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LIVING IN A WORLD OF CHEAPER OIL

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Living in a world of cheaper oil

- **Oil price movements in 2014.** Year-to-date, the average price of Brent crude oil remains triple-digit at USD104.42pb. For the first seven months of this year, Brent crude had been trading at levels above USD105pb. However, from its high of USD115pb achieved in the middle of this year, Brent crude price appears to have experienced a free fall, declining close to 30% to a low of USD82pb. This has caused jitters around the global commodities market and has even, up to a certain extent, reverberated across other commodity classes.
- **Price downside to be supported by producers' assets and fiscal breakeven costs.** Despite the significant fall in quantum in a short span of time, we are of the opinion that this should not be much of a concern for two reasons, namely (i) 10-15% of global crude oil supply have breakeven costs of above USD75pb, and (ii) countries within the OPEC are heavily reliant on the sale of oil and, on average, have fiscal breakeven costs in excess of USD80pb.
- **Are oil prices at the cusp of a secular downtrend? We say, no.** We believe instead that oil prices are currently experiencing a cyclical pullback within a multi-year consolidation pattern. Furthermore, we are of the opinion that oil price is approaching the 'sweet spot' plausibly circa USD80-75pb where price equilibrium support is met. Moving forward, our fundamental as well as technical studies point to the likelihood that oil prices will continue to trade within the USD125-75pb range for an extended period of time.
- **Hostilities against US shale?** There are theories suggesting that Saudi Arabia is on the attack against US shale. Some observers are speculating that Saudi Arabia is trying to discover the true breakeven cost of US shale oil production. This theory is further supported by the fact that, in a surprise move, Saudi Arabia has recently reduced its selling price of oil to US customers in stark contrast to the higher price agreed with Asian buyers barely weeks earlier. However, amid the downward pressure on oil price, US shale production has risen to its highest level ever in October 2014.
- **Sectors to be affected.** Sectors which are expected to benefit from the persistent downward pressure on oil prices are aviation, shipping and power generation. Sectors such as gloves, plantation and local oil and gas, on the other hand, are expected to experience generally negative reactions with the extent of which is dependent on the specific usage of crude oil in the value chain.



A. UPDATES ON THE DEMAND FOR OIL

I. SLOWDOWN IN ECONOMIC GROWTH

Slowdown in economic growth and tightening liquidity may pull down oil prices but demand dynamics are not expected to ease that significantly, allowing prices to avoid sharp decline and reflect more of the fundamentals.

- **Global economic growth continuously revised downwards.** The World Bank cut its global growth for 2014 from 3.2% to 2.8% as early as middle of this year, citing concerns in the Ukraine, the Middle East and the slow progress of China's economic rebalancing. Recently in early October, the IMF in its World Economic Outlook (WEO) cut its global growth projections again, by -0.1p.p for 2014 and -0.2p.p for 2015 to 3.3% and 3.8% respectively.
- **While this growth pace is relatively still robust,** the fact that the IMF had been consistently revising downwards its growth projections since last April raised concerns that global economic prospects keep on worsening at pace faster than the IMF could keep up and include it as timely into its periodical projection exercise. The latest growth number projected for 2014 and 2015 is 0.4p.p. and 0.2p.p. lower, respectively, than that estimated in January 2014.
- **Mixed performance of advanced economies, but overall to be modest in 2015.** US economy expected to perform better than earlier forecasted. The US economy is expected to buck the global trend and maintain a much higher expansionary momentum into 2015. The World Bank expects the US to expand to 2.1% from its January forecast of 2.8% while revising its 2015 projections by +0.1p.p to 3.0%. The IMF is more bullish and expects the US to grow by 2.2% for 2014 and 3.1% next year. Growth is projected to average about 3% in the second half of 2014 into 2015.
- **Meanwhile outlook in 2015 for Eurozone and Japan is unlikely to be encouraging** - The IMF projected a growth of 0.8% in 2014 and 1.3% in 2015 for Eurozone, lower than its April 2014 projections. Japan's recovery has lost much momentum following the implementation of consumption tax hike and will be hampered further by weak exports demand premised on weaker global economy despite the weaker Yen.
- **Emerging markets performance trending lower on tighter liquidity conditions and China's slowdown.** The IMF now expects Emerging Markets (EM) and developing countries growth to be slower-than-expected earlier, from 4.6% and 5.2% for 2014 and 2015 respectively in its July update to 4.4% and 5.0% for 2014 and 2015 respectively in its October forecast. The performance of EM countries in 2015 is also subject to a high degree of uncertainty when the US Federal Reserve starts hiking up the interest rate.
- While China's numbers remained unchanged at 7.4% in 2014 and 7.1% in 2015, the projections still reflect growth trending even lower to the lower end of official target range of 7%. We expect China's growth to average around 7.0 - 7.2% in 2014-2015. That would imply the strong imports of energy from China seen in the last few years when the economy was growing at a heady pace of 9 - 10% to come off quite significantly.
- According to US Energy Information Administration (EIA) China is the world's second-largest consumer of oil and projected to move from second-largest net importer of oil to the largest by end 2014. China's oil consumption growth has eased after a high of 14% in 2009, reflecting the effects of the financial crisis as well as domestic slowdown. Despite the slower growth, the country still made up nearly a third of global oil demand growth in 2013, according to EIA estimates. Moving forward, we expect the pace to be even slower. However, as the rest of the oil consumers are also facing slower growth, China's share of global consumption may remain relatively unchanged.

II. GLOBAL DEMAND

- Data from the Organisation of Petroleum Exporting Countries (OPEC) indicates that the global demand for crude oil has risen to 90 million barrels per day (mbpd) in 2013 from 76.5mbpd in 2000. The growth has been largely driven by demand from the Middle East which has grown at a cumulative annual growth rate (CAGR) of 4.2% but the bulk of the demand as of 2013 comes largely from Asia (29.2mbpd) and North America (21.2mbpd) which explains 57% of global crude oil demand (Chart 1).

Chart 1: Demand by region in 2013

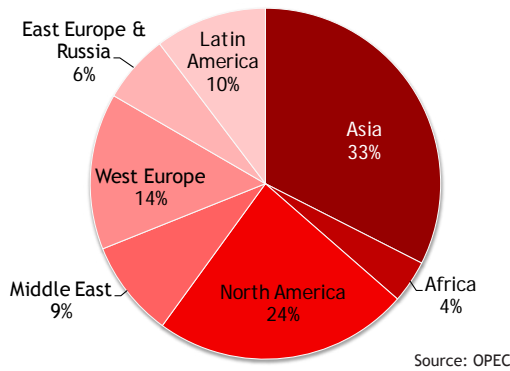
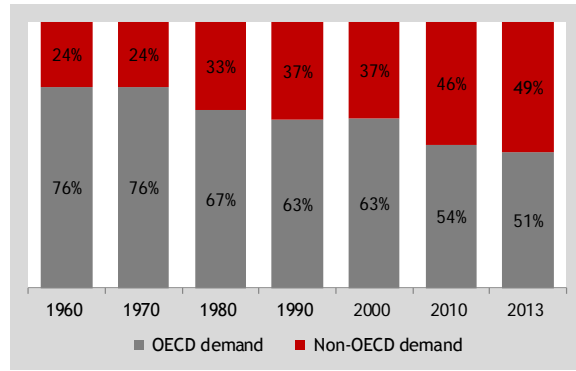
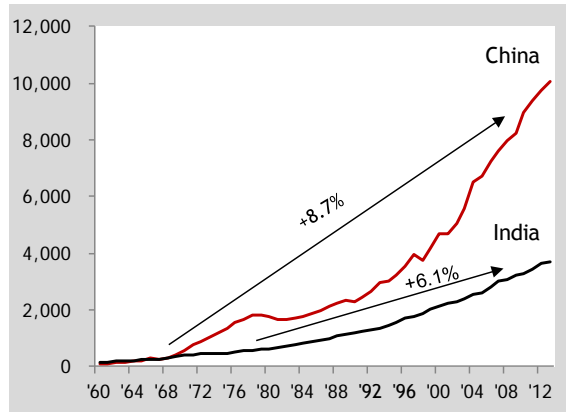


Chart 2: OECD & Non-OECD demand



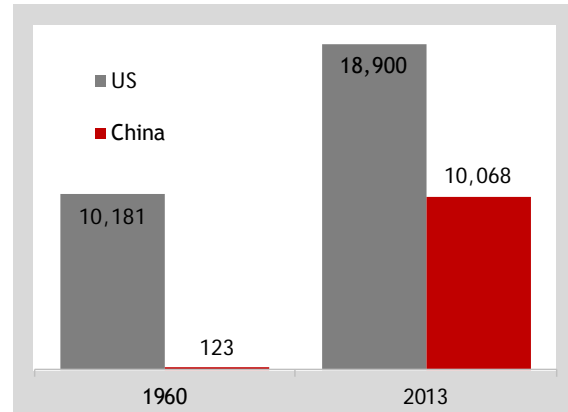
- Consequently, the global demand dynamics between Organisation for Economic Co-operation and Development (OECD) and non-OECD countries have swung considerably towards the non-OECD nations which now constitute 49% of global demand share (Chart 2). Of the latter, almost half is explained by the BRIC (Brazil, Russia, India and China) economic block with 22% share.
- Apart from the Middle East, Asia’s oil demand has also grown strongly. Over 1960 to 2013, oil demand from Asia grew at a CAGR of 5.5% with demand share rising from 8.1% to 32.5% over the period. The growth has been underscored by China and India, reflecting the rapid economic growth in both countries in recent years (Chart 3). To-date, China’s oil demand is only second to the US at 10mbpd. Interestingly, China’s consumption only equates US’ consumption in 1960 (Chart 4). With 4x the population size of the US today, we believe China’s oil demand could only grow going forward.
- In the October edition of OPEC’s monthly oil market report (MOMR), the organisation expects world oil demand to grow +1.05mbpd to 91.2mbpd, similar to the growth seen in 2013, before accelerating to +1.19mbpd in 2015 to 92.4mbpd. The 2014 demand growth was attributed to China, Brazil and Saudi Arabia which offset some of the lower-than-expected demand from OECD countries.

Chart 3: China & India oil demand 1960 - 2013 ('000 bpd)



Source: OPEC

Chart 4: US & China oil demand 1960 - 2013 ('000 bpd)



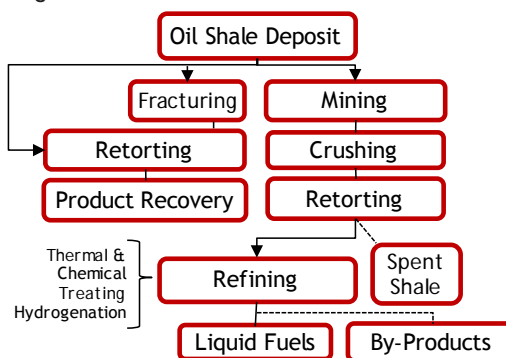
Source: OPEC

B. UPDATES ON THE SUPPLY OF OIL

I. SHALE OIL

- Shale oil is categorized as an unconventional oil play produced from oil shale rock fragments. Shale oil (as featured on the front cover) is extracted via pyrolysis, hydrogenation, or thermal dissolution. Basically, these processes convert the organic matter within the rock (kerogen) into synthetic oil and gas. The oil extracted will subsequently be refined and the refined oil can have the same properties as refined crude oil extracted from conventional plays, i.e. onshore oil-well extraction and offshore oil-well extraction.

Figure 1: Oil-shale extraction



- In certain literature, shale oil is also referred to as light tight oil. Oil-shale reserves are found in almost all of known oil provinces globally. However, due to the formation of certain oil-shale deposits, extraction of oil could be economically unviable.

II. LOCATIONS OF OIL-SHALE RESERVES

- Shale oil is found globally. However, due to high cost of production and technically challenging method of extractions, only the US and Canada has been one of the more aggressive countries pursuing this unconventional oil.

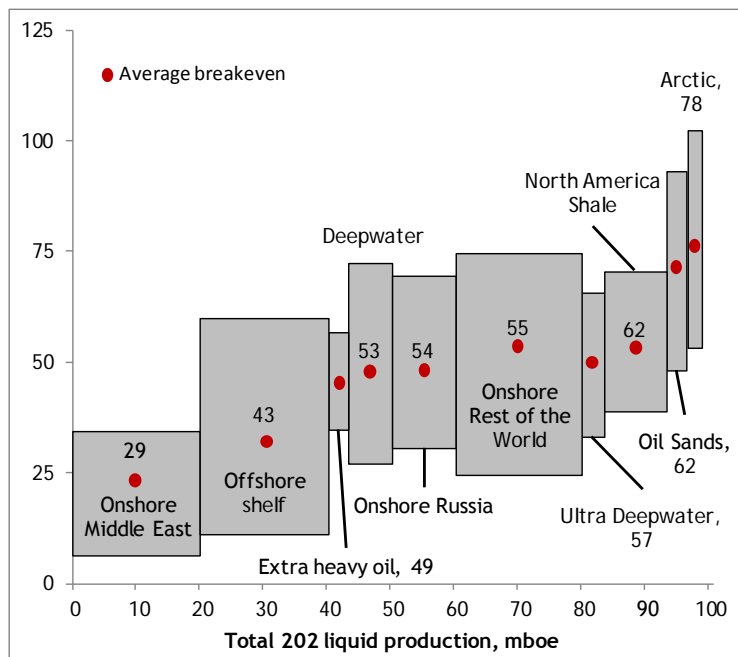
Table 1: Largest shale oil deposits

Deposit	Country	Period	In-place shale oil resources	
			mn barrels	mn metric tons
Green River Formation	United States	Paleogene	1,466,000	213,000
Phosphoria Formation	United States	Permian	250,000	35,775
Eastern Devonian	United States	Devonian	189,000	27,000
Heath Formation	United States	Early Carboniferous	180,000	25,578
Olenyok Basin	Russia	Cambrian	167,715	24,000
Congo	Demo. Rep. of Congo	-	100,000	14,310
Irati Formation	Brazil	Permian	80,000	11,448
Sicily	Italy	-	63,000	9,015
Tarfaya	Morocco	Cretaceous	42,145	6,448
Volga Basin	Russia	-	31,447	4,500
Leningrad deposit, Baltic Oil Shale Basin	Russia	Ordovician	25,157	3,600
Vychegodsk Basin	Russia	Jurassic	19,580	2,800
Wadi Maghar	Jordan	Cretaceous	14,009	2,149
Graptolitic argillite	Estonia	Ordovician	12,386	1,900
Timahdit	Morocco	Cretaceous	11,236	1,719
Collingwood Shale	Canada	Ordovician	12,300	1,717
Italy	Italy	Triassic	10,000	1,431

III. COST OF PRODUCTION

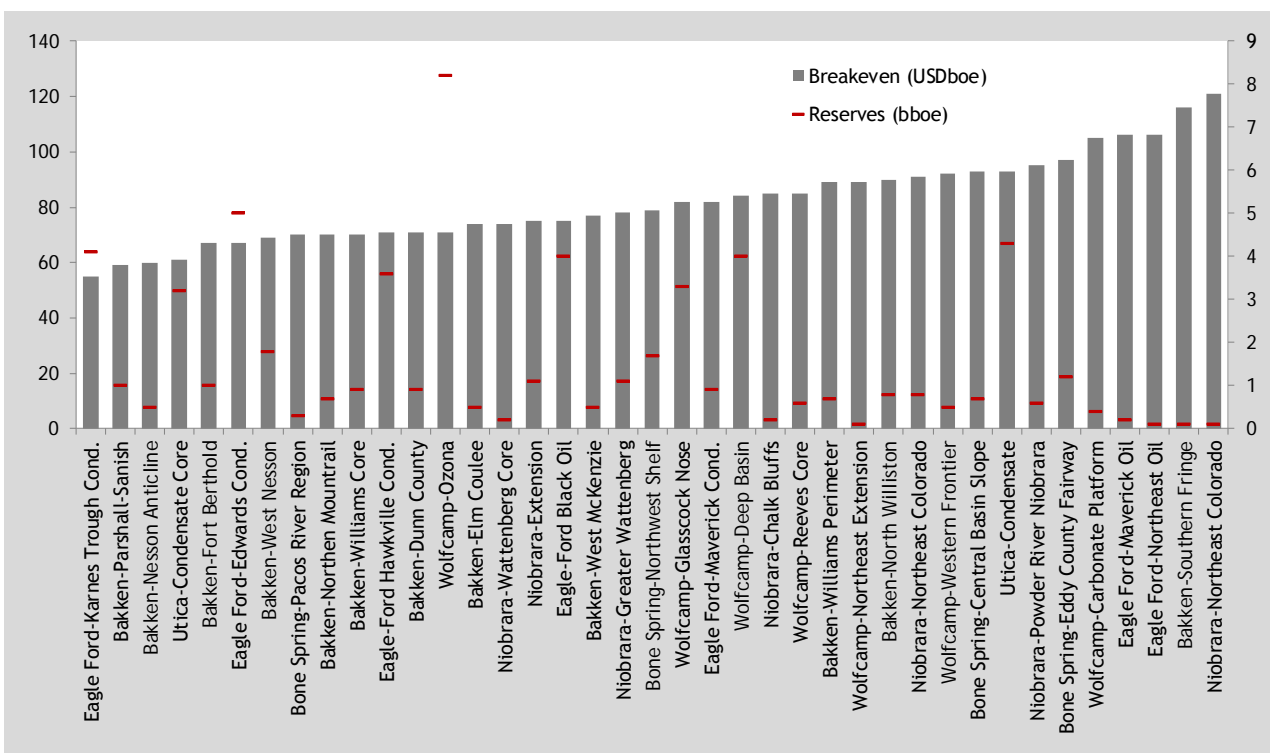
- The cost of producing shale oil ranges roughly from USD60pb to as high as USD95pb. The average breakeven cost is arguably around USD75pb. There are of course conflicting numbers in the market claiming that cost of production for shale oil could, in certain cases, be as low as conventional onshore fields in the Middle East. However, suffice to say, oil extraction from unconventional sources are generally more expensive than that of conventional sources.
- According to the International Energy Agency (IEA), the production cost of North American shale oil averaged approximately USD62pb. Moreover, only around 4% has a production cost of above USD80pb. As such, at current price levels of approximately USD85-80pb, it is still profitable for shale oil producers in the US. According to the Energy Information Administration, total production in the Permian Basin in Texas and New Mexico, the largest US oil field, is expected to rise by 42kbpd to 1.81mbpd. Output from new wells will climb by four barrels a day to 176 barrels per rig.

Chart 5: Breakeven prices for non-producing assets (USDpbbl)



Source: IEA

Chart 6: Breakeven estimates for U.S. shale plays

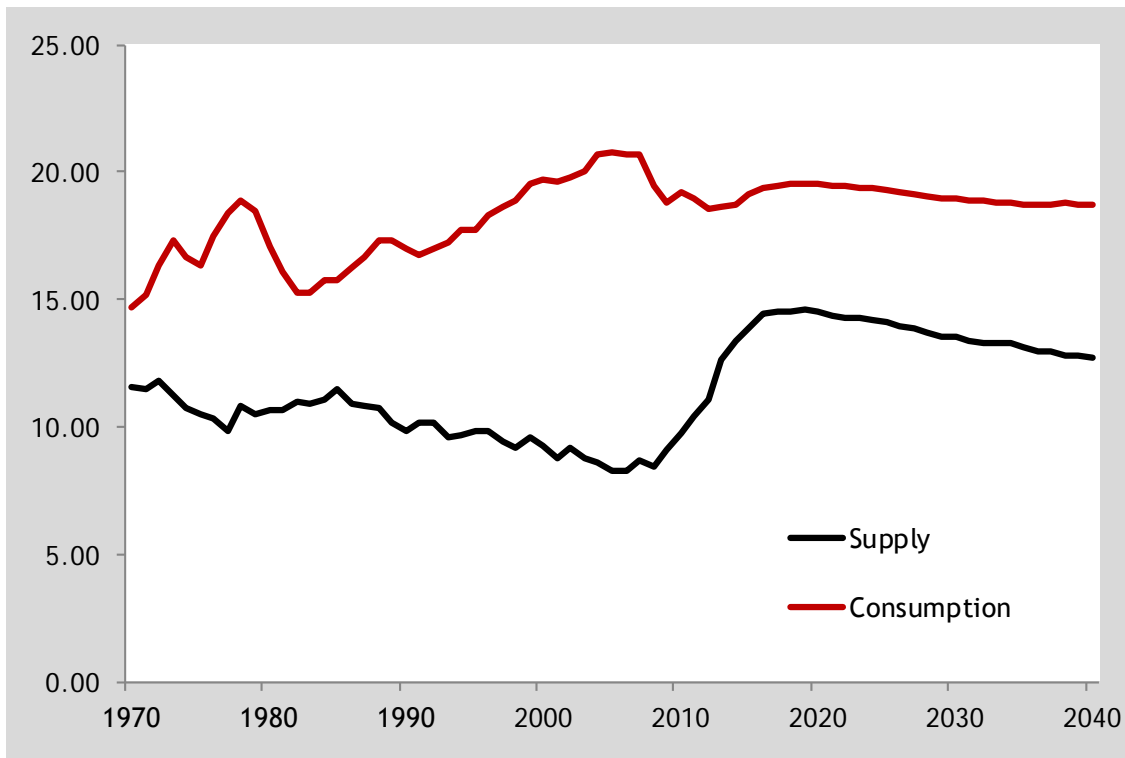


Source: Wood Mackenzie

IV. COULD SHALE OIL MAKE THE U.S. A NET EXPORTER?

- At the moment, the US is a net importer of crude oil as its consumption far outweighs production. It currently imports roughly 5mbpd of crude oil and products. Therefore, the US is still keeping a ban on oil exports. Nonetheless, there was a debate if the shale oil revolution could eventually help the US to attain 'energy independence' which means the country would be a net oil exporter.
- It is notable that US oil production has been on the rise in recent years but its domestic demand was not keeping pace with the growth in supply. However, we opine that although there is a probable chance of the US being energy independent going forward, it is unlikely that it will happen in the near term. Having said that, if the US were to boost production further, it could possibly exert a sustained moderating impact on global oil prices.
- The EIA noted that the US use of imported petroleum and other liquid fuels continues to decline in 2014 mainly as a result of increased domestic oil production. Imported petroleum and other liquid fuels as a share of total US use reached 60% in 2005 before dipping below 50% in 2010 and falling further to 40% in 2012.
- In its analysis, the EIA forecasted that the import share may continue to decline to 25% in 2016 and then rises to about 32% in 2040 as domestic production of tight oil begins to decline in 2022. Despite lesser reliance on imported fuels, domestic US demand will still most likely outpace supply in the foreseeable future.

Chart 7: US production and other fuel liquid supply 1970-2040 (mbpd)



Source: US Energy Information Administration (EIA)

V. OPEC'S MARKET SHARE INTENTION

- **Despite global oil demand failing to keep pace with increasing oil supply**, the OPEC is being adamant in maintaining its declining global market share. Currently, the OPEC has a collective market share of approximately 39% of total global oil supply. In fact, the OPEC boosted its production output by the most in 13 months in September 2014, causing global crude oil prices to plunge further. Media sources were also quoted as saying that Saudi Arabia will continue to produce at elevated levels until the end of the year.
- **Apart from that, certain industry observers and policymakers reckon that the OPEC** is testing the breakeven level at which it is not economical for North American shale oil producers to remain producing. However, North American shale oil production does not seem to be slowing down as yet. From the current tug-of-war situation between the OPEC and the other producers, it would appear that the OPEC is more concern with maintaining its market share as opposed to keeping a certain level of profitability from the sale of oil.

VI. GLOBAL SUPPLY

- The recent collapse in crude oil price was attributed to the growth in global oil supply ahead of a possible drop in demand as the world grapples with the slowdown in key major economies. OPEC expects global oil supply to grow +1.2mbpd in both 2014 and 2015 to 91.2mbpd and 92.4mbpd respectively, driven by non-OPEC supplies (Table 2).

Table 2: Global oil supply (mbpd)

	2011	2012	2013	2014	2015
Non-OPEC	52.4	52.9	54.2	55.9	57.2
OPEC	35.2	36.7	35.8	35.3	35.2
Total global oil supply	87.6	89.6	90.0	91.2	92.4

Source: OPEC

- Interestingly, OPEC's production receded by -0.9mbpd in 2013 and is expected to reduce further by -0.5mbpd in 2014 and -0.1mbpd in 2015. This would reduce OPEC's supply share from 41% in 2012 to 39% and 38% in 2014 and 2015 respectively.
- The growth in non-OPEC oil supply has largely been driven by the US. Its oil supply is expected to grow by +1.4mbpd in 2014 and +0.9mbpd in 2015. Quoting the EIA, OPEC indicated that the growth in US oil supply came from North Dakota and Texas, particularly from the Permian shale play.
- Another source of growth within the non-OPEC countries is amongst the developing countries (DCs) driven by the Latin America and Africa regions which more than offset the declines expected in the Middle East and Other Asia regions (Table 3). The Latin America growth is underpinned by Brazil's output while the declines in Other Asia is due to lower output expected from Indonesia, Vietnam, Thailand and India.

Table 3: Global oil supply breakdown (mbpd)

Global oil supply	2011	2012	2013	2014e	2015f
<i>Non-OPEC</i>					
OECD	20.2	21.1	22.2	23.7	24.8
Americas	15.5	16.7	18.1	19.6	20.7
of which US	na	na	11.2	12.6	13.5
Europe	4.1	3.8	3.6	3.6	3.5
Asia Pacific	0.6	0.6	0.5	0.5	0.5
DCs	12.6	12.1	12.1	12.2	12.4
FSU	13.2	13.3	13.4	13.4	13.3
Other Europe	0.1	0.1	0.1	0.1	0.1
China	4.1	4.2	4.2	4.3	4.3
Processing gains	2.2	2.1	2.2	2.2	2.2
Total non-OPEC supply	52.4	52.9	54.2	55.9	57.1
<i>OPEC</i>					
Crude oil	29.8	31.1	30.2	29.5	29.2
OPEC NGLs + non conventional oils	5.4	5.6	5.6	5.8	6.1
Total global oil supply	87.6	89.6	90.0	91.2	92.4

*DCs - developing countries; **FSU - former Soviet Union; ^NGLs - natural gas liquids

Source: OPEC

- While OPEC's forecast indicates equilibrium in the global oil market for 2014 and 2015 (Table 4), it also acknowledges the demand risks which could put pressure on crude oil price. In our view, the uncertainties in the global economic outlook has been, at worst, similar to that seen since 2010, although we see more positive signs in the overall outlook especially with the US economy which is gaining traction.

Table 4: Global oil demand-supply dynamics

	2011	2012	2013	2014e	2015f
Global oil demand (per barrel)	88.1	89.0	90.0	91.2	92.4
Global oil supply (per barrel)	87.6	89.6	90.0	91.2	92.4
Surplus/deficit	-0.5	0.6	-0.1	0.0	0.0
<i>Average price for the year (USD per barrel)</i>					
Brent	111.0	111.9	108.8	104.8	-
WTI	95.0	94.1	98.0	98.4	-

Source: OPEC, Bloomberg

- This was also reflected in the World Bank's global growth forecast accelerating from 2.8% in 2014 to 3.4% in 2015 and a further 3.5% in 2016. The improvement is largely attributed to high-income economies which are expected to contribute about 50% of the global growth for 2015 and 2016 compared to less than 40% in 2013.

C. LIVING IN A WORLD OF RELATIVELY CHEAP OIL

I. BEAR MARKET: SHORT-LIVED OR SECULAR DOWNTREND?

- Price cyclicality is a norm. Industry observers noted that the current slump in oil prices was as a result of lower consumption expectations from Europe and China coupled with increasing supply from outside North America. On that score, it must also be highlighted that price decline engendered by intermittent oversupply and slowdown in consumption is not out of the ordinary as it has been recurring in yesteryears. Hence while the recent price action may be unnerving, it must be looked upon in a right perspective. The latest drop in oil price by more than -20% within a four-month period should therefore be of no rude shock as history has proven that such occurrence did occasionally happen.
- Understanding of price behavior... Nevertheless, the seeming chaos of late can be better understood if we can gauge the floor equilibrium at which oil prices will most probably be supported at. Having said that, the more appropriate question to ask now is whether we are already seeing the cyclical bottom in prices or the market is only at the cusp of a secular downtrend.
- ...lies in fundamental as well as technical studies. In our opinion, the answer lies in (i) the fundamental of demand and supply which, in no small way, ties to the importance of and the adherence to maintaining a certain level of fiscal and asset breakeven prices by the producers, as well as (ii) the technical study of secular price behavior of crude oil in particular (and the commodity sphere in general).

FISCAL AND ASSET BREAKEVEN PRICES

- Middle East producers have low cost of operations but... Most onshore fields in the Middle East are matured brownfields with an average asset breakeven cost of approximately USD10-30pb. This is due to the comparatively cheaper cost of operations and capital expenditure associated with onshore wells as compared with offshore wells.

Table 5: Fiscal breakeven prices of various oil producing countries (USD per barrel)

Breakeven* Prices	2014	2013	2012	2011
Middle East and North Africa				
Algeria	112.5	113	120	110.6
Bahrain	116.6	118.7	115.3	110.7
Iran	143	140	130	84
Iraq	93	99.5	95.3	93.2
Kuwait	58	53.8	49	44.2
Libya	99.6	98.8	88.5	183.5
Oman	104.4	94.1	79.8	77.9
Qatar	45.8	46.1	42	38
Saudi Arabia	87.6	84.5	73.8	77
United Arab Emirates	66.5	67.5	79	92.4
Yemen		214.8	237	195
Central Asia				
Azerbaijan	72.5	60	55	54
Kazakhstan	60.8	62.4	67.2	56.8
Turkmenistan	48.9	46.3	49.3	37.8

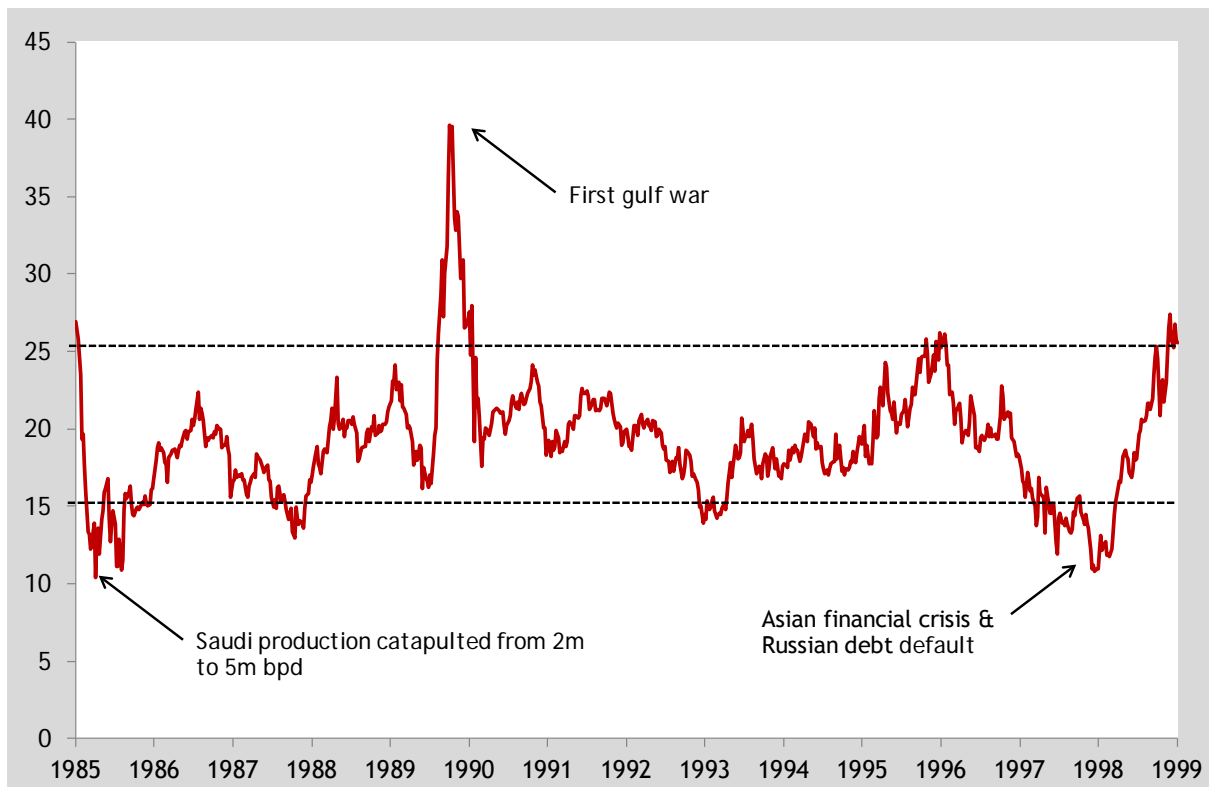
* Fiscal Breakeven (fiscal balance is zero)
Source: Bloomberg

- **...high fiscal breakeven of circa USD88pb.** However, for most of the oil producing countries in the Middle East, oil revenue is the single largest source of revenue for the country. OPEC members in the Middle East rely on the sale of hydrocarbon to fund the country's development and to cater for social needs. Table 5 shows the fiscal breakeven cost for most of the OPEC member countries. The average fiscal breakeven cost for the top OPEC member producers is USD88pb for 2014.
- **Unconventional producers have high asset breakeven cost of around USD75pb.** As stated earlier, the cost of producing shale oil ranges roughly from USD60pb to as high as USD95pb with the average breakeven cost arguably around USD75pb. Hence, suffice to say, oil extraction from unconventional sources are generally more expensive than that of conventional sources.

SECULAR PRICE BEHAVIOUR

- **Heightened versus extreme volatility.** Empirically, oil prices have occasionally experienced bouts of heightened volatility but, in rare instances, it even undergone periods of super bull-run with extreme price movements. During the past half century, the latter episode occurred only twice, namely during the decades of 1970s and 2000s.
- **Super bull-run of 1970s followed by...** Based on US Department of Energy (DOE) Annual Energy Review data on average crude oil nominal first purchase price, crude oil prices shot up by approximately +837% from USD3.39pb as at end-1971 to USD31.77pb exactly a decade later. The colossal jump was arguably precipitated by a mixture of monetary and political adventurism in the 1970s. The monetary consequence of free-floating currency following the demise of gold-pegged Bretton Woods system in 1971 has introduced a new paradigm to the world's financial market. This factor and coupled with several key political events in the Middle East (i.e. the oil embargo of 1973, the Iranian revolution and later the Iran/Iraq war in early 1980s) have resulted in a massive shift in the demand/supply dynamics of the crude oil market.

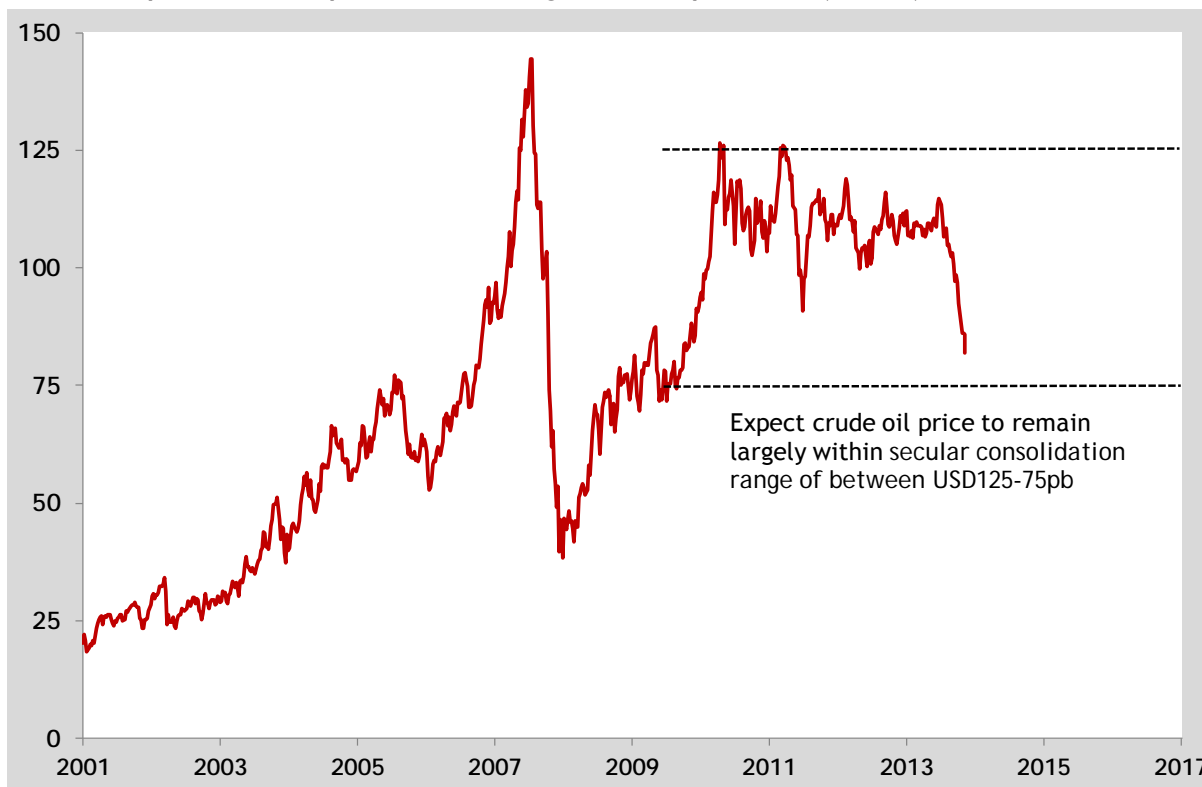
Chart 8: Crude oil prices in range bound equilibrium (1985-1999)



Source: Bloomberg, MIDFR

- ...secular consolidation from mid-1980s to late 1990s. However, crude oil prices managed to find its secular equilibrium by mid 1980s. Thenceforth, except during certain key events, namely (i) the Saudis cranked up production massively from 2mbpd in mid-1985 to 5mbpd in early 1986, (ii) the First Gulf War in 1990, and (iii) the Asian financial crisis & Russian debt default in 1998, prices continued to trade within a defined range bound secular consolidation pattern of between USD15-25pb.
- Super bull-run of 2000s arguably followed by... In the decade of 2000s, we witnessed another episode of extreme price movements. This was evident by the approximately +634% rise in the price of Brent crude from USD19.90 as at end-2001 to USD146.08 in early July 2008. The Western monetary over accommodation of early to mid-2000s ended in the financial crisis of 2008 and with it dragged the crude oil prices down to as low as USD36.61 in late 2008. However, the ensuing economic recovery helped to drive oil price back higher.
- ...secular consolidation since 2011... The prices of crude oil have been in a consolidation mode since 2011. Besides, it seems that crude oil prices have managed to find its new secular equilibrium post-2008. We believe the crude oil is currently testing its lower consolidation price range of USD75pb. On the other end, the crude prices have tested the upper USD125pb levels on several occasions in 2011 to 2013.
- ...of between USD125pb and USD75pb. Hence we are of the opinion that the recent slump in oil prices is not portending a secular downtrend but instead a cyclical pullback within a multi-year consolidation pattern. As such, prices may soon reach the 'sweet spot' plausibly in the range of USD80-75pb where price equilibrium support is met. Moving forward, it is likely the crude oil prices shall continue to trade within the USD125-75pb secular consolidation range pattern for a long and extended period of time.

Chart 9: Expect crude oil prices in new range bound equilibrium (2011-?)

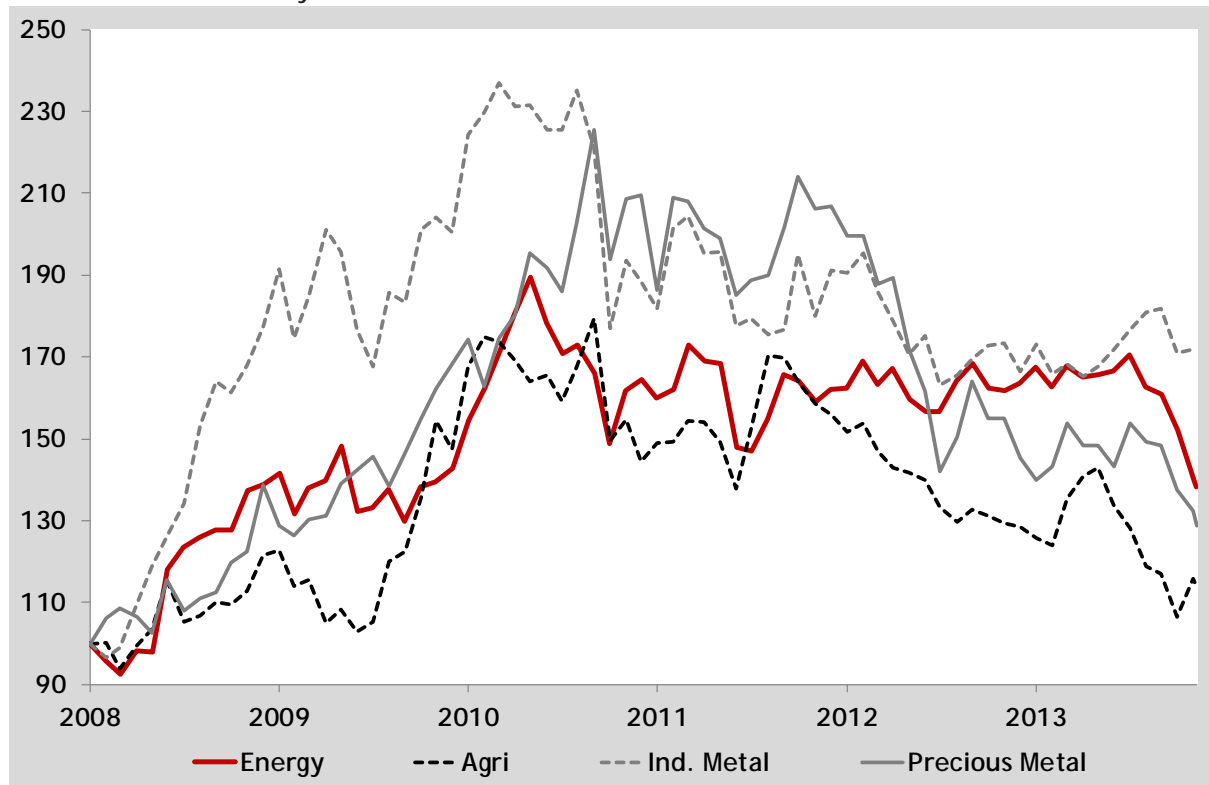


Source: Bloomberg, MIDFR

II. OIL PRICE AND COMMODITY PRICES

- Oil price moves in unison with other commodities. Oil prices generally trending in unison with other globally traded commodity prices. This is mostly true apart from the occasions which saw intermittent trend divergences due to commodity specific factors. In turn, the trend of commodity prices sways in tandem to the overall health of the economy, in particular the manufacturing and other industrial sectors. During the period in which the global economy is buoyant and in an upbeat phase, the demand and use for commodities such as oils, metals, grains and livestock increase, and vice versa.

Chart 10: All commodity classes move in trend unison

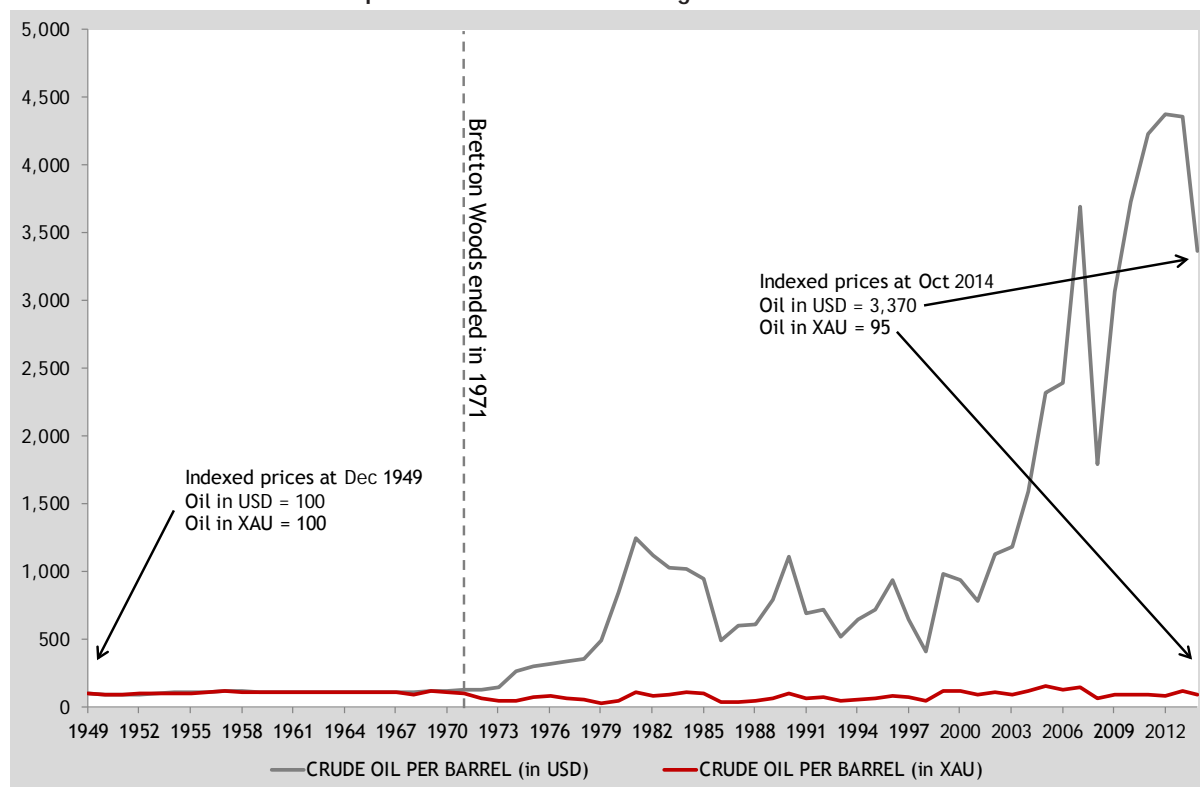


Source: Bloomberg, MIDFR

- Crude oil is arguably the trend leader. In the commodity sphere, crude oil belongs to the energy class. Compared with all other commodities, crude oil is normally the trend leader as it has the most pervasive impact on the economy relative to the other commodity classes. Crude oil is the first among equals due to its strategic importance to our lifestyle. Hence the past hundred years to present is dubbed as the oil-era. Crude oil is used in almost all sectors and is even derived into sub-commodities for various other industries.
- Interesting relationship between crude oil and gold. The 'fixed' price relationship between crude oil and gold is an interesting phenomenon. With regard to this subject, there are numerous hypotheses or explanations on why the prices of crude oil and gold seem to have a very strong correlation. One idea suggests that if the price of crude oil increases, then the prices of fuel at petrol stations will also increase which will have a knock-on effect on transportation cost. This will then lead to higher cost of goods sold which will eventually cause inflation to rise. As gold is known as a hedge against inflation, the price of gold will then increase in tandem.
- The relationship survived the disbandment of Bretton Woods. This 'fixed' relationship even survived the disbandment of Bretton Woods system and continued on to these days. While the free-floating US Dollar post-Bretton Woods brought with it massive inflation, the fixed price relationship between crude

oil and gold remained intact. As a comparison, on one hand, the indexed price of oil in gold (XAU) as at end 1949 of 100 remained little change at 95 in October 2014. On the other hand, the indexed price of oil in US Dollar (USD) as at end 1949 of 100 was severely inflated to 3,370 in October 2014. This clear empirical study presents an irrefutable evidence with regard to the superiority of gold as a just denominator in wages, trade and finance.

Chart 11: 'Fixed' relationship between crude oil and gold



Source: Bloomberg, MIDFR

III. PRICE PROJECTIONS

- Now to the end of the year. The 2014 year-to-date WTI and Brent average price is USD98.2pb and USD105.3pb respectively. Given the current crude oil price levels, we are expecting 2014 Brent average to still end at above USD100pb - indicating that current price levels would have to hover at the lower band of between USD75pb to USD80pb until year end.
- Moving forward into 2015. For 2015, we are expecting WTI and Brent to average around USD94pb and USD100pb respectively. This is in-line with global price expectations in light of weaker global gross domestic price expectations (GDP) and weakening GDP growth in the world's top oil consumers China and Europe.

Table 6: Forward price forecasts

	Consensus		Energy Information Agency		MIDF Research	
	2014	2015	2014	2015	2014	2015
Brent	100.00	98.50	104.42	101.67	100.00	93.25
WTI	89.00	94.00	97.72	94.58	94.50	90.00

Source: Bloomberg, EIA, MIDFR

D. SECTORAL IMPACT

I. AVIATION

- Falling crude oil price bodes well for airlines operation. Jet fuel is categorized as middle distillates of crude oil refinery products. Thus, the easing global crude oil price has a direct correlation on the market price of jet fuel. Typically, 30-50% of an airline’s operating expenses consist of jet fuel cost. It is true that the Low Cost Carriers (LCC) may contain relatively higher percentage of fuel costs than Full Service Carriers (FSC) because the former’s lower non-fuel Cost per Available Seat per Kilometer (CASK) structure. Across the local aviation players, AirAsia X would be the top beneficiary due to its lowest non-fuel unit cost (Table 7). MAHB may indirectly benefit from the higher tourists arrivals as we expect cheaper fare could be offered by LCCs as a result.
- Global airlines reduced the hedging exposure of oil price. The falling and waning volatility of crude oil price has prompted global airlines to reduce fuel hedging exposure in anticipation of a further drop in oil price which would improve their bottomline. Based on our oil price sensitivity analysis (Table 7), every five US dollar drop in Singapore kerosene jet fuel price will enhance the local airlines’ FY15-16 bottomline by 9.9-10.2% for AirAsia and 43.9%-66.3% for AirAsia X. The sharp improvement in the latter’s bottomline is attributable to its smaller earnings base.

Table 7: Oil price sensitivity for local airlines

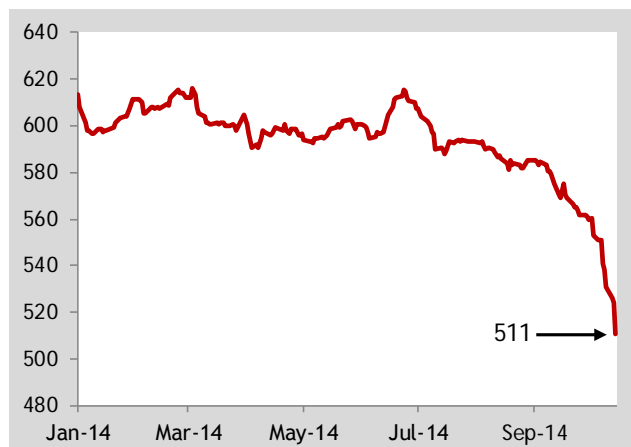
Company	Fuel cost/ Operating Expense (%)	Percentage change in bottomline for every USD5/b drop in fuel price (%)	
		FY15	FY16
AirAsia	49-55	+9.9	+10.6
AirAsia X	48-51	+66.3	+44.0

* Forecasted FY14’s average jet fuel price: USD135/b
Source: Companies, Forecasts by MIDFR

II. SHIPPING

- Shipping operators may get relief from **lower bunker price**. While the supply and demand of vessels is not directly impacted by falling crude oil price, we foresee shipping companies gaining from lower marine bunker cost. For MISC and Maybulk, the percentage of bunker cost component over their operating expenses is about 20-30%, depending on the spot market price of bunker oil.
- **Sharp dive in bunker price corresponds to lower crude oil price**. For the past six months, the Bloomberg IFO380 bunker price

Chart 12: Price chart for Bloomberg IFO 380 bunker price (USD-pmt)



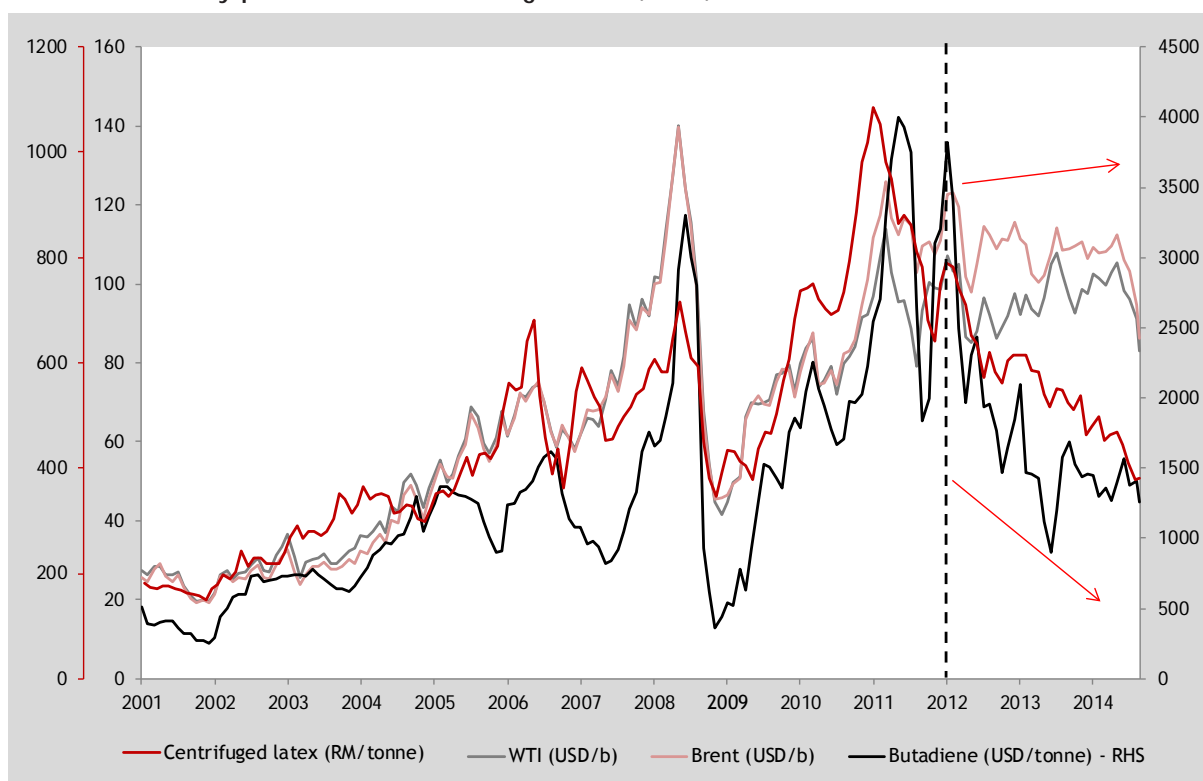
Source: Bloomberg, MIDFR

had been trading at the range of USD580-620pmt. It had since taken a dive to USD511pmt as of 15 October, reflecting the sharp drop in crude oil price. This price level translates into a discount of 14% from the year-to-date average (Chart 12).

III. GLOVE

- **Rubber glove types.** There are two main types of gloves, nitrile gloves and latex gloves. Nitrile glove is composed of nitrile butadiene rubber (NBR) which is a synthetic rubber copolymer of acrylonitrile and butadiene. Meanwhile, natural rubber or latex glove consists mainly of natural rubber which has been processed into centrifuged latex. Besides rubber gloves, nitrile butadiene rubber and centrifuged latex are widely used in the automotive and aeronautics industry. In fact, 70-75% of rubber supply (natural and synthetic rubber alike) is consumed by the automotive industry for the manufacturing of tyres.
- **NBR is mainly petroleum derived.** Unlike centrifuged latex which is derived from the sap of the rubber tree, *Hevea brasiliensis*, NBR's components are mainly derived from petroleum. Acrylonitrile is produced from propylene and ammonia, where propylene is produced from fossil fuels such as petroleum, natural gas and coal. Meanwhile, butadiene is a petroleum hydrocarbon obtained from the C4 fraction (mixture of liquefied hydrocarbons) of steam cracking. This high usage of petroleum derivatives in the production of gloves causes a high correlation between crude oil, centrifuged latex and butadiene prices.
- **Historically, the prices of crude oil, nitrile and latex were closely correlated...** The correlation between crude oil WTI, Brent, centrifuged latex and butadiene is high from 2001 - 2012. However, since 2012, there was an apparent oversupply of nitrile and latex (thus applying downward price pressure on nitrile and latex) which resulted in a stark divergence in its price trend vis-à-vis crude oil (refer to Chart 13) and reducing its correlation (refer to Table 8).

Chart 13: Monthly price trend of centrifuged latex, WTI, Brent and Butadiene



Source: MIDFR, Bloomberg

Table 8: Correlation between centrifuged latex, WTI, Brent and Butadiene monthly prices

	2001 - Current		2001 - 2011		2012 - Oct 2014		July - Oct 2014	
	WTI	Brent	WTI	Brent	WTI	Brent	WTI	Brent
Centrifuged latex	0.80	0.81	0.85	0.89	0.07	0.57	0.82	0.87
Butadiene	0.77	0.79	0.83	0.87	0.08	0.51	0.87	0.85

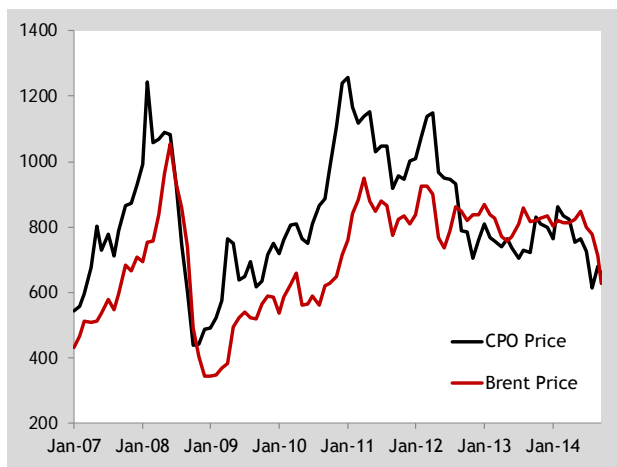
Source: MIDFR , Bloomberg

- ...yet, recently it is gaining correlation. Of late, since July - Oct 2014, the level of correlation has increased to its previous level which is above 0.8. However, it is still too early to conclude that the cause for the drop in butadiene price could be related with the fall in crude oil prices. Nonetheless, since NBR is mainly derived from acrylonitrile and butadiene, the industry leaders are expecting NBR prices to eventually decrease in accordance with the fall in crude oil prices. As such, we believe that a further reduction in crude oil prices could possibly decrease the price of nitrile. Hence, if the fall in crude oil price were to continue, it would not affect glove manufacturers as the current price of NBR is favourable. Given the subdued crude oil price now, we believe this is an opportune time for glove manufacturers to stock up on its nitrile input.

IV. PLANTATION

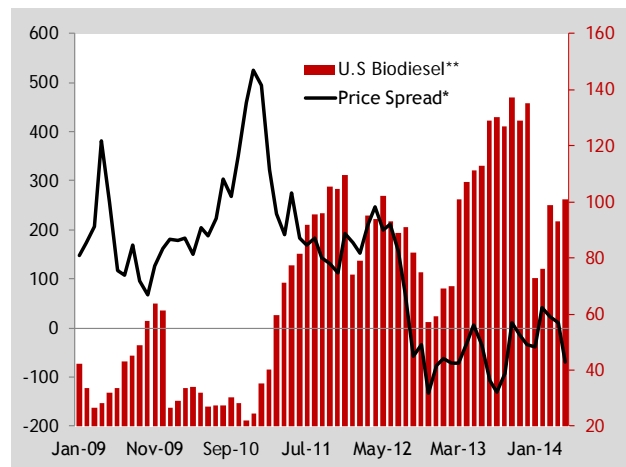
- The alternative source of energy. Apart from its wide applications in the food industry, palm oil can also be used as a feedstock for the production of renewable energy namely biodiesel. The conversion of palm oil into palm methyl ester (PME) and then to biodiesel produces more environmentally friendly fuel than diesel fuel. In addition, the usage of biodiesel also requires no modifications on diesel engines and therefore, increases the demand for renewable fuels.

Chart 14 : Price spread between CPO and Brent (USDpmt)



Source: Bloomberg

Chart 15: Correlation between U.S biodiesel production and the price gap



*CPO minus Brent (USDpmt)
 **B100 Production (mn gallons)
 Source: Bloomberg, U.S Energy Information Administration (EIA)

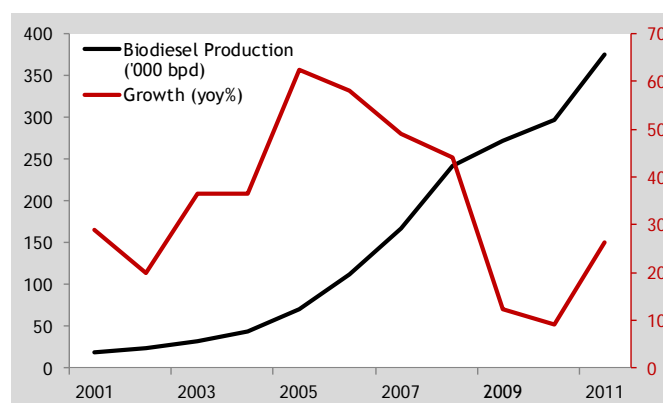
- As an alternative energy source, biodiesel competes directly with petroleum-based petrol and diesel. The substitution effect between biodiesel and petroleum-based fuel causes the prices of crude oil and crude palm oil (CPO) which is used as a feedstock in the production of biodiesel to move in tandem (see Chart 14).

- The correlation.** The magnitude of biodiesel production depends on various factors such as tax incentives, subsidies, blending mandate, tariffs and import barriers. Besides that, the movements of the feedstock price - the CPO, also have a significant influence

on the pattern of biodiesel production. Refer to Chart 15, the production of biodiesel is generally increased when CPO price is relatively cheaper than crude oil (the premium CPO over Brent narrowed, and the discount of CPO to Brent is widened).

- When the crude oil prices soared from USD25pb in 2002 to USD97pb in 2008, the total world biodiesel production increased by more than nine times. However, in 2009, the biodiesel production growth decelerated when the crude oil prices came-off in 2009 (see Chart 16). The slower growth in biodiesel production gave a negative signal to the agricultural industry as demand for edible oils is expected to soften and eventually push CPO prices lower.
- Maintain NEUTRAL.** Given this backdrop, we believe that the recent decline in crude oil prices to indirectly cap the upside potential on CPO price. Since we do not foresee any strong catalyst to lift sentiments in our local plantation sector in the near term, we reiterate our NEUTRAL stance on this sector with unchanged average CPO price assumptions of RM2,600pmt and RM2,650pmt for 2014 and 2015 respectively.

Chart 16: World Biodiesel Production

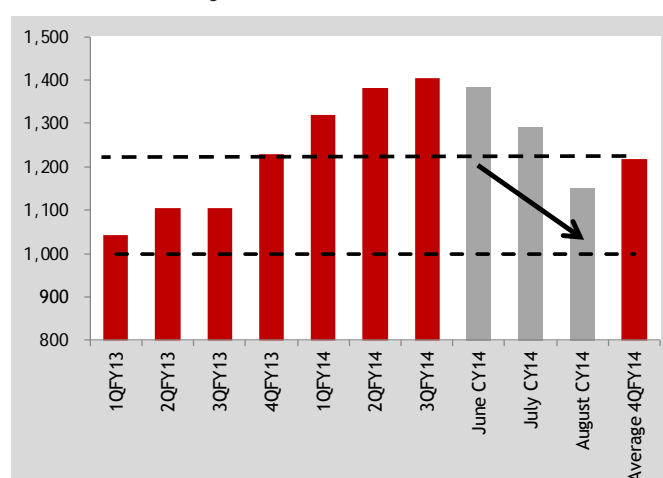


Source: Bloomberg

V. POWER

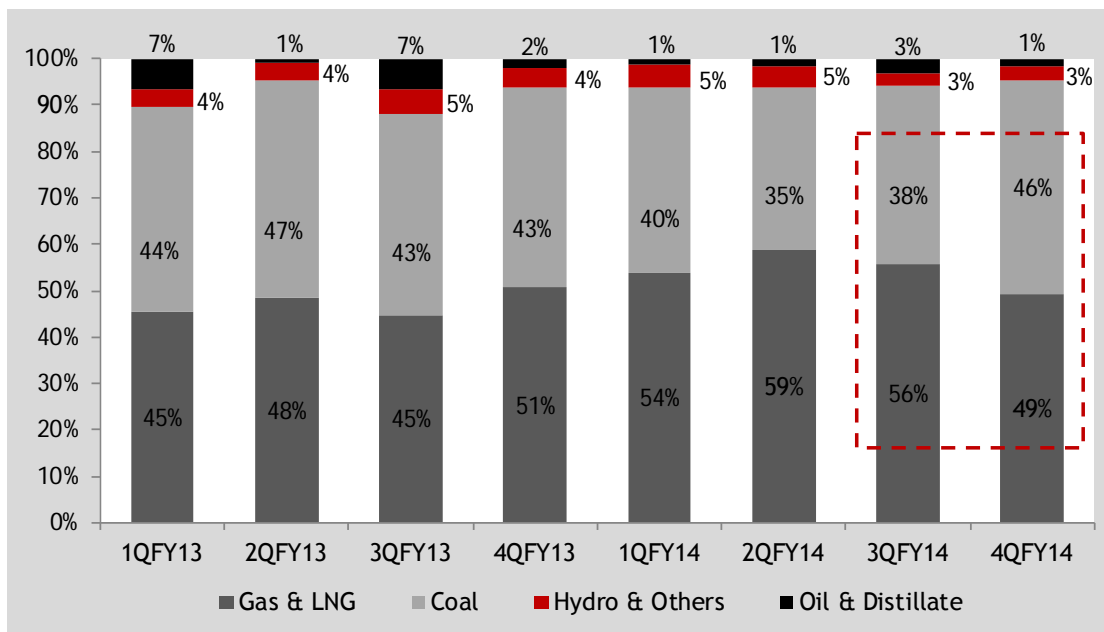
- Oil and distillates make up only a small portion of generation mix for power sector in Malaysia** which is largely dominated by coal, gas and Liquefied Natural Gas (LNG). While the generation mix has been shifting between coal and gas, the extended outages at the Tanjung Bin and Jimah coal-fired power plants had forced the power sector to burn the more expensive gas as a source of generation. However, the gas and LNG supply to the power sector are limited to approximately 1,300mmscfd and the shortage will be supplied by burning more oil and distillates.

Chart 17: Daily average gas consumption for the Malaysia Power sector (mmscfd)



Source: Energy Commission Malaysia

Chart 18: Power generation mix



Source: Energy Commission Malaysia

- Nevertheless, we have observed that the situation has changed in the recent quarter in which there is an increase in coal utilisation whilst the gas requirement had subsided. This would enable the power sector to capitalised on the cheaper coal price as the main source of generation. Having said that, portion of the more expensive oil and distillates was reduced to just 1% of the generation cost during the period.
- Assuming that the recent trend continues, we expect the power sector to continue to capitalize on the cheaper coal as the main generation source which would negate the impact on the falling oil prices; power producers would still prefer to burn more coal and not oil and distillates. On this note, we are of the view that the power sector will stand to benefit from the falling crude oil prices in terms of lower generation cost, albeit just marginally as oil and distillates make up only small portion of generation mix and on the basis that coal would still be the cheapest fuel among various fuel sources.

VI. OIL AND GAS

- **Stocks on Bursa Malaysia.** Despite global oil prices taking a steep dive, our locally listed oil and gas stocks continue to remain resilient. This is largely due to the lack of strong correlation these stocks have with global oil price movements. The reason is simple - locally listed oil and gas stocks are not oil producers and are not directly linked to the sale of crude oil. Almost all of our locally-listed stocks are service providers. Undeniably, should oil prices fall further below breakeven levels, then service providers will be affected as well.
- **Correlation.** Naturally, crude oil prices would have a strong correlation with price trends of oil producers as the companies derive its revenue from the extraction and sale of hydrocarbons. We would then expect a weaker correlation between oil prices and oil and gas service providers as company revenue is not derived from the sale of hydrocarbons. Table 9 and Table 10 show the correlation between oil prices and sample companies.

Table 9: Correlation between WTI crude oil price and international oil companies (oil producers)

Company	Royal Dutch Shell	British Petroleum	Total S.A	Statoil	Exxon Mobil	Chevron	Petroleo Brasileiro	Petro China
Correlation	0.7	-0.3	-0.1	0.3	0.7	0.7	0.2	0.5
Strength	Strong	-	-	Weak	Strong	Strong	Weak	Moderate

Source: MIDFR

Table 10: Correlation* between WTI crude oil price and locally-listed companies** (service providers)

Company	Dayang	KNM Group	Gas Malaysia	Petronas Gas	Petronas Chemicals	Bumi Armada	MMHE	Wah Seong	Dialog Group
Correlation	0.4	0.1	0.6	0.5	0.6	0.2	-0.1	0.2	0.6
Strength	Moderate	Weak	Moderate	Moderate	Moderate	Weak	-	Weak	Moderate

* Data sample taken from 2006 to present

** Sample is based on stocks under MIDFR's coverage

- From Table 9, we note that Shell, ExxonMobil and Chevron have strong positive correlations with WTI oil prices. However, from Table 10, there are no stocks under our universe of coverage which have strong positive correlations with WTI oil price. Most of the relationships which are moderate are in essence, downstream utilities companies. In addition, we ran the correlation test for other service providers from the offshore support vessel chartering segment. For Perisai Teknologi Bhd, Alam Maritim and Perdana Petroleum, the correlation with WTI oil price is between weak to moderate. From these simple observations, we can safely opine that our locally-listed oil and gas service providers are resilient to negative global oil price movements, with the condition that the prevailing price is still above the production breakeven cost.
- We continue to believe that the local oil and gas sector will remain to be vibrant. Our view is premised on sustained capital expenditure and operating expenditure commitments by global oil producers. In Malaysia, the average asset breakeven cost for shallow water oil production is approximately USD20-30pb. Deepwater breakeven cost is approximately between USD50-70pb. As such, there is still a large price gap for producers to continue to profit from the production of oil and gas.

H. CONCLUSION

- In conclusion, we might be experiencing a period of weak oil prices but it should be noteworthy that this is by no means signaling the start of a secular downtrend. The fundamentals of oil supply and demand remain intact and the heavy global reliance on fossil fuel is here to stay, for the long foreseeable future at least. Despite oil prices continue to remain subdued, we believe that there is a strong fundamental support at around USD75pb levels. This is based on the notion that 10-15% of the global oil supply have asset breakeven levels of above USD75pb, especially unconventional oils such as shale oil and arctic oil. Additionally, oil producing nations within the OPEC have fiscal breakeven levels in excess of USD80pb.
- This episode on falling crude prices have exposed the vulnerability of some countries, and have showcased the strength of others. Since oil prices began to slide in the latter part of this year, countries such as Venezuela, which is a member of the OPEC, has been lobbying to the larger oil producing members to support and control oil prices, but hitherto to no avail. As the Venezuelan government is heavily reliant on oil as a main source of income, every USD1 drop in oil price translates into a loss of USD1b in state revenue. It is also likely that given the persistently weak crude oil prices, Venezuela could default on its debts.
- On the flipside, the current oil price weakness has thus far displayed the US shale oil industry's resilience towards price pressures against it. The advancement in shale oil extraction and production technology is helping the US to weather against adverse price movements. Even with prices trading at circa USD80pb, the US shale oil production is reportedly to be in full swing, chalking up one of the highest production levels in three decades.
- The global addiction towards fossil fuel will not waver any time soon. Whether we are living in a world of relatively cheaper oil or in a world of expensive energy, our insatiable thirst for oil persists. Oil is arguably one of the most pivotal driving factors for economic growth and the quests for harder-to-find oil will continue, benefitting the global oil and gas industry.



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NEUTRAL	Total return is expected to be between -15% and +15% over the next 12 months.
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