

Global Energy: what do OPEC cuts mean for the oil market?

October, 2016

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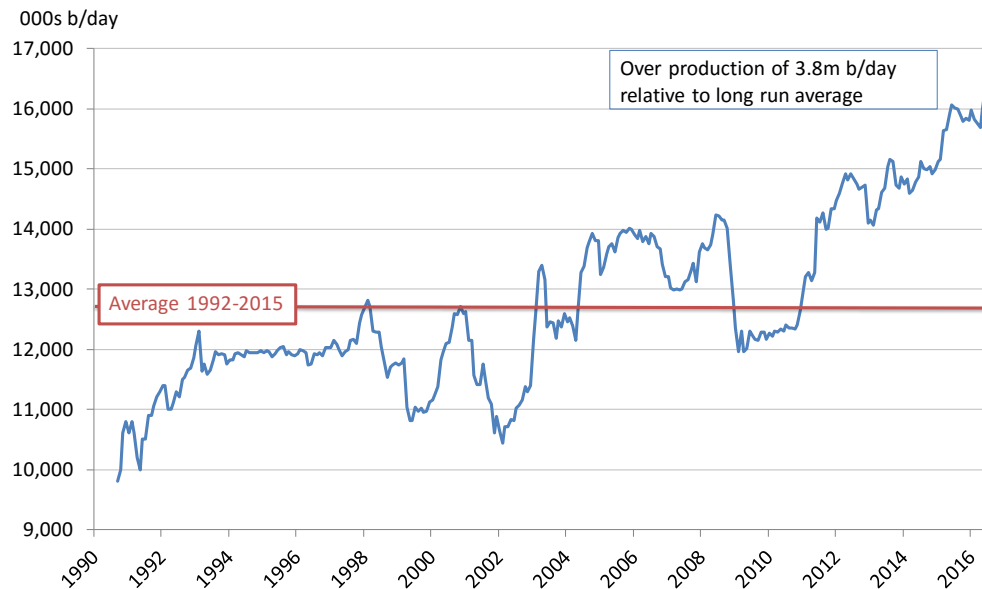
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- **OPEC cuts:** announcement of first supply cuts since 2008, to put a floor under the oil price. Cuts likely to come from Saudi, Kuwait & UAE
- **Oil market remains oversupplied**, but in better balance than at start of the year...
....moving to deficit in 2017
- **We consider the oil price to be on a journey back to \$70/bbl**
- **US natural gas market: has moved into undersupply**
- **Energy equities have outperformed in 2016:** rebound still leaves the sector a long way from historical normalised valuation levels

- OPEC announced on September 28th 2016 that they had agreed to cut production levels
- OPEC have opted for a new production limit of 32.5-33.0m b/day, a reduction of 0.5-1.0m b/day versus current supply. To be ratified at OPEC's November meeting
- We expect the lion's share of the cut to be borne by Saudi, Kuwait & UAE

Saudi, Kuwait and UAE production (k b/day)



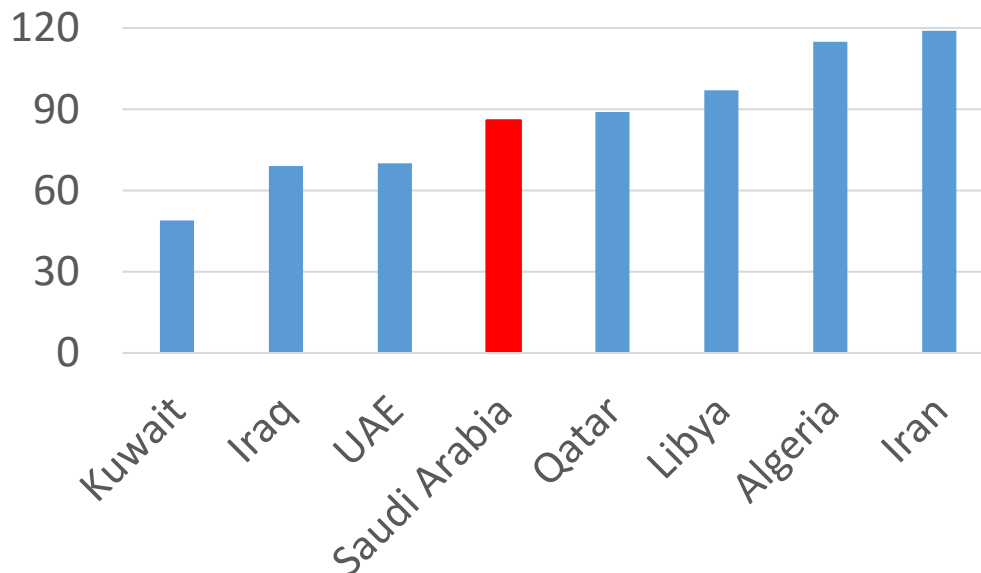
OPEC production (m b/day)

('000 b/day)	31-Dec-10	31-Aug-16	Change
Saudi	8,250	10,600	2,350
Iran	3,700	3,640	-60
UAE	2,310	3,070	760
Kuwait	2,300	2,910	610
Neutral zone	540	0	-540
Nigeria	2,220	1,460	-760
Venezuela	2,190	2,140	-50
Angola	1,700	1,760	60
Libya	1,585	280	-1,305
Algeria	1,260	1,110	-150
Qatar	820	650	-170
Ecuador	465	550	85
OPEC-11	27,340	28,170	830
Iraq	2,385	4,350	1,965
OPEC-12	29,725	32,520	2,795

- OPEC's statement, accompanying the announcement of cuts, says:

“In the last two years... Oil-exporting countries' and oil companies' revenues have dramatically declined, putting strains on their fiscal position and hindering their economic growth. The oil industry faced deep cuts in investment and massive layoffs, leading to a potential risk that oil supply may not meet demand in the future, with a detrimental effect on security of supply.”

OPEC (selected) fiscal breakeven oil prices 2016 (\$/bbl)

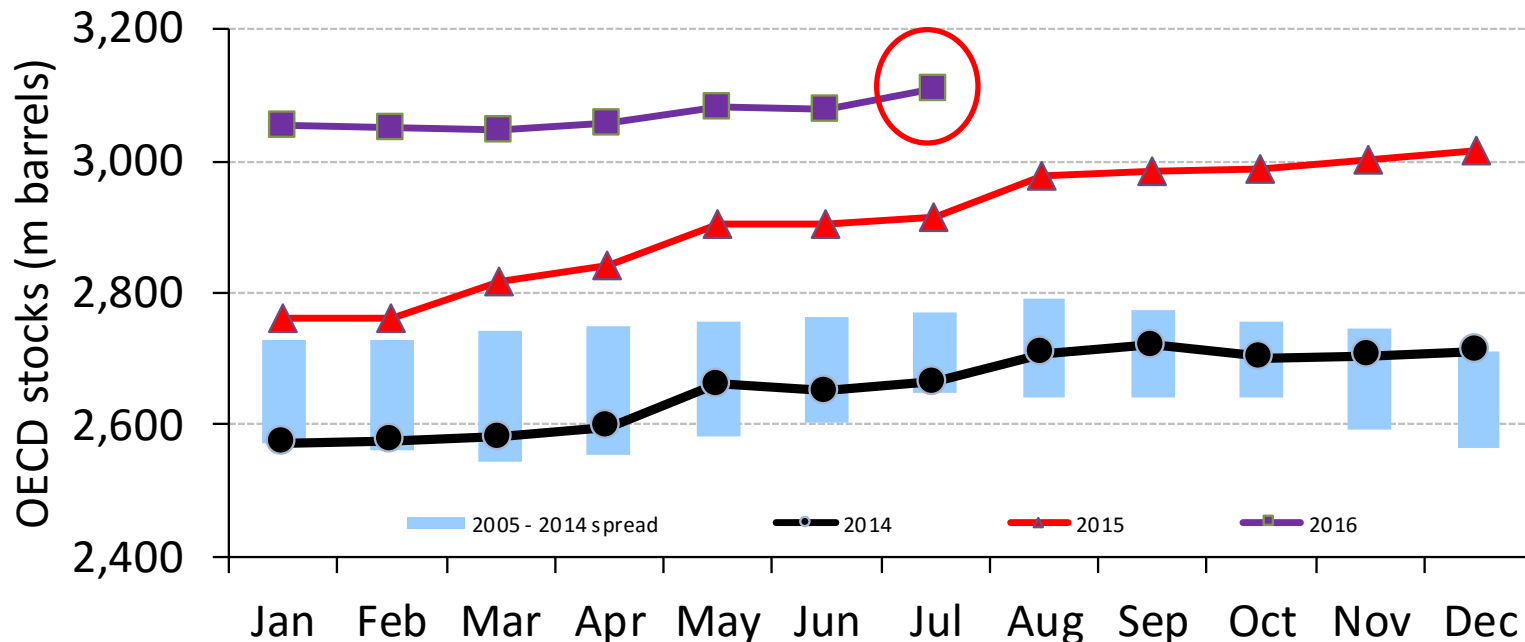


- Saudi are running highest budget deficit within the G20
- Cuts to Saudi ministerial salaries of 20% announced in September
- Payment delays to contractors in Saudi being reported
- Financial pressures even greater in 'tier 2' OPEC (e.g. Iraq; Nigeria; Venezuela; Ecuador)

Oil supply/demand: OECD inventories over top of 10 year range 4

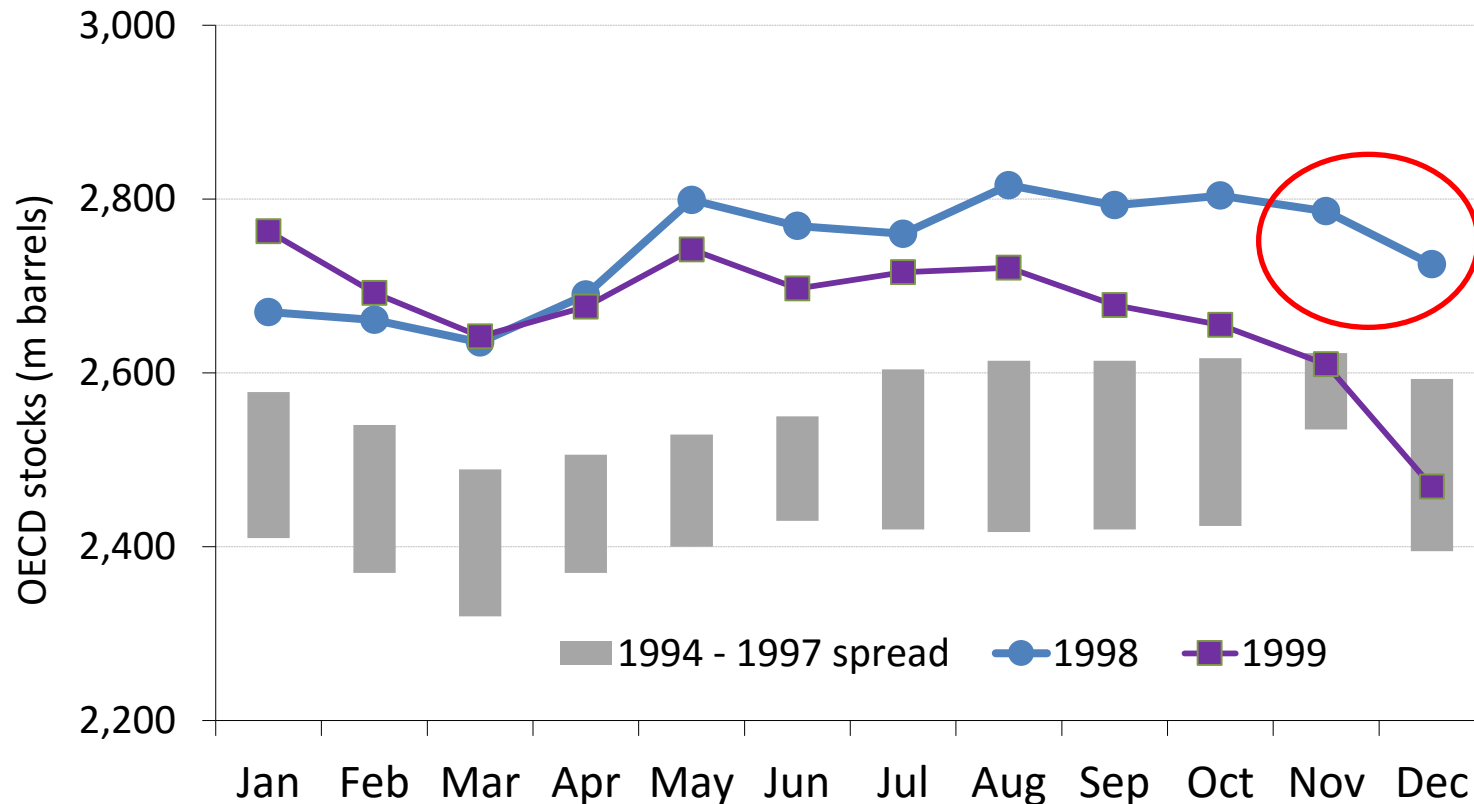
- The net supply/demand effect in 2014 was a loosening of OECD inventories
- In 2015, OECD inventories moved above the top of the ten year range...
...the move implied average oversupply of c.0.7m b/day
- In the six months to the end of July, the oversupply has fallen to 0.2m b/day

OECD oil inventories (million bbls)



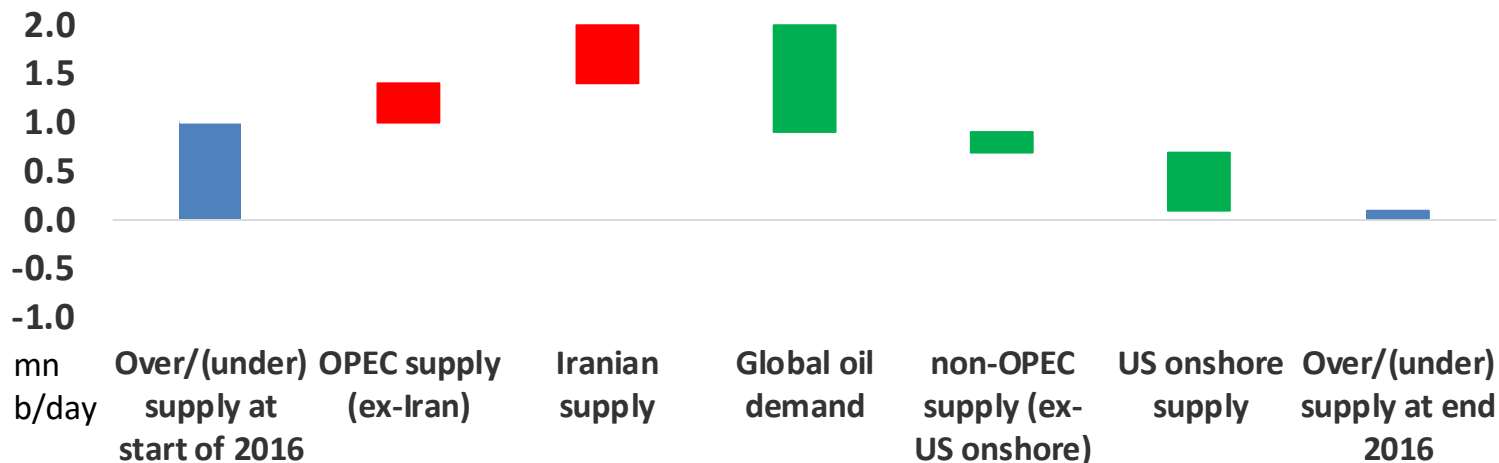
- In the 1998/99 downcycle, oil inventories peaked at around 300m above average...
.... very similar to magnitude of oversupply in 2015/16
- Oil price recovery and end of 1998 coincided with inventories starting to fall

OECD oil inventories 1994-1999 (million bbls)



Inventories – the path to a tighter market in 2017

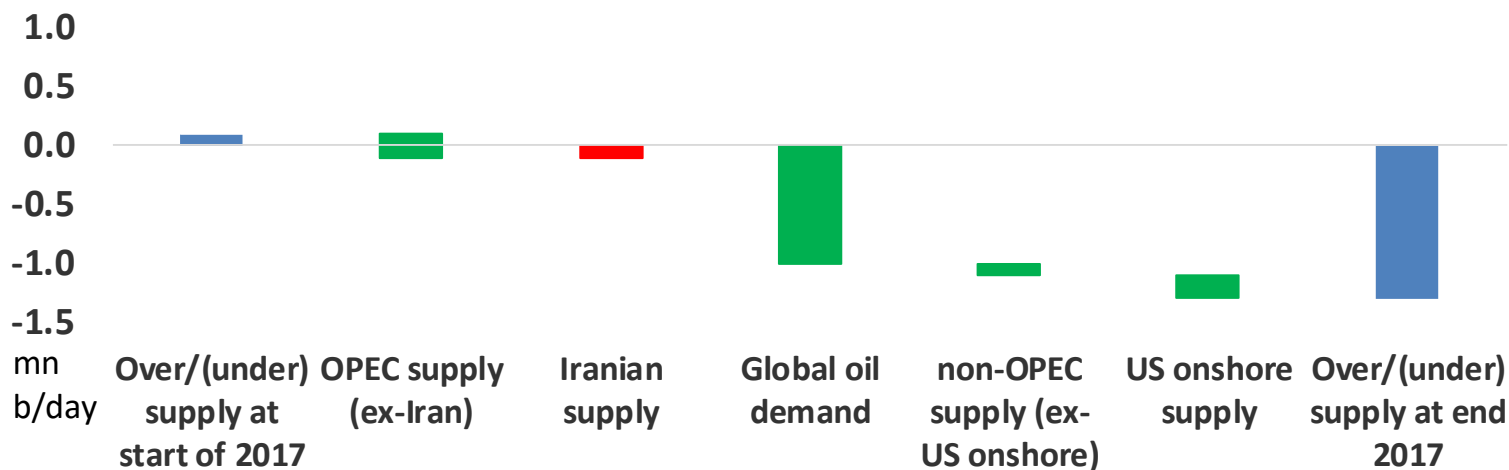
2016 global oil market balance



Q4 2016 wildcards:

- Libya

2017 global oil market balance (assuming OPEC deal is adhered to)



2017 wildcards:

- Libya
- Nigeria
- US onshore

Near term oil demand: world oil demand up 1.4m b/day in 2016

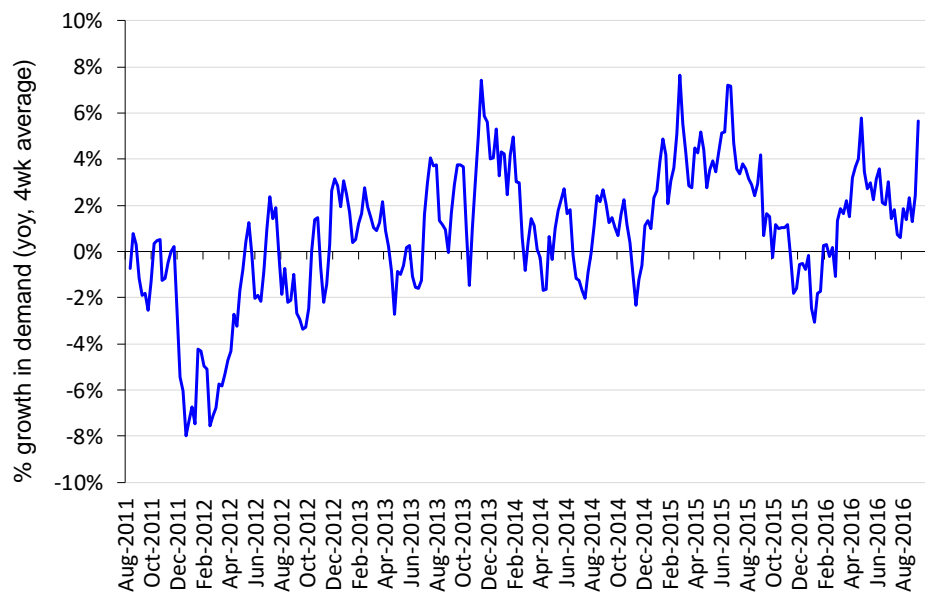
- 2016 world oil demand forecast to be around 8.9m b/day up on pre-recession peak (2007)
- Non-OECD demand has grown unchecked through the oil price spike and financial crisis of 2008/09
- Demand growth in 2015 of 1.8m b/day highest since 2010, spurred on by low price
- Estimates for 2016 and 2017 indicate healthy demand growth of 1.3m and 1.2m b/day

Global oil demand (m b/day)

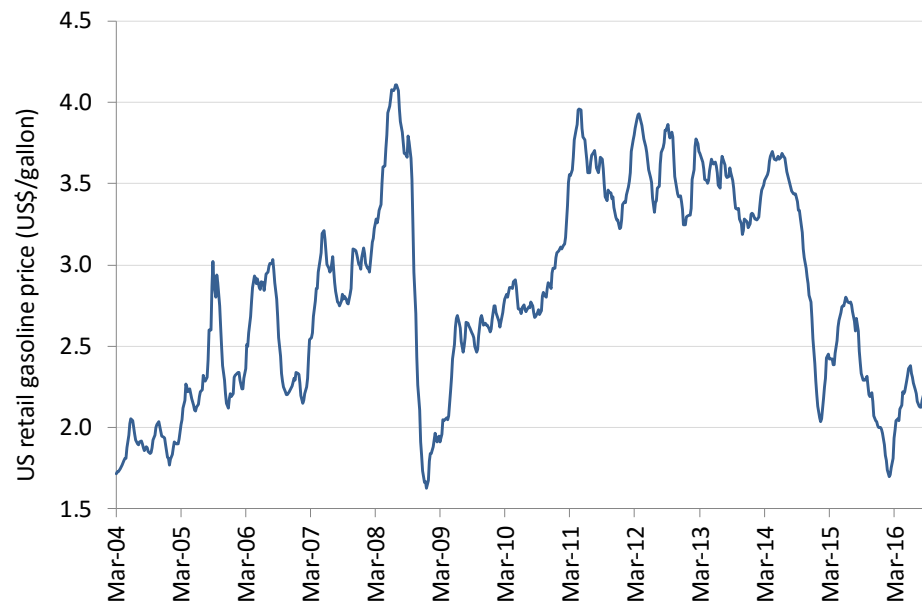
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
OECD demand													IEA	IEA
North America	25.7	25.8	24.5	25.8	24.5	23.7	24.1	24.0	23.6	24.1	24.1	24.4	24.6	24.7
Europe	15.6	15.7	15.7	15.6	15.5	14.7	14.7	14.3	13.8	13.6	13.5	13.7	13.8	13.8
Pacific	8.8	8.9	8.7	8.7	8.3	8.0	8.2	8.2	8.5	8.3	8.1	8.1	8.0	8.0
Total OECD	50.1	50.4	48.9	50.1	48.3	46.4	47.0	46.5	45.9	46.0	45.7	46.2	46.4	46.5
<i>Change in OECD demand</i>		0.3	-1.5	1.2	-1.8	-1.9	0.6	-0.5	-0.6	0.1	-0.3	0.5	0.2	0.1
NON-OECD demand														
FSU	3.8	3.9	4.0	4.0	4.2	4.0	4.1	4.4	4.6	4.7	4.9	4.9	5.0	5.1
Europe	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
China	6.4	6.7	7.2	7.6	7.7	7.9	8.9	9.3	9.9	10.4	10.7	11.4	11.6	11.9
Other Asia	9.0	9.0	9.3	9.8	9.9	10.3	10.8	11.1	11.3	11.7	12.0	12.5	13.1	13.6
Latin America	4.9	5.0	5.2	5.3	5.6	5.7	6.1	6.2	6.5	6.6	6.8	6.8	6.7	6.7
Middle East	5.5	5.9	6.1	6.4	6.7	7.1	7.3	7.5	7.9	7.9	8.0	8.2	8.3	8.5
Africa	2.8	2.9	2.9	3.3	3.3	3.4	3.5	3.5	3.8	3.9	4.0	4.1	4.2	4.4
Total Non-OECD	33.1	34.1	35.4	37.1	38.1	39.1	41.4	42.7	44.8	45.9	47.2	48.6	49.7	50.9
<i>Change in non-OECD demand</i>		1.0	1.3	1.7	1.0	1.0	2.3	1.3	2.1	1.1	1.3	1.4	1.1	1.2
Total Demand	82.5	83.8	85.1	87.2	86.4	85.5	88.4	89.2	90.7	91.9	92.9	94.7	96.1	97.3
<i>Change in demand</i>		1.3	1.3	2.1	-0.8	-0.9	2.9	0.8	1.5	1.2	1.0	1.8	1.4	1.2

- US oil demand fell from c.20m b/day to c.19m b/day, between 2001 and 2012
- Lower domestic oil and gasoline prices now driving positive US oil demand growth
- Retail gasoline is still less than \$2.50/gallon, with Brent oil prices at \$50/bbl
- We would expect demand growth to stay robust as a result of weak oil prices

US oil demand, yoy growth

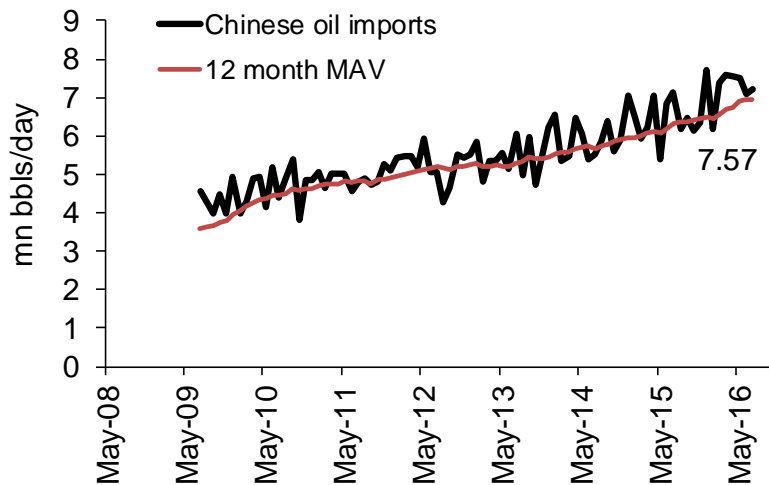


US retail gasoline prices (US\$/gallon)

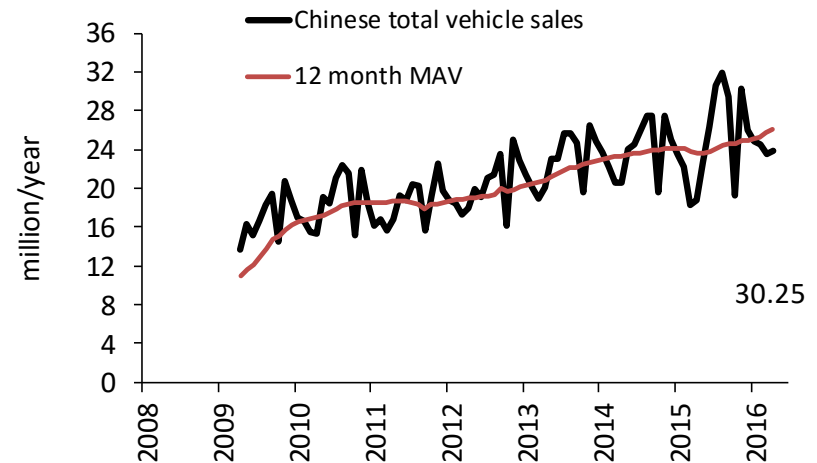


- China 2015 apparent oil demand up 6.5% vs 2014 (strongest yoy growth since 2011)
- IEA estimates for 2016 and 2017 indicate 0.3m b/day pa growth on average
- China's Strategic Petroleum Reserve was estimated to be 235mn bls in early 2016
- The rate of build appears to be around 100-200k b/day....
...This represents 30 days of oil import coverage; the target is 90 days by 2020

China oil imports

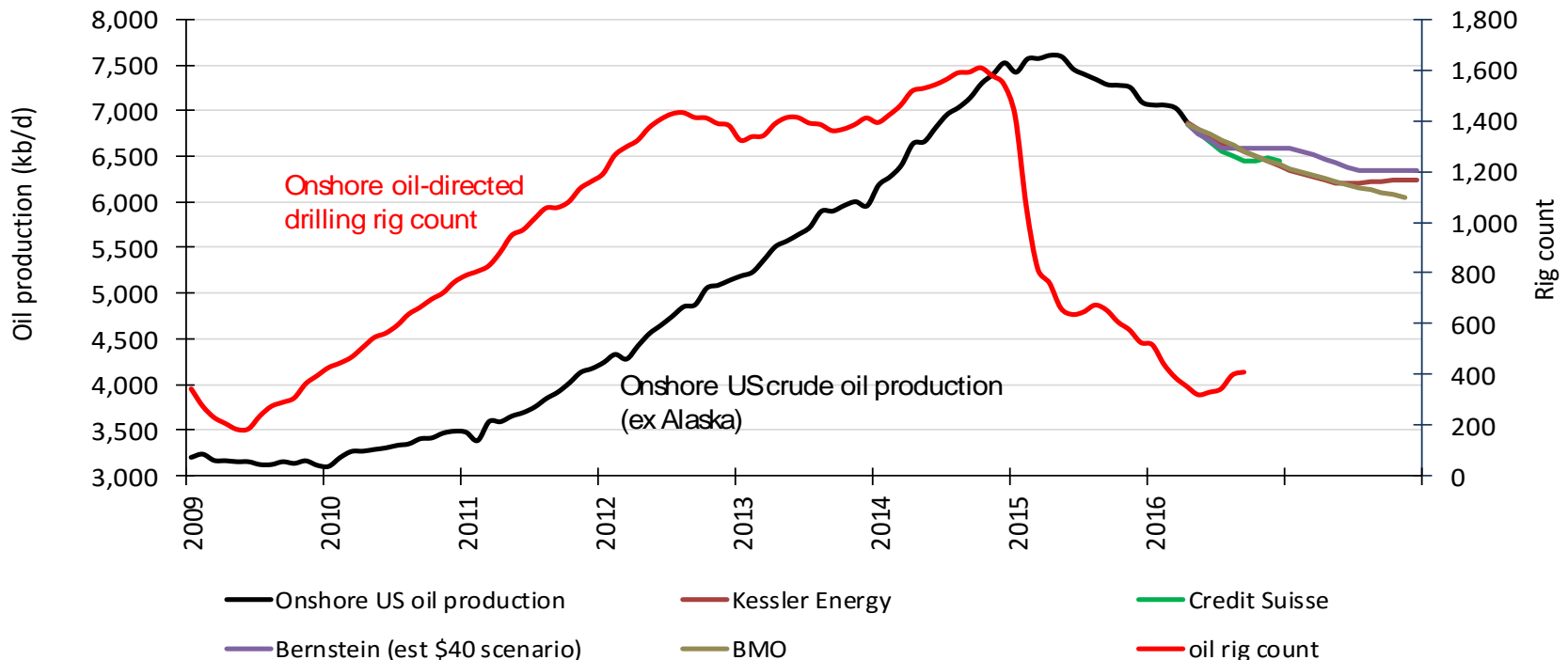


China total vehicle sales



- US onshore (ex Alaska and GoM) oil supply was 6.86m b/day in Feb 2016
- US onshore oil supply peaked in Apr 2015 at 7.65m b/day
- US onshore oil supply was down 0.6m b/day in 2015 and is heading down further, we think
- The US oil directed rig count has fallen from over 1,600 rigs to 330 rigs at end June 2016
- The rig count in key oil shale basins has fallen by 60%-70%

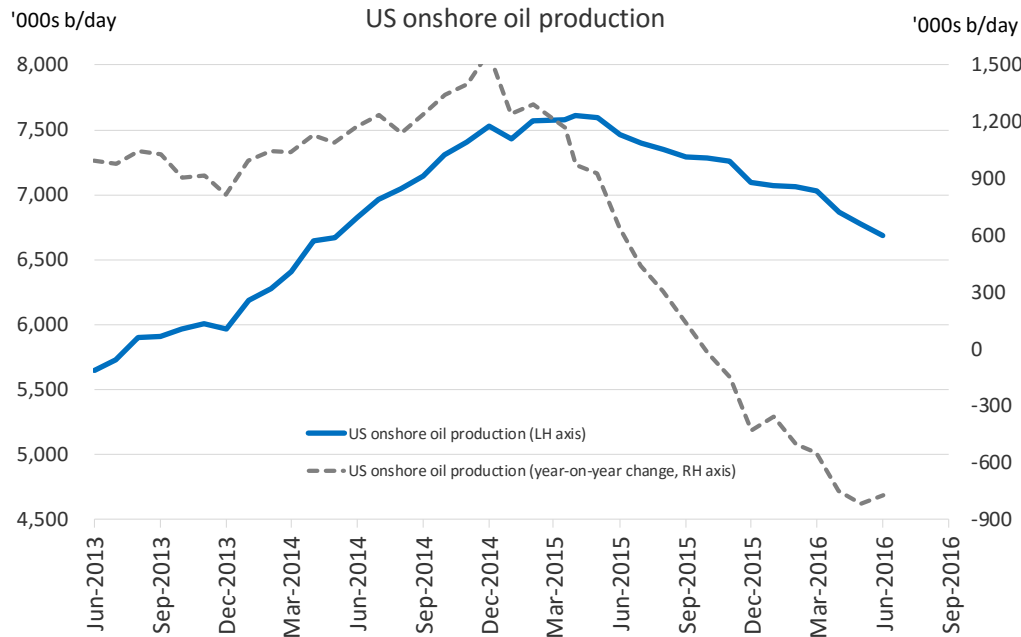
US onshore oil production vs oil rig count (table shows US onshore total rig count by shale basin)



- US onshore oil production peaked in April 2015
 - Most recent data (June 2016) shows decline of around 0.8m b/day (year-on-year)
 - We expect US onshore oil production to continue declining in to the end of 2016

US onshore oil production (kb/day)

Actual production and annual change



Data as at end July 2016

US onshore oil production (kb/day)

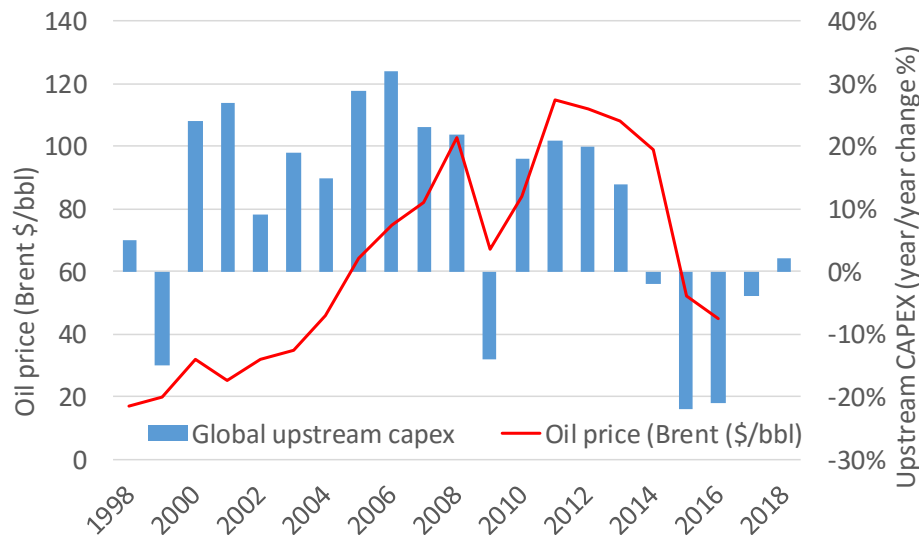
Potential future production sensitivity

kb/d	US onshore oil production (ex GoM and Alaska) (kb/d)	Change (kb/d)	Change (%)
Exit 2012	5,145		
Exit 2013	5,962	817	16%
Exit 2014	7,530	1,568	26%
Exit 2015	7,098	(432)	-6%
Exit 2016	6,519	(579)	-8%
Exit 2017	6,819	300	5%
Average 2012	4,690		
Average 2013	5,667	977	21%
Average 2014	6,867	1,200	21%
Average 2015	7,410	543	8%
Average 2016	6,736	(674)	-9%
Average 2017	6,623	(113)	-2%
Peak, April 2015	7,613		
Decline to date		(924)	-13%
Decline at Dec 2017		(794)	-12%

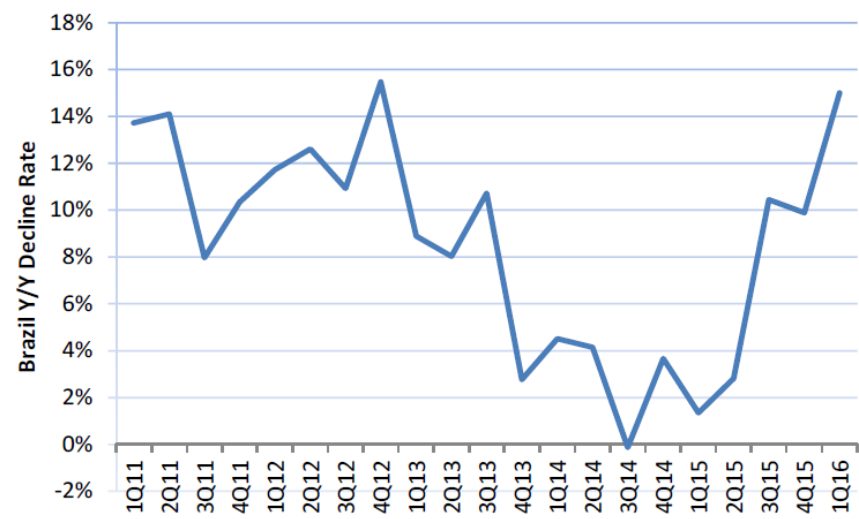
Assumes an average 30kb/d of oil production decline per month to end December 2016 and June 2017 and an average 25kb/d growth through 2017

- Global upstream capex fell over 20% in 2015 and will see similar falls in 2016
- This is a larger and longer decline than those seen in 2008/2009 and 1998/1999
- The effect is twofold:
 1. The 'decline rate' on existing production starts to increase
 2. The rate of new non-OPEC project start-ups slows
- There is a time delay between oil prices falling and non-OPEC production reacting

Year over year change in global upstream capex



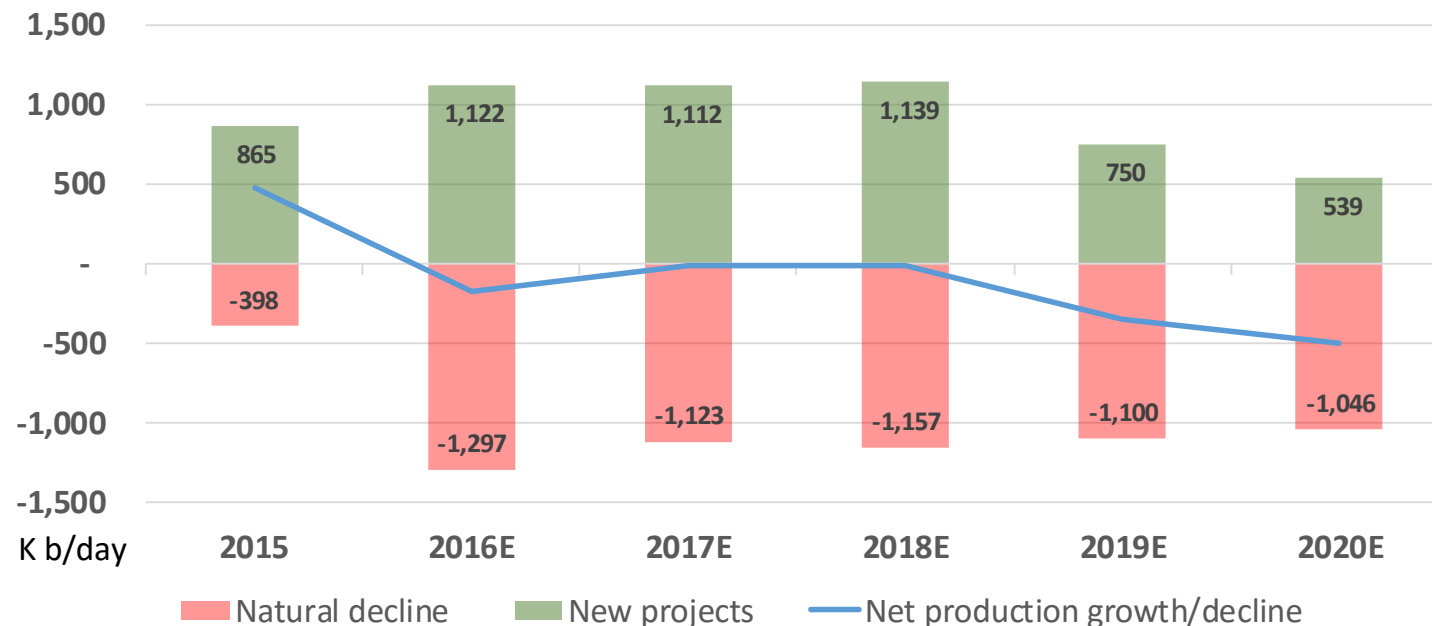
Decline rates on current Brazil oil production



Data to end of 1Q 2016

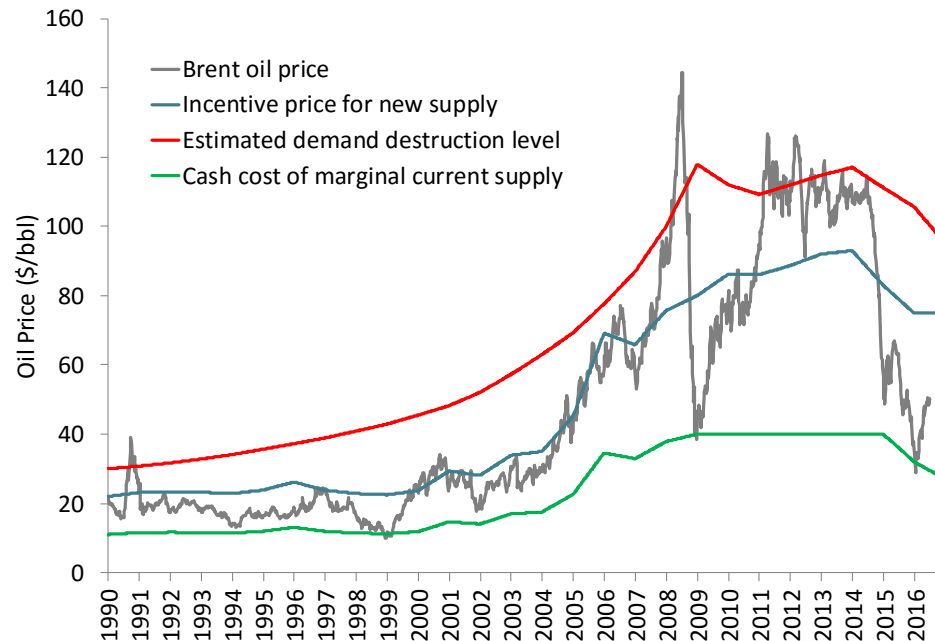
- Non-OPEC supply (ex-US) expected to be flat in 2017/18, then decline in 2019/20
- Biggest sources of net new supply and decline to 2020:
 - Brazil (+1.2m b/day)
 - Canada (+0.4m b/day)
 - UK (+0.2m b/day)
 - Russia (-0.6m b/day)
 - China (-0.7m b/day)

Top 10 non-OPEC producers (ex-US): forecast production to 2020

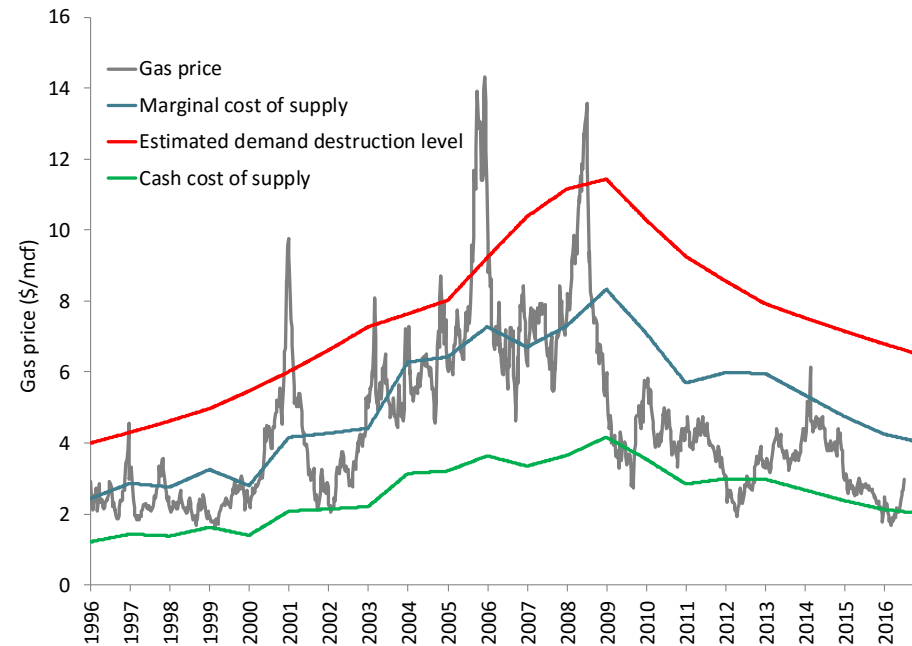


- Historically, both crude oil and natural gas commodity prices have traded between the cash cost of supply and the price at which demand is destroyed
- Crude oil is currently trading close to the estimated marginal cash cost of supply, estimated to be the cost of running large scale Canadian oil sands facilities
- Henry Hub natural gas is trading at around the cash cost of current marginal supply

Economics of crude oil

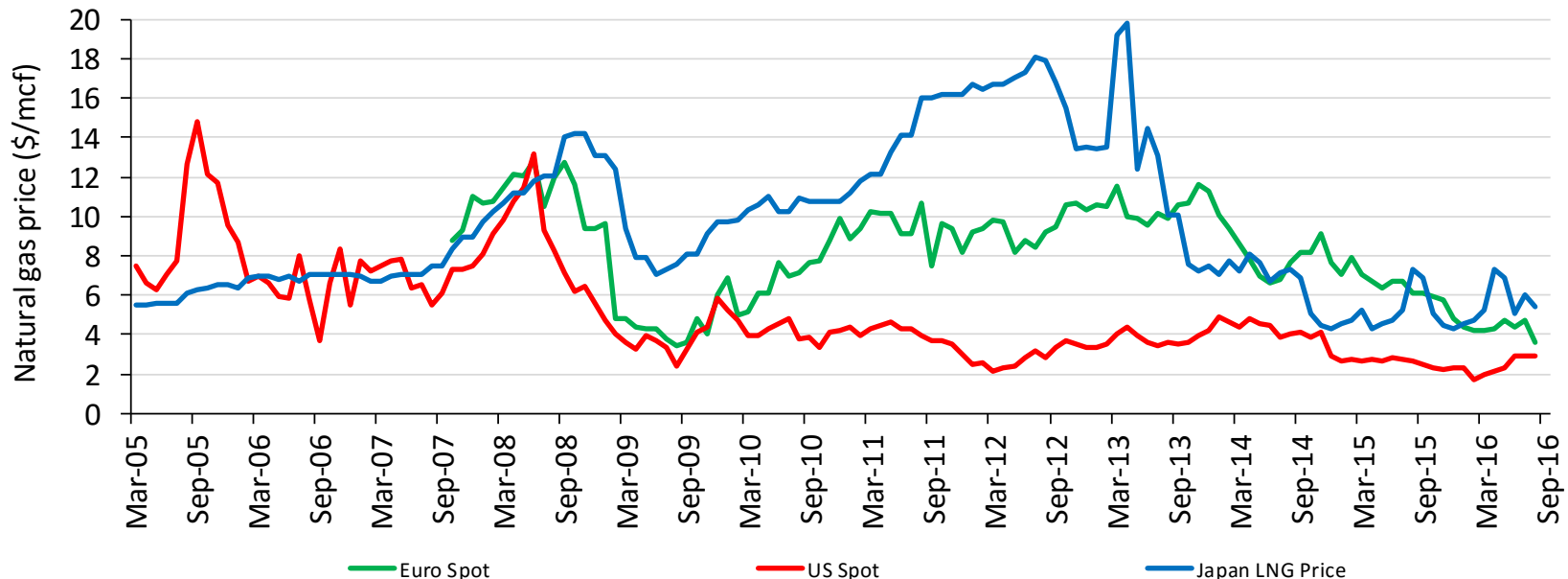


Economics of US natural gas



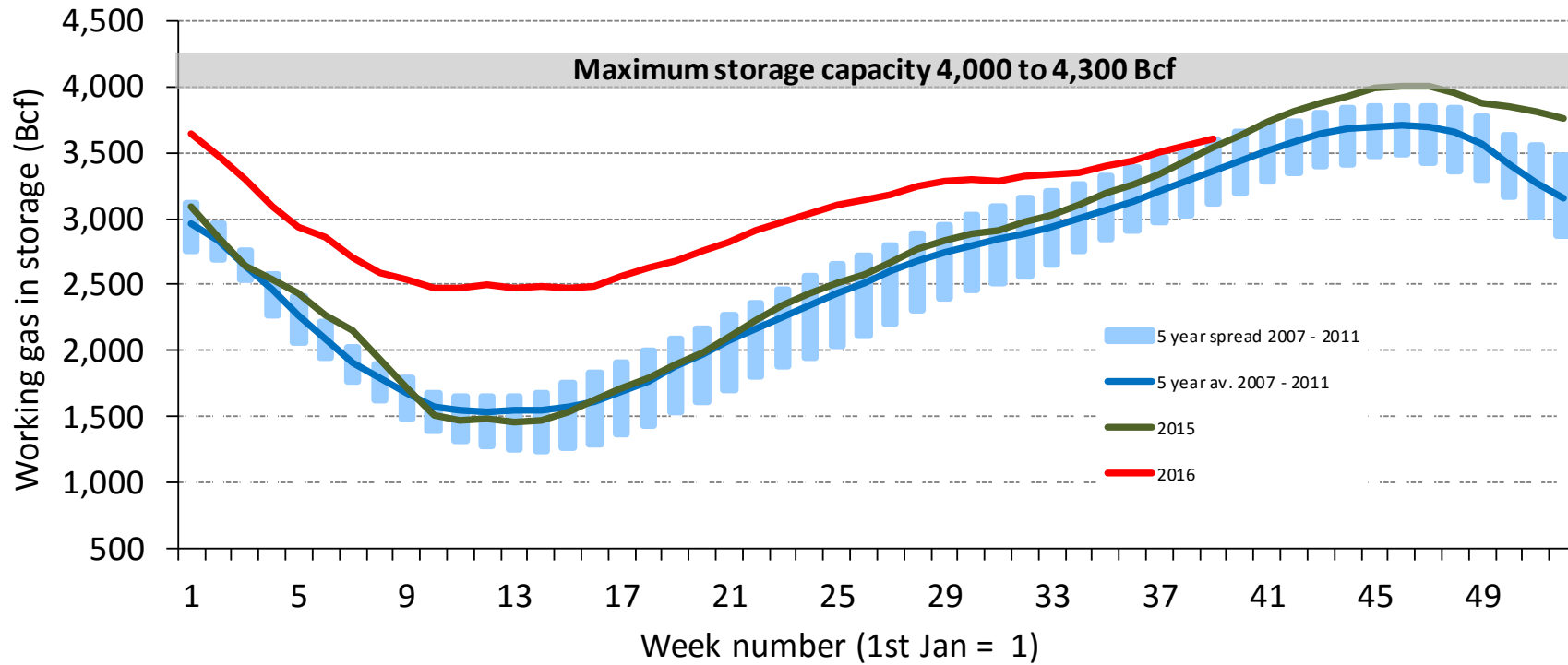
- The gap between US and international gas prices has closed significantly
 - US continues to have high levels of new supply, economic at \$3/mcf, from the Marcellus
 - Asian gas demand has weakened as Japan has increased nuclear activity and switched to solar
 - Asian gas price formulae are linked to oil prices with a 6 month lag
- New US LNG facilities will start operation between 2016 and 2020, the economics of the spot price arbitrage now look significantly less attractive

Global natural gas prices (US\$/mcf)



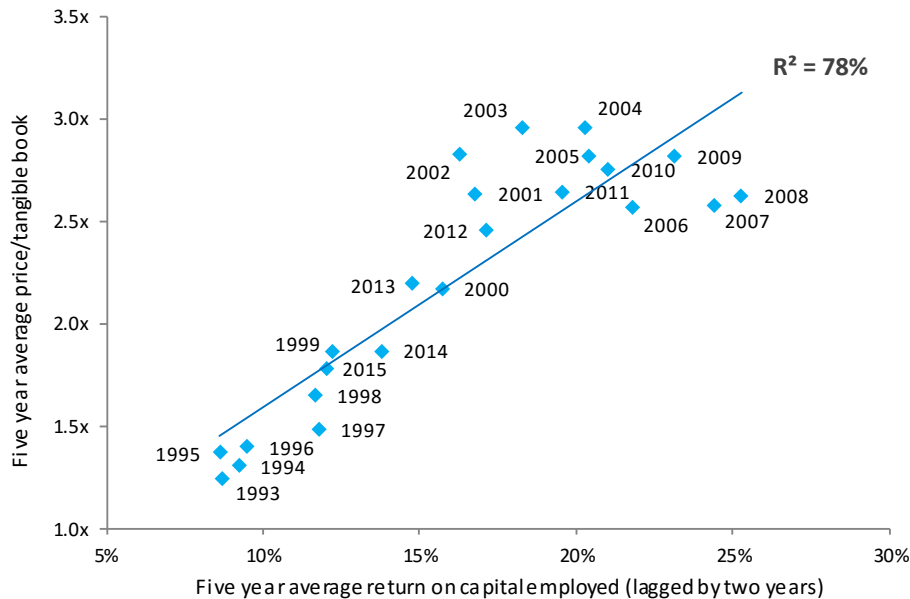
- A very warm 2015/16 winter pushed inventories to record (seasonal) levels
- The overhang vs 10yr average has reduced from 900bcf (end 1Q 2016) to 210bcf

US natural gas inventories

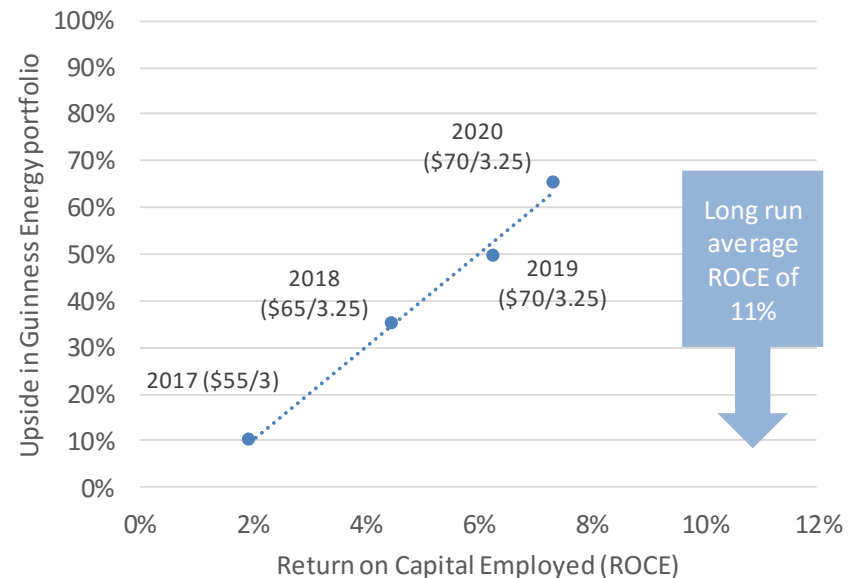


- Return on Capital Employed (ROCE) is a key driver of valuation for the energy sector
- ROCE has been depressed as a result of cost inflation, capital enlargement and now, oil prices
- The ROCE for the Guinness portfolio is likely to be only 2% in 2016 at \$40 Brent oil
- Even with \$70/bl oil in 2019, all else being equal, ROCE would be below the long run average of 11%
- The sector is focussing on cost cutting and efficiency gains to help boost ROCE
- We see good potential for ROCE to exceed our expectations and for valuation to benefit

Super Majors* ROCE vs Price/Book multiple



ROCE and Upside for GA Energy portfolio



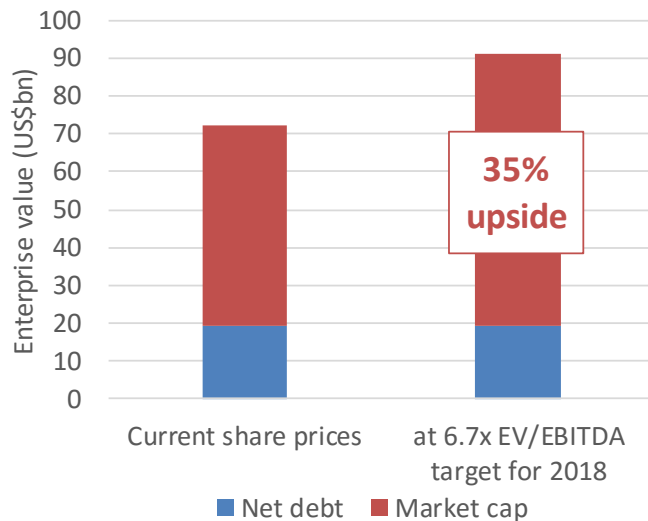
* Super Majors are Exxon, Chevron, BP, RD/Shell and TOTAL

Source: Bloomberg numbers in brackets indicate forecast Brent oil (\$/bl) and Henry Hub (\$/mcf) gas prices; upside for GA Energy portfolio upside represent Guinness Atkinson estimates

Past performance is no guarantee of future results.

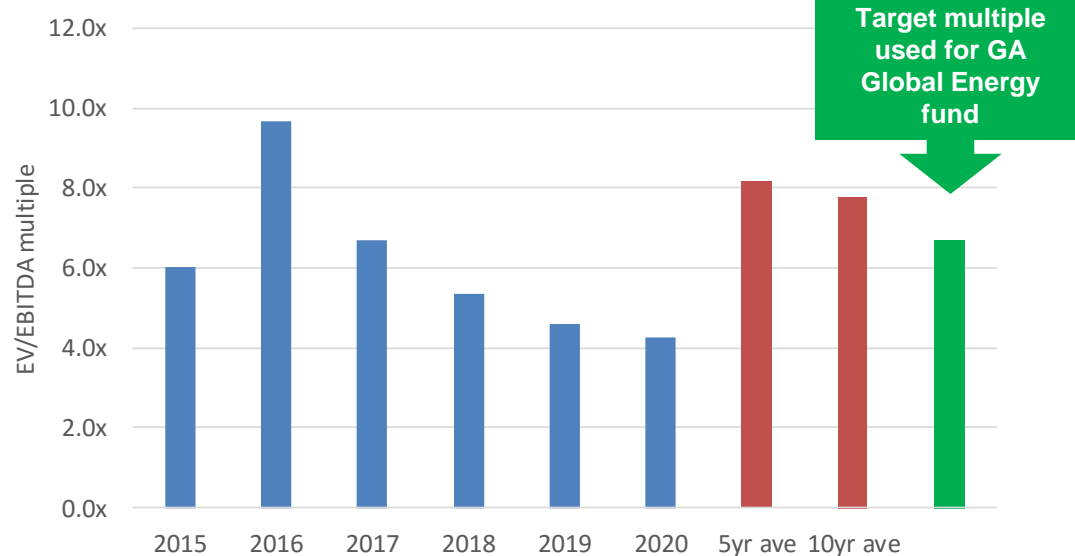
- We use target EV/EBITDA multiples as one of our tools for assessing valuation
- Each company has a specific target multiple based on historic levels and profitability
- The Guinness Atkinson portfolio has had a 10yr average (2006-15) EV/EBITDA multiples of around 7.8x
- Our average target multiple is a more conservative 6.7x for the Guinness Atkinson Energy portfolio
- If the portfolio traded at 6.7x 2018 EBITDA, there would be around 35% upside

Equity upside at \$65 oil in 2018



* chart represents the average net debt, market capitalization and enterprise value for the Guinness Atkinson Global Energy fund

Historic and forecast * EV/EBITDA multiples (at \$65 oil)



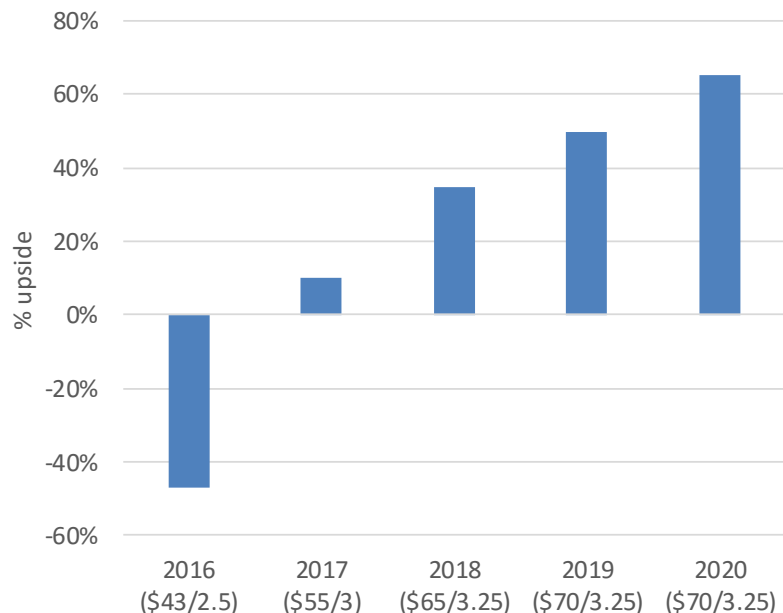
Source: Bloomberg; Equity upside represents Guinness Atkinson estimates

* Oil and gas price estimates as follows: 2016 (\$43/\$2.50), 2017 (\$55/\$3.00), 2018 (\$65/\$3.25), 2019 (\$70/\$3.25)

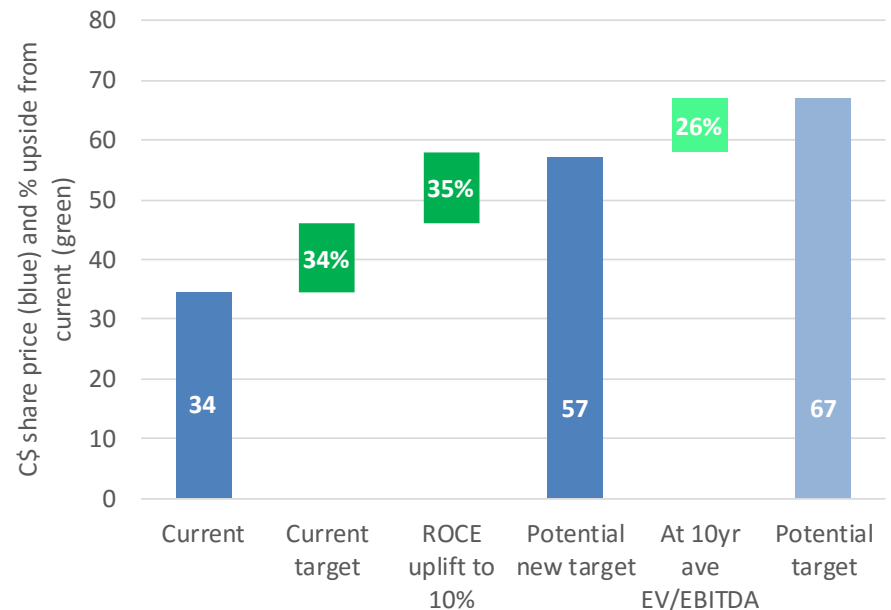
Past performance is no guarantee of future results.

- On our base case oil price and EV/EBITDA assumptions, we believe the Guinness Atkinson Energy Fund:
 - is around fair value at \$50-55/bl oil in 2017, based on 6.7x EV/EBITDA
 - Offers between 50% and 65% upside at \$70/bl oil in 2019/2020
- Our ROCE and EV/EBITDA estimates may prove to be conservative. Using Suncor as an example:
 - Based on our 6.5x EV/EBITDA and 4% ROCE estimate for 2017, we have a target of C\$46/sh
 - If ROCE increased to 10%, then our target could increase to around C\$57/sh
 - If our EV/EBITDA target multiple increased to 7.5x, then our target could increase to around C\$67/sh

Upside/downside at Base Case price estimates



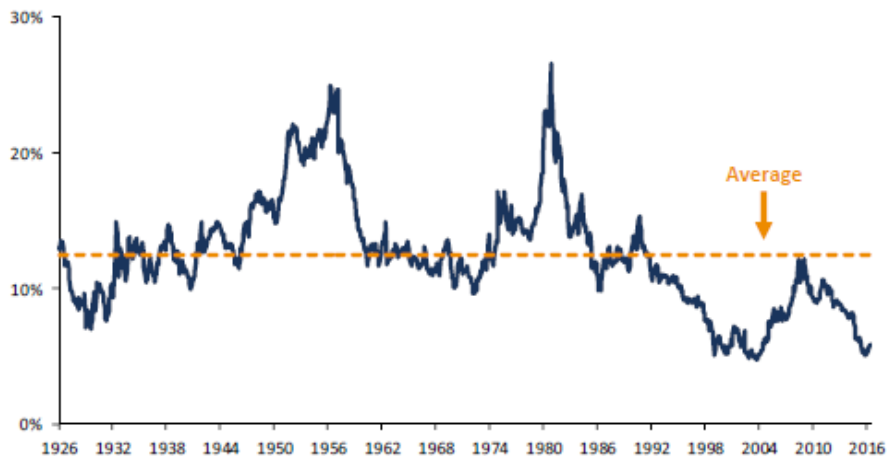
Suncor*: example of valuation uplift



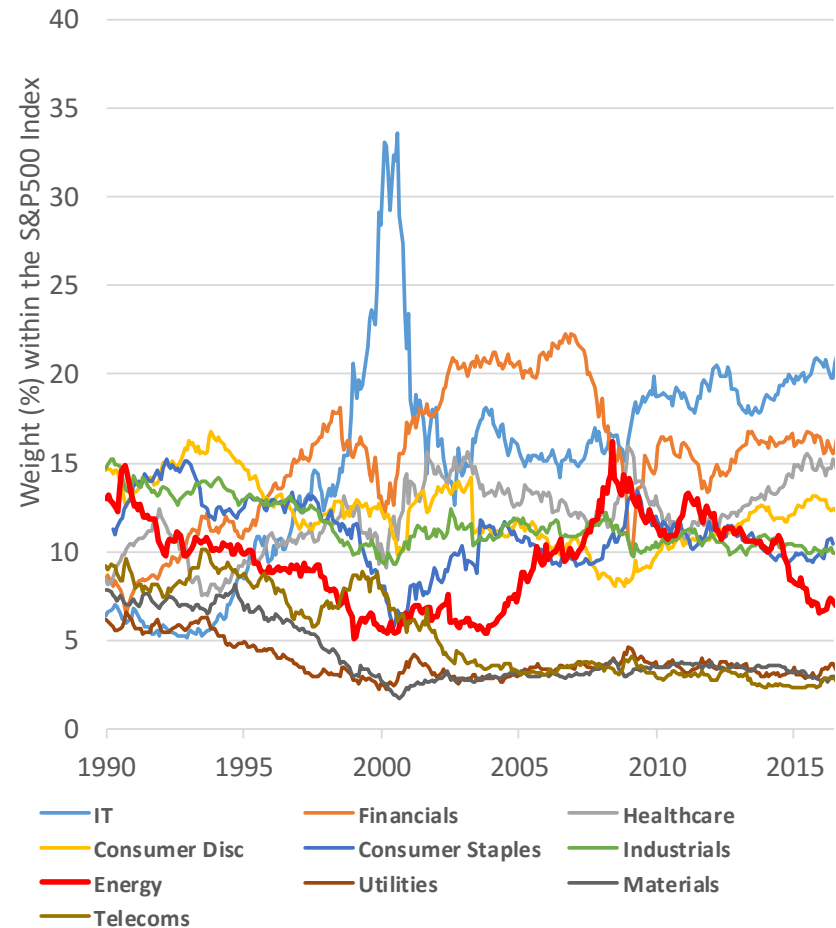
Suncor (SU CN) Potential New Target based on EBITDA of C\$15bn and 10% ROCE. SU has 10yr average ROCE of 11% and EV/EBITDA of 7.5x

- The S&P500 energy index was 7.3% of the S&P500 index at 30 Sept 2016
- Since 1990, energy has ranged between 5.1% and 16.2% of the S&P500
- The average weight over the last 25 years has been 9.5%
- The weight of energy within the S&P 500 is close to multi-decade lows

Weight of energy with the S&P Index (1926-2016)



S&P Index sector weights (1990-2016)



Fund and index performance, as of Sept 30, 2016











- Energy suffered a second consecutive year of poor returns
- The energy index was down 22% in 2015 as a result of lower oil prices
- This is the second consecutive year of significant negative returns for energy
- Outperformance from energy vs S&P500 in 2016 (to Sept 30)

	YTD	1 Year	5 Years*	10 Years*	Since Inception (June 30, 2004)*
Global Energy Fund	16.50%	16.13%	-0.20%	1.15%	6.88%
MSCI World Energy Index	18.59%	18.01%	3.18%	2.56%	6.32%
S&P 500	7.82%	15.39%	16.33%	7.22%	7.59%

Gross expense ratio: 1.41%

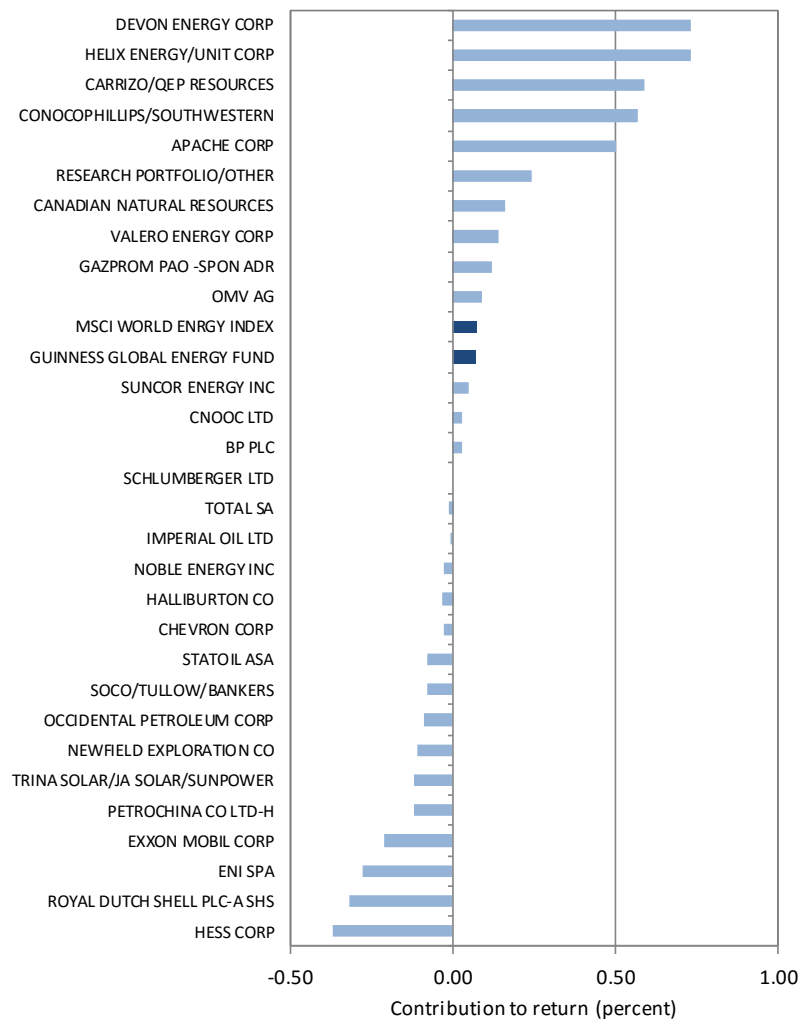
*Periods over 1 year are annualized returns

Performance data quoted represents past performance; past performance does not guarantee future results. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance of the fund may be lower or higher than the performance quoted. Performance data current to the most recent month end may be obtained by calling 800-915-6566 and/or visiting www.gafunds.com

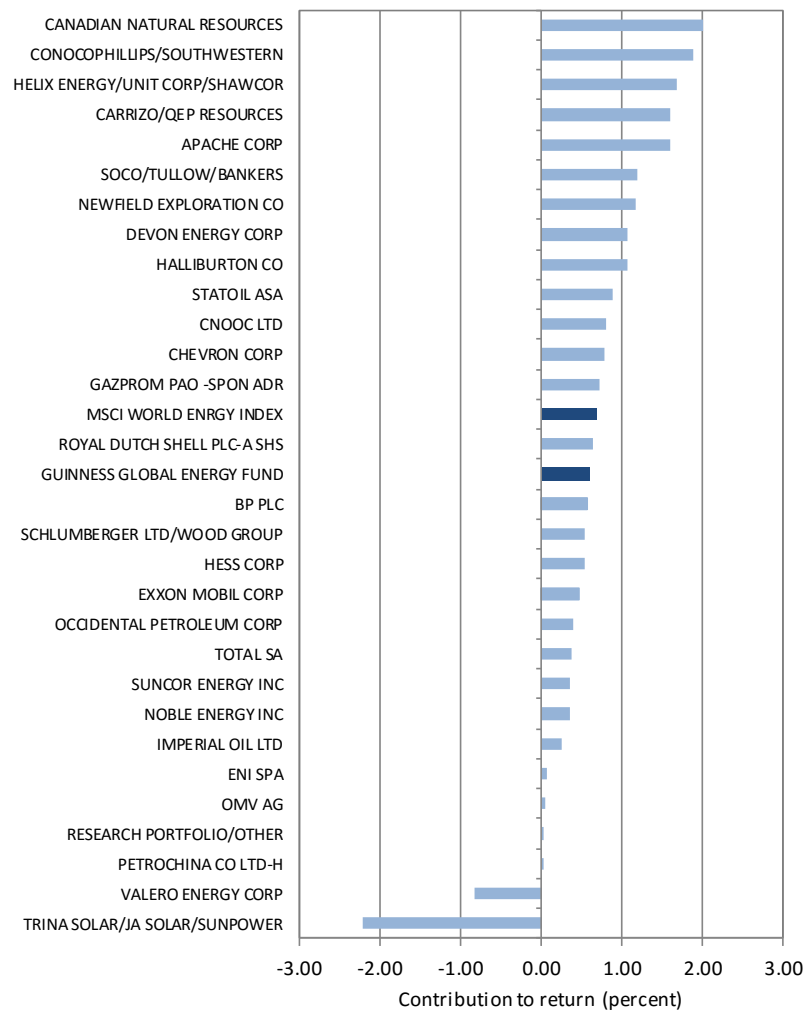
Theme	Example holdings	Weighting (%)
1 Cheap large-cap oil	  	34.4%
2 Undervalued integrated oil & gas reserves	  	19.5%
3 Exploration & production spending plans	  	8.8%
4 US shale oil growth	  	8.5%
5 Emerging market natural gas demand	 	7.5%
6 International mid and small cap oil producers	  	5.9%
7 Rising US natural gas price		3.6%
8 US Gulf Coast refining advantages		2.9%
9 Low cost solar	 	2.6%
10 Other (incl cash)		5.4%

Top 10 holdings in the fund at Sept 30 2016: Apache Corp 4.00%; CNOOC Ltd 3.77%; Halliburton Co 3.62%; Devon Energy Corp 3.60%; Gazprom PJSC 3.58%; Statoil ASA 3.58%; Canadian Natural Resources Ltd 3.57%; Royal Dutch Shell PLC 3.53%; Chevron Corp 3.40%; Newfield Exploration Co 3.40%;

2016 3Q indicative contribution



2016 (YTD) indicative contribution



Notes: MSCI World Energy Index included for comparison purposes. Charts include companies held in the quarter but, in some instances, no longer held. There is no guarantee similar investments will be made

Past performance should not be taken as an indicator of future performance. The value of this investment and any income arising from it can fall as well as rise as a result of market and currency fluctuations as well as other factors.

Single sector	Companies engaged in the production and distribution of energy (oil, natural gas, coal, alternative energy, nuclear and utilities)
High conviction	Equally weighted, concentrated portfolio (30 positions)
Unconstrained	No reference to index
Global	Diversified globally
Investment type	Listed equities (long-only)
Investment objective	Long-term capital appreciation



Timothy Guinness

- Executive Chairman and Chief Investment Officer of Guinness Asset Management
- Portfolio manager of the Investec Global Energy Fund from November 1998 to February 2008
- Co-founder of Guinness Flight Global Asset Management and, after its acquisition by Investec, chairman of Investec Asset Management until March 2003
- Graduated from Cambridge University in 1968 with a degree in Engineering. After obtaining an MBA at MIT, worked for 10 years as a corporate financier



Will Riley CA

- Joined Guinness Asset Management in 2007
- Company valuation expert for PricewaterhouseCoopers 2000-2007
- Qualified as a Chartered Accountant in 2003
- Graduated from Cambridge University with a Masters degree in Geography in 1999



Jonathan Waghorn

- Joined Guinness Asset Management in 2013
- Co-portfolio manager of the Investec Global Energy Fund from February 2008 to May 2012
- Co-head of energy equity research at Goldman Sachs from 2000-2008
- Drilling engineer in Dutch North Sea for Shell

- **Guinness Atkinson Asset Management:** founded in 2003, along with US sister firm Guinness Atkinson Asset Management Inc.
- **Four core areas of expertise:** Global Equities, Energy, Asia & Financials
- **Guinness Group AUM (at Sept 30, 2016): \$1.13bn**
- **Staff of 19, including 8 investment professionals**
- **Company is 100% owned by employees**

Opinions expressed are subject to change, are not guarantee and should not be considered investment advice.

The Fund's holdings, industry sector weightings and geographic weightings may change at any time due to on-going portfolio management. References to specific investments and weightings should not be construed as a recommendation by the Fund or Guinness Atkinson Asset Management, Inc. to buy or sell the securities. Current and future portfolio holdings are subject to risk. References to other mutual funds should not be interpreted as an offer of these securities.

Mutual fund investing involves risk and loss of principal is possible. The Fund invests in foreign securities which will involve greater volatility, political, economic and currency risks and differences in accounting methods. The Fund is non-diversified meaning it concentrates its assets in fewer individual holdings than a diversified fund. Therefore, the Fund is more exposed to individual stock volatility than a diversified fund. The Fund also invests in smaller companies, which involve additional risks such as limited liquidity and greater volatility. The Fund's focus on the energy sector to the exclusion of other sectors exposes the Fund to greater market risk and potential monetary losses than if the Fund's assets were diversified among various sectors. The decline in the prices of energy (oil, gas, electricity) or alternative energy supplies would likely have a negative effect on the funds holdings.

While the fund is no-load, management and other expenses still apply. Please refer to the prospectus for further details.

This information is authorized for use when preceded or accompanied by a prospectus for the Guinness Atkinson Funds. The prospectus contains more complete information including investment objectives, risks, fees and expenses related to an ongoing investment in the Fund. Please read it carefully before investing.

You cannot invest directly in an index.

Contango refers to a situation where the future spot price is below the current price, and people are willing to pay more for a commodity at some point in the future than the actual expected price of the commodity.

Fund holdings & sector allocations are subject to change and are not recommendations to buy or sell any security.

Diversification does not assure a profit nor protect against a loss in a declining market.

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