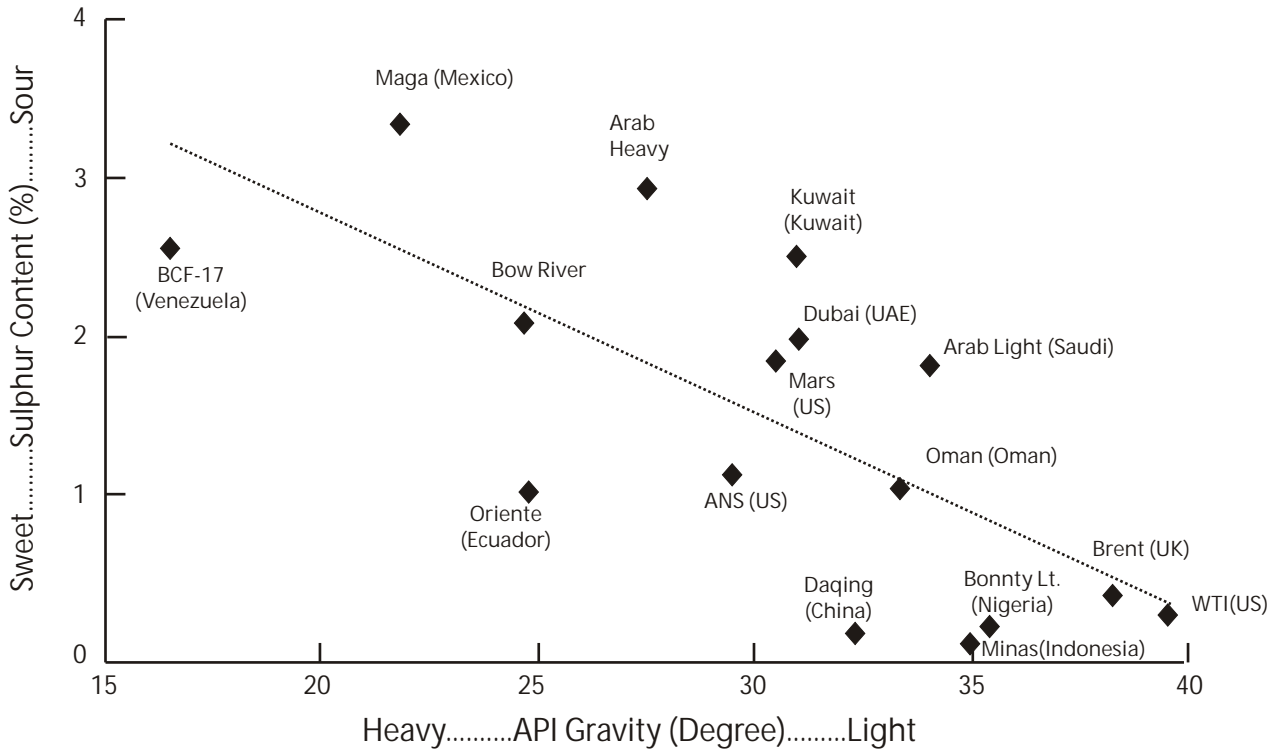
The primary characteristics studied while evaluating crude oil quality are the following.

I. API (American Petroleum Institute) gravity is a measure of how heavy or light crude oil is compared to water. The higher the API, the lighter is crude and yields more refined products.

II. Sulphur Lower the sulphur, sweeter is crude. Sweet crude yields higher value petroleum products such as gasoline.

Therefore light sweet crude oil yields higher proportion of superior quality of petroleum products such as gasoline than heavy and sour variety of crude and are traded at a premium. Crude oil is classified into 161 varieties based on their API gravity and sulphur content (Figure 3). The prominent 'benchmark' varieties of crude oil are Brent Crude Oil and Light Sweet Crude Oil (WTI) which are traded extensively in the global futures market.

FIGURE 3: GRADES OF CRUDE OIL



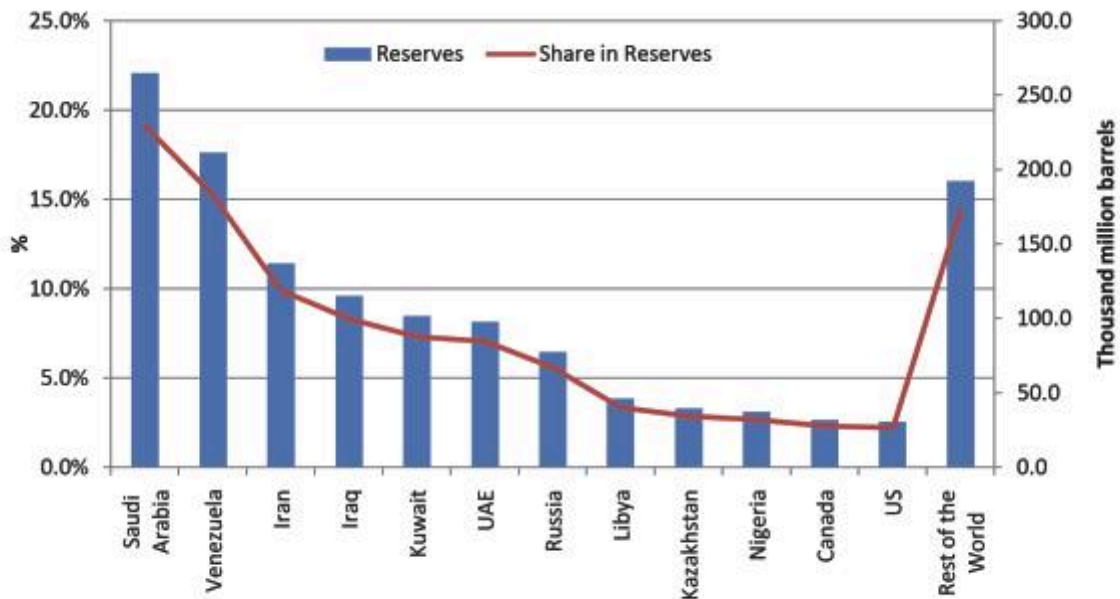
Source : The International Crude Oil Market Report

SUPPLY OF CRUDE OIL

Supply of crude oil is not responsive to change in prices in the short run improving only in the long run. The only way supplies can increase in short run is drawing down on strategic reserves. However elevated prices for a long period can spur exploratory activity leading to jump in supplies in the long run.

Proven reserves of crude are an indicator of quantum of supply of crude oil. Crude oil reserves meet the criteria of proven reserves if they are feasible commercially to extract given the state of technology. As of 2009, about 77% of proven reserves were with OPEC lead by Saudi Arabia which holds 19% of the global proven reserves. Russia leads the non-OPEC group with 6% of global proven reserves.

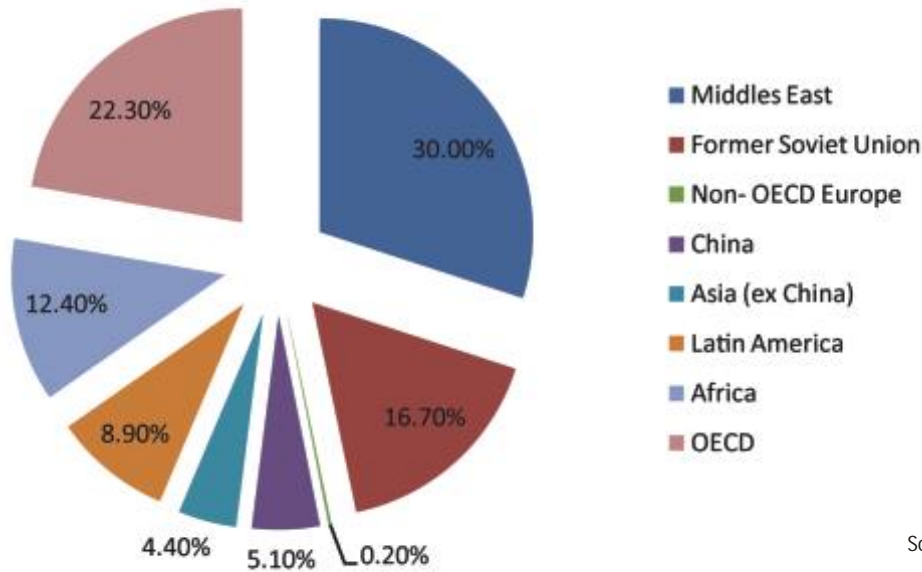
FIGURE 4: PROVEN RESERVES OF CRUDE OIL (2010)



Source: BP's Statistical Review of World Energy 2011

Middle East continues to be the most dominant producer amongst producing regions with 30% share in crude oil production in 2009 (Figure 5). The shares of all regions except Middle East and China have not undergone significant change in last four decades in total crude oil produce. The share of Middle East has declined by 7% in the same period as a result of increase in production by other regions.

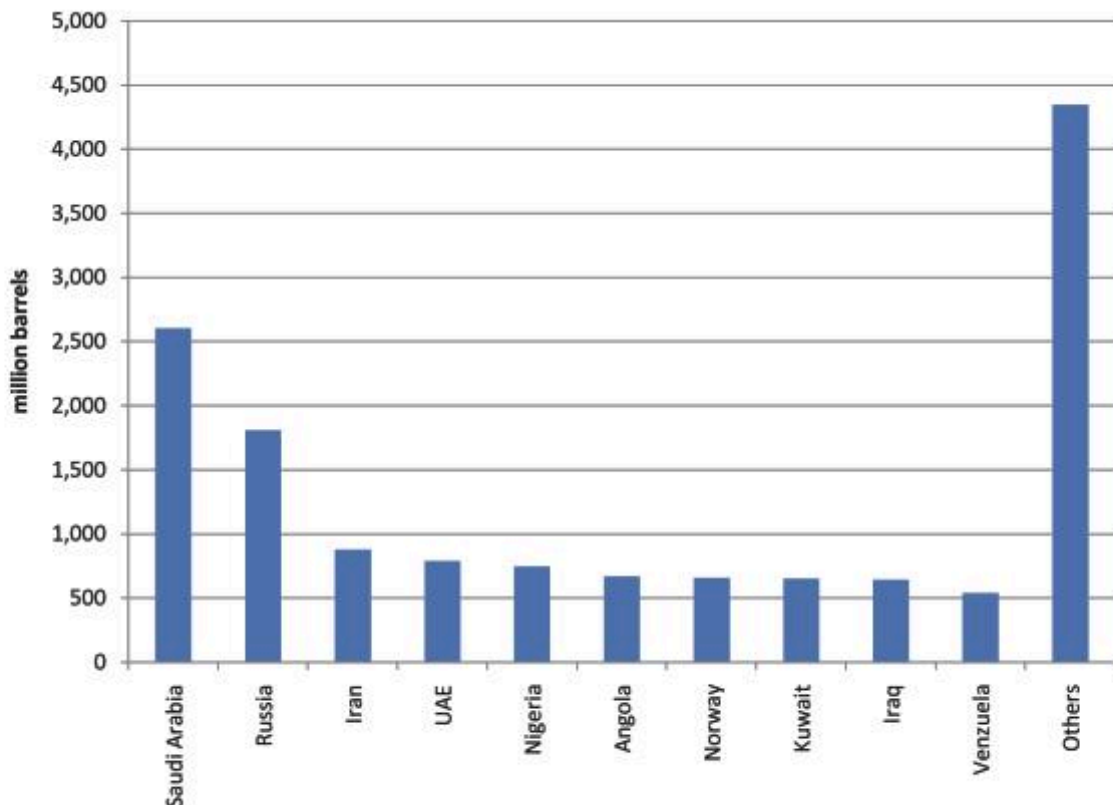
FIGURE 5: REGIONAL SHARE IN CRUDE OIL PRODUCTION (2009)



Source: BP's Statistical Review of World Energy 2011

Of the major producers of crude oil, the USA and China do not export crude oil. Saudi Arabia exports more than three fourth of its produce while Russian Federation and Iran export approximately half of the produce.

FIGURE 6: NET EXPORTERS OF CRUDE OIL (2008)



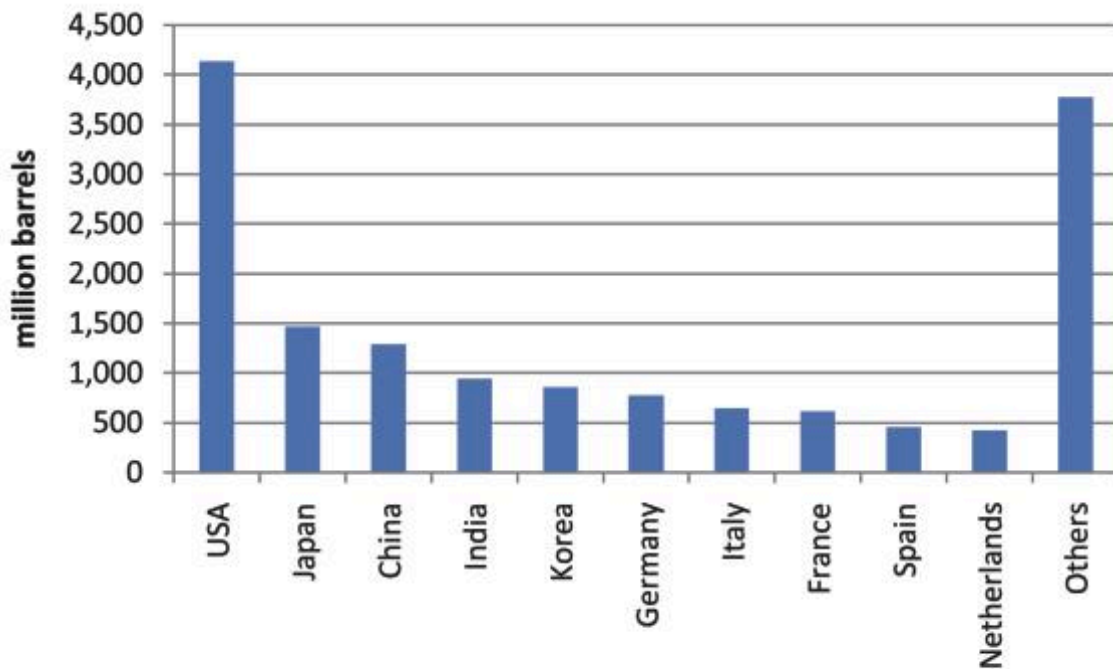
Source: IEA

DEMAND FOR CRUDE OIL

Crude oil demand has a seasonal pattern increasing prior to the winter heating season. Upsurge in demand for gasoline during winter months occurs around the Christmas and New Year eve as holiday travel increase adding to the demand for crude oil in the prior months. Demand for crude oil declines in December as refiners sharply curtail purchases to avoid year-end inventory taxes. Demand is weak in February due to reduced demand for heating oil followed by rise in March to May prior to US driving season. Refineries gear up meet gasoline and jet fuel demand since most travelling in the northern hemisphere is done in summer. Consumption of heating oil declines between June and August.

Responsiveness of oil demand to changes in price as measured by the price elasticity of demand is crucial to understand demand for crude oil. The impact of change in price is different in developed and emerging economies. Demand in developed economies is more responsive to changes in price as compared to that in emerging economies. United States continues to be the largest importer of crude oil. China overtook Japan as the largest importer for the first time in May of 2008 although Japan retained its position for the year. In 2009, China overtook Japan as the second largest importer of crude oil. India is the fourth largest importer of crude oil (Figure 7).

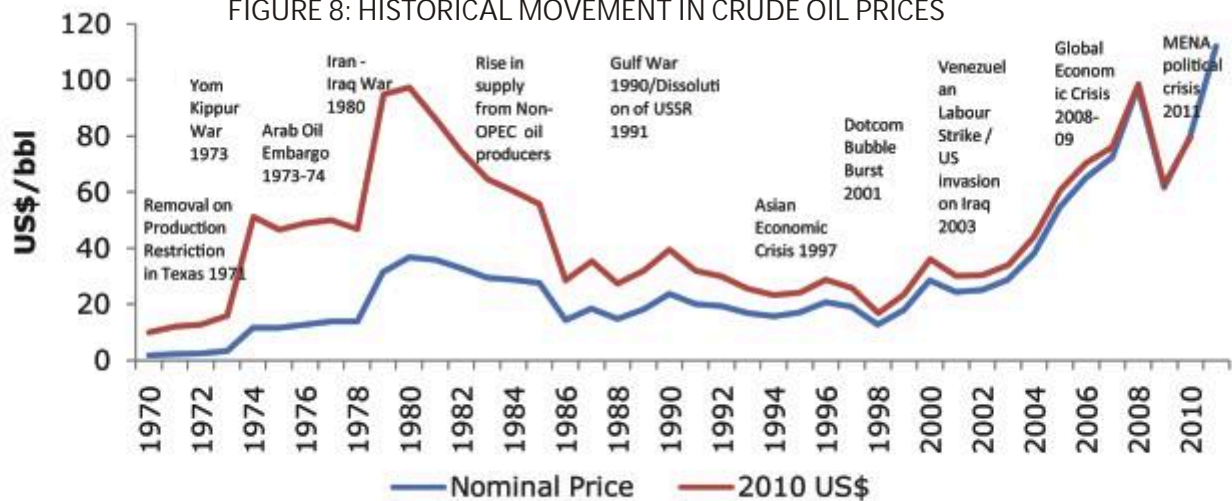
FIGURE 7: NET IMPORTER OF CRUDE OIL (2008)



Source: IEA

MOVEMENT IN CRUDE OIL PRICES

FIGURE 8: HISTORICAL MOVEMENT IN CRUDE OIL PRICES



Data Source: BP's Statistical Review of World Energy 2010

* Data Source: Reuters (Average price of dated Brent for 2010 & 2011 (till July 2011))

1971-1983: Arabian Light

1984-2011: Dated Brent

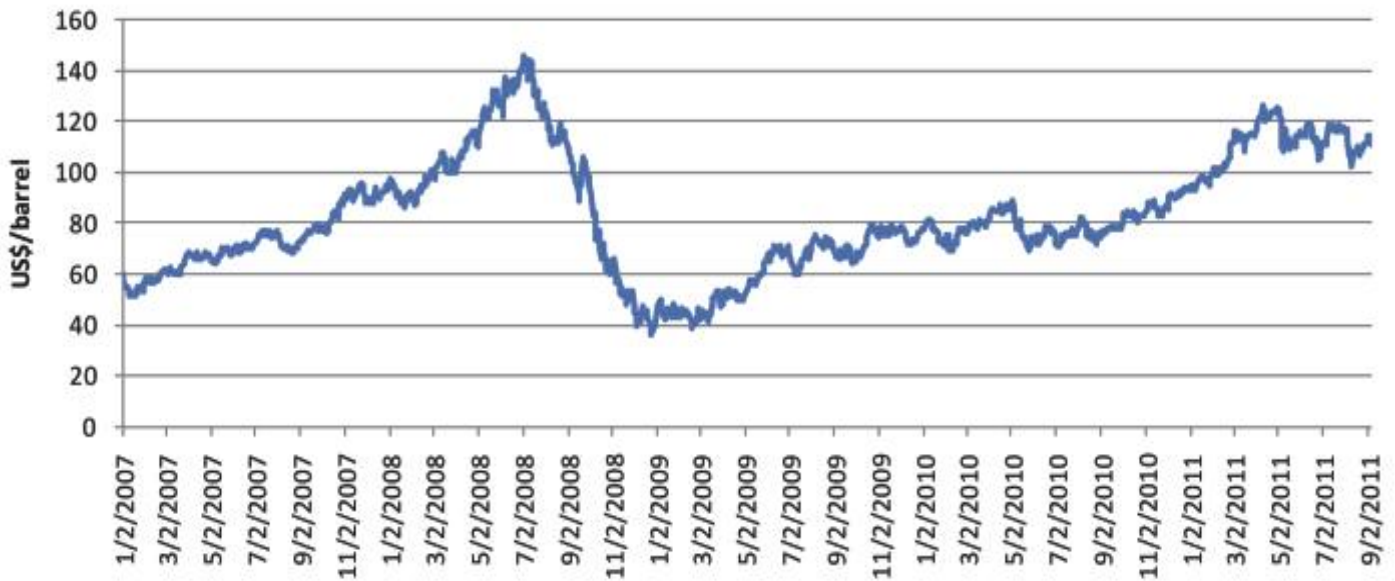
Main factors impacting crude oil prices are:

- Geo-political uncertainties
- State of the world economy
- Seasonal factors (weather conditions)
- Policies on taxation
 - Government intervention in the oil industry
- Available strategic reserves of crude oil
- Available spare capacity

BRENT

Brent is a benchmark for pricing of crude oil internationally. Brent crude is extracted in the North Sea, and is sea-borne, rendering assurity of supply within short period of time and volume to trade. Most of the crude oil produced in the Middle East and North Africa (MENA) are priced at a differential to Brent. Brent is used for pricing of about two third of the total crude oil trade. The futures contract in Brent was launched by International Petroleum Exchange (IPE), now ICE Futures Europe, in June 1988. Given its benchmark status, Brent crude enjoys a liquid spot, forward and futures market.

FIGURE 9: NEAR MONTH PRICES OF BRENT



Source: Reuters

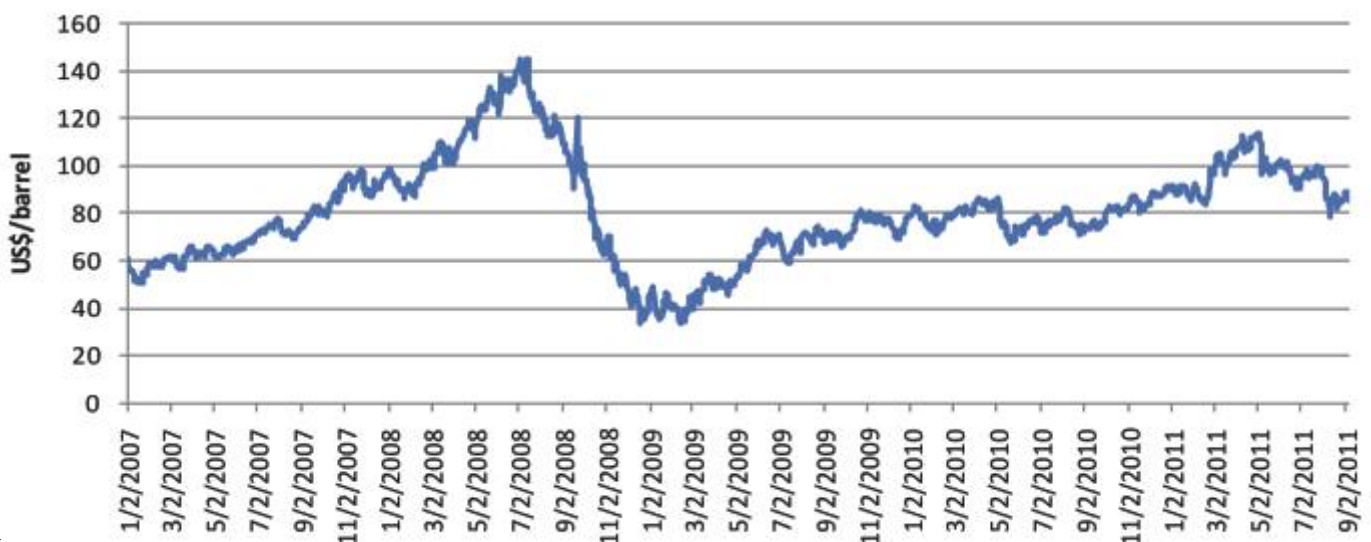
The Indian Basket of crude oil comprises of Oman and Dubai for sour grades and Brent for sweet grade in an approximate 60-40 ratio. Almost 70% of crude oil import to India is sourced from Middle East and North Africa which is priced against Brent. Therefore Brent variety of crude oil is extremely relevant to India. The global price movement in Brent has direct bearing on the price of Indian crude oil.

LIGHT SWEET CRUDE OIL

Light sweet crude oil/West Texas Intermediate (WTI) is the benchmark crude oil variety from the US. The variety is lighter and sweeter than the Brent crude of Europe. WTI is landlocked crude transported through pipelines across the US. The pipeline system is laid through this terminus connecting the Gulf Coast refiners with the consumers.

NYMEX launched the futures contract on WTI in 1983, which within a decade went on to become global benchmark in the crude oil derivatives space. Pipeline terminus at Cushing, Oklahoma is the delivery centre for the NYMEX derivatives contract on WTI. Despite no international trade, WTI enjoys benchmark status primarily due to the fact that it is the underlying commodity of the light sweet crude oil futures traded on NYMEX which draws large volumes.

FIGURE 10: NEAR MONTH PRICES OF WTI



Source: Reuters

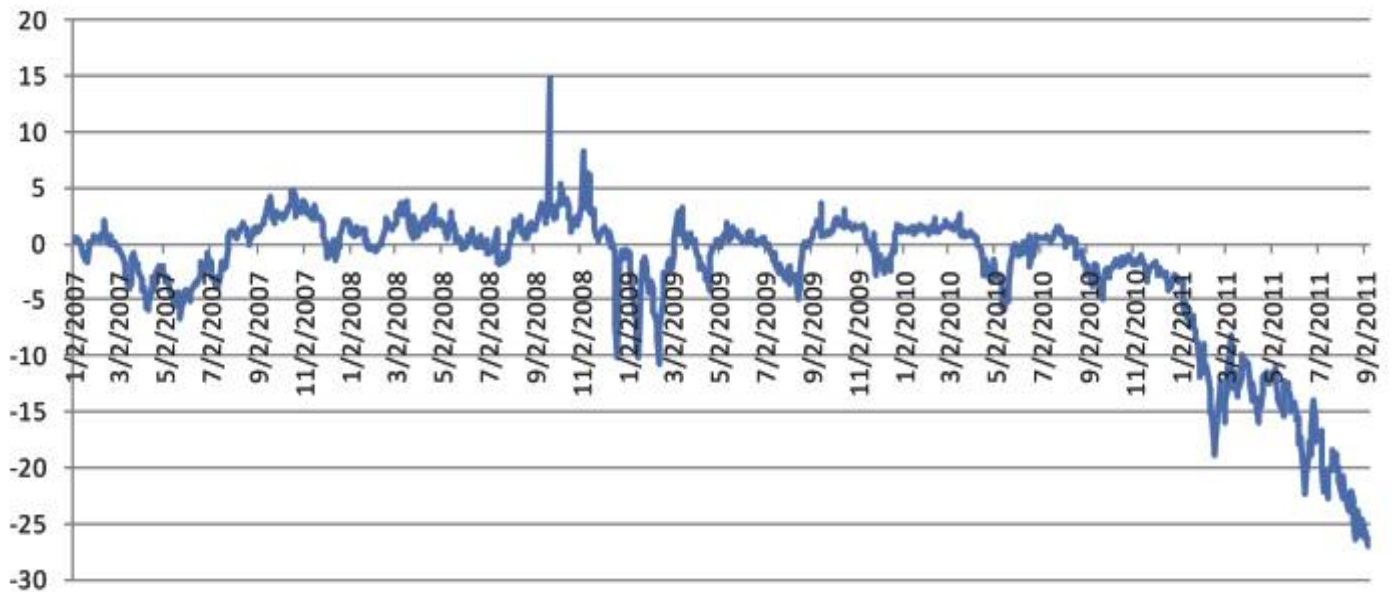
SPREAD BETWEEN BRENT CRUDE OIL AND LIGHT SWEET CRUDE OIL

Light Sweet Crude Oil being lighter and sweeter than Brent Crude Oil, should normally trade at a premium to Brent. Futures contract on WTI has historically traded at a premium to the Brent crude oil. The median spread of the two contracts since inception has been 1, with outliers ranging between a premium of 15 on September 22, 2008 and discount of 27 on September 6, 2011 for review period ending September 8, 2011.

The spread has widened significantly and turned negative since January 2011. WTI prices were depressed early in the year because of stockpiles at Cushing reaching the capacity while outflow was limited. Meanwhile Brent futures widened the gap against WTI with reduced supply from the oil exporting nations of Middle East and North Africa hit by political turmoil. Brent is used for pricing sale of crude oil from the affected region.



FIGURE 11: WTI BRENT NEAR MONTH FUTURES SPREAD



Source: Reuters

Spreads between prices of Brent and WTI are actively traded internationally. If a trader expects the Brent to rise more (or fall less) relative to WTI prices, the trader would typically buy Brent contract and sell the WTI. Conversely, if the trader expects Brent prices to fall more (or rise less) relative to WTI prices, the traders would typically sell the Brent contract and buy the WTI contract.



CONTRACT SPECIFICATIONS

Name of Commodity	Brent Crude Oil	Light Sweet Crude Oil												
Ticker symbol	BRENTCRUDE	CRUDEOIL												
Unit of trading	100 Barrels	100 Barrels												
Quotation/base value	Rs per barrel*	Rs per barrel*												
Basis	Sullom Voe, Shetland Islands, United Kingdom exclusive of all levies and taxes.	FOB Cushing, Oklahoma, United States of America exclusive of all levies and taxes												
Tick size	Re 1.00	Re 1.00												
Quality specification	<table border="1"> <thead> <tr> <th>Crude Type</th> <th>API Gravity</th> <th>Sulphur Content</th> </tr> </thead> <tbody> <tr> <td>Brent</td> <td>38.5 degrees</td> <td>0.36%</td> </tr> </tbody> </table>	Crude Type	API Gravity	Sulphur Content	Brent	38.5 degrees	0.36%	<table border="1"> <thead> <tr> <th>Crude oil</th> <th>API Gravity</th> <th>Sulphur Content</th> </tr> </thead> <tbody> <tr> <td>All Crudes Which Satisfy The Following</td> <td>37-42 degrees</td> <td>Less than or equal to 0.42%</td> </tr> </tbody> </table>	Crude oil	API Gravity	Sulphur Content	All Crudes Which Satisfy The Following	37-42 degrees	Less than or equal to 0.42%
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Delivery logic	Intention matching	Intention matching												
Closing of contract	All open positions for which delivery intentions have not been received or for which delivery intentions have been rendered but remain unmatched for want of counterparty to settle delivery will be cash settled at the Final Settlement Price on the expiry of the contract.	All open positions for which delivery intentions have not been received or for which delivery intentions have been rendered but remain unmatched for want of counterparty to settle delivery, will be cash settled at Final settlement Price on the expiry of the contract.												
Price limit	Base daily price fluctuation limit is (+/-) 4%. If the trade hits the prescribed daily price limit, the price limits will be relaxed up to (+/-) 6% without any break/ cooling off period in the trade. In case the daily price limit of (+/-) 6% is breached, then after a cooling off period of 15 minutes, the daily price limit will be further relaxed up to (+/-) 9%. Trade will be allowed during the cooling off period within the price band of (+/-) 6%. In case of price movement in International markets which is more than the maximum daily price limit (currently 9%), the same may be further relaxed in steps of 3% with the approval of FMC.	Base daily price fluctuation limit is (+/-) 4%. If the trade hits the prescribed daily price limit, the price limits will be relaxed up to (+/-) 6% without any break/ cooling off period in the trade. In case the daily price limit of (+/-) 6% is breached, then after a cooling off period of 15 minutes, the daily price limit will be further relaxed up to (+/-) 9%. Trade will be allowed during the cooling off period within the price band of (+/-) 6%. In case of price movement in International markets which is more than the maximum daily price limit (currently 9%), the same may be further relaxed in steps of 3% with the approval of FMC.												
Position limits	Member: 20,00,000 barrels or 15% of market wide open interest , whichever is higher. Client: 4,00,000 barrels.	Member: 20,00,000 barrels or 15% of market wide open interest , whichever is higher. Client: 4,00,000 barrels.												
Position limits	The Final Settlement Price (FSP) in Indian Rupees (INR) will be determined by the Exchange on maturity of the contract. The FSP will be the value of Brent Index published by Intercontinental Exchange (ICE) for a similar corresponding contract expiring on ICE. The exchange rate to be used as the conversion factor shall be the RBI reference spot exchange rate on that day (as obtained from Reserve Bank of India website www.rbi.org.in)	The Final Settlement Price (FSP) in Indian Rupees (INR) will be determined by the Exchange on maturity of the contract. The FSP will be the value of Brent Index published by Intercontinental Exchange (ICE) for a similar corresponding contract expiring on ICE. The exchange rate to be used as the conversion factor shall be the RBI reference spot exchange rate on that day (as obtained from Reserve Bank of India website www.rbi.org.in)												
Position limits	* 1 Barrel = 42 US gallons = 158.98 litres	* 1 Barrel = 42 US gallons = 158.98 litres												

For further details, please refer to the NCDEX website <http://www.ncdex.com>
 Contact our Product Managers for any queries/information:
 Ramesh Iyer : 9820488975