Global Energy: OPEC vs US shale

April, 2017

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Guinness Atkinson Global Energy: summary

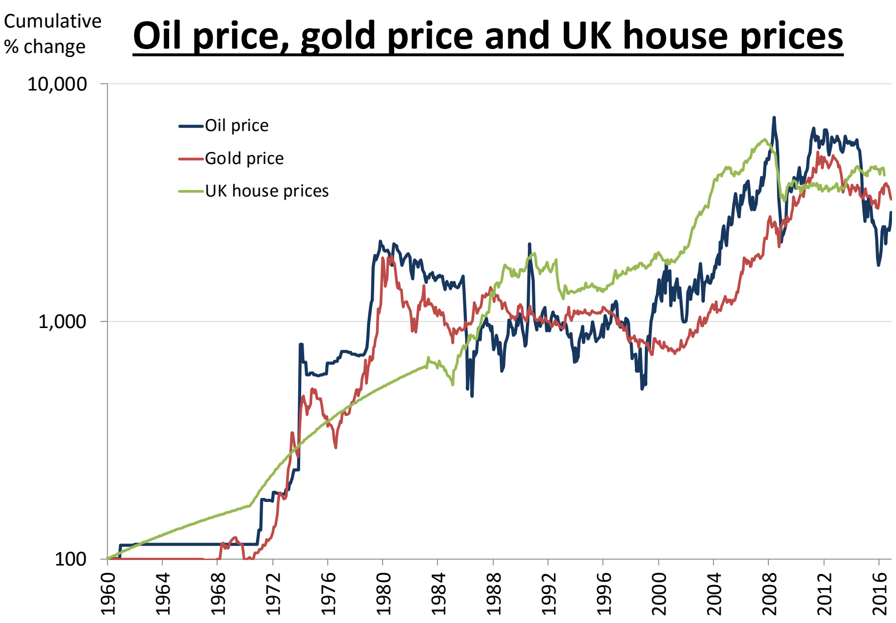
- **2017 OPEC cuts**: compliance from OPEC appears good, ok from non-OPEC
- **Oil prices:** dipped in Q1 as oil inventories built, driven by a flush of oil reaching end-markets that was produced before the cuts were implemented
- **US oil activity:** picking up as rig count rises, focussed on the Permian
- **Oil market rebalance**: is underway
- **US natural gas market:** structural undersupply vs warm winter weather
- **Energy equities strong in 2016 but significantly underperformed in Q1 2017:** pulled lower by oil price drop, and in our analysis, leaving the sector a long way from historical normalised valuation levels

Energy equities: an attractive inflation hedge for the long term

- We believe oil belongs alongside gold and property as along term inflation hedge
- It is difficult to get direct investment exposure to the oil price
- Energy equities provide a proxy for owning oil

… and have actually outperformed the oil price over the long term

Oil price, gold price and UK house prices



Return, CPI correlation and volatility metrics

1960-2016	Gold	UK Property	Crude oil
Annual nominal return (%pa)	6.3%	6.6%	6.1%
Annual real return (%pa)	2.6%	2.9%	2.3%
R-sq with annual changes in US CPI	24.5%	2.6%	21.9%
Standard deviation of monthly returns	5.2%	2.6%	12.6%
Increase in nominal asset value	32.7x	38.4x	28.7x
R-sq or nominal asset value with US CPI	66.9%	83.9%	58.0%

Source: UK Govt; Halifax; Bloomberg; Datastream (Apr 2017)

OPEC oil supply: 1.2m b/day supply cuts announced in Nov 2017

- In Nov 2016, OPEC announced a cut of 1.2m b/day with non-OPEC adding 0.6m b/day
- The cuts are effective from 1 January 2017 for six months

OPEC quotas (m b/day)

(m b/day)	Oct 2016*	Adjustment	Jan 2017	% adjustment
Saudi	10.54	-0.49	**10.05**	-5%
Iran	3.70	0.09	**3.79**	2%
Iraq	4.56	-0.21	**4.35**	-5%
UAE	3.01	-0.14	**2.87**	-5%
Kuwait	2.84	-0.13	**2.71**	-5%
Nigeria	1.60	*exempt*	**1.60**	n/a
Venezuela	2.07	-0.10	**1.97**	-5%
Angola	1.75	-0.09	**1.66**	-5%
Libya	0.42	*exempt*	**0.42**	n/a
Algeria	1.09	-0.05	**1.04**	-5%
Qatar	0.65	-0.03	**0.62**	-5%
Indonesia	0.74	*suspended*	**0.74**	n/a
Gabon	0.20	-0.01	**0.19**	-5%
Ecuador	0.55	-0.03	**0.52**	-5%
OPEC-14	**33.72**	**-1.19**	**32.53**	-4%

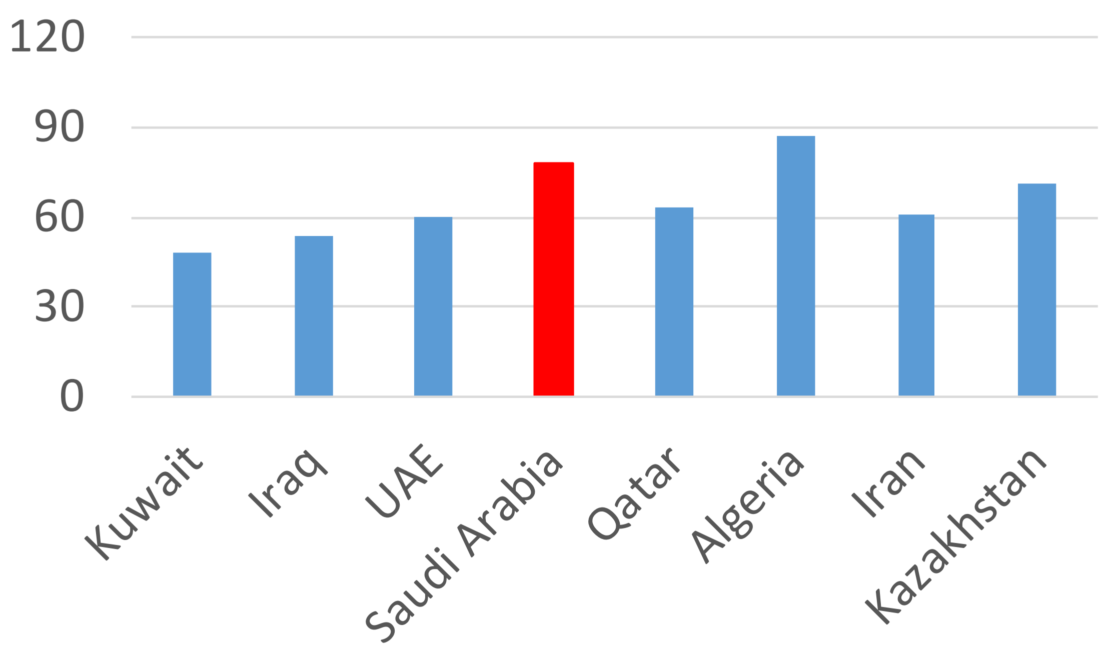
Source: OPEC; Guinness Funds. Oct 2016 production or OPEC 'reference' production

Source: IEA; Bloomberg (data as of Jan 2017)

OPEC oil supply: fiscal budgets imply high oil price needs

- The actual economic cost of developing most OPEC oil remains very low
- Higher levels of government expenditure necessitate greater oil revenues
- The fiscal breakeven oil price* for Saudi in 2017 is estimated to be $78 per barrel

OPEC (selected) fiscal breakeven oil prices 2017 ($/bbl)



*'Required oil price' is defined as the oil price that is needed by each country to balance fiscal budgets

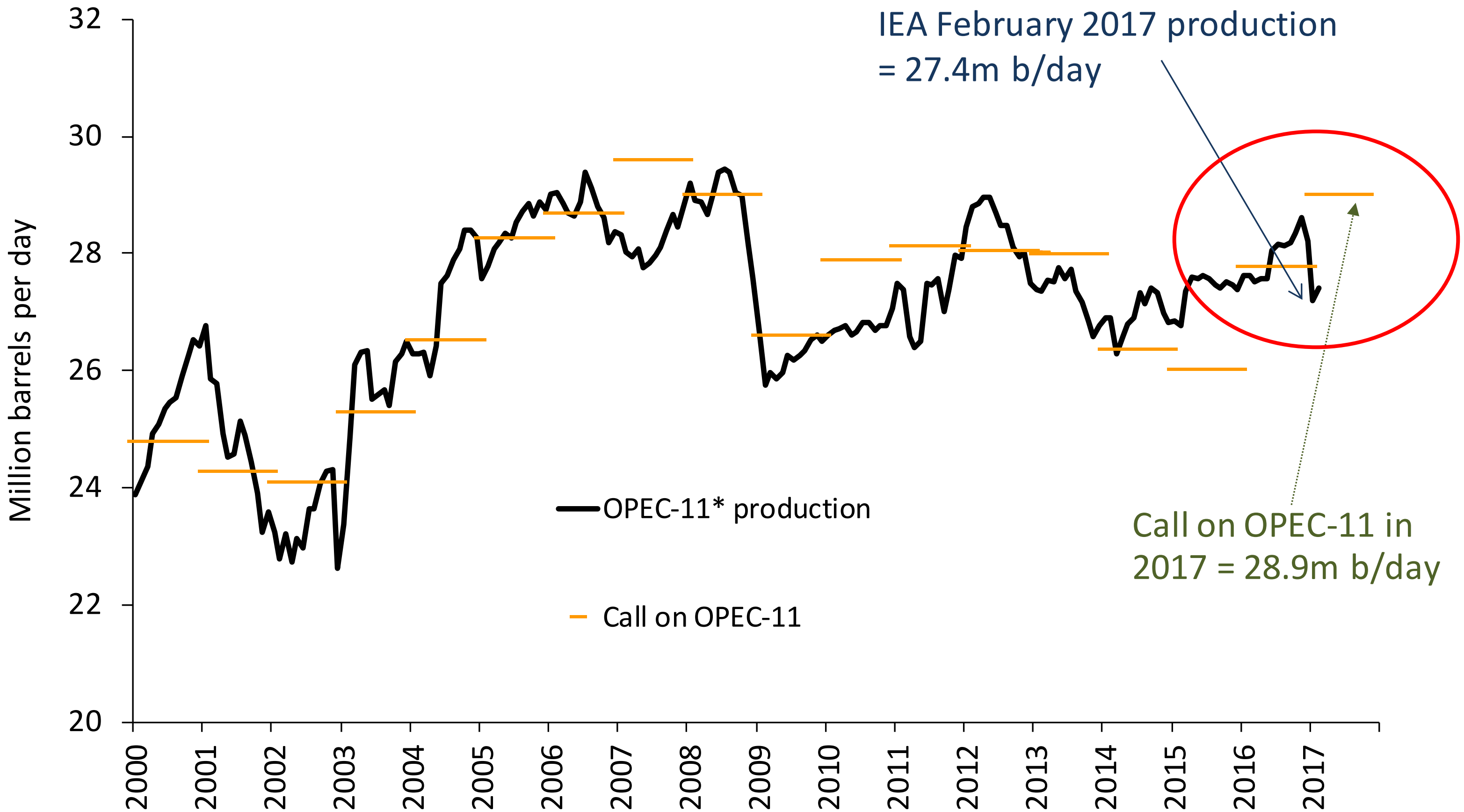
Source: IMF; Guinness Atkinson

OPEC oil: good compliance with 2017 quota cuts

- OPEC production has fallen sharply since the start of 2017….

  ….. Feb 2017 production down by 1.1m b/day vs Dec, implying >90% compliance with cuts

OPEC-11* production (m b/day)



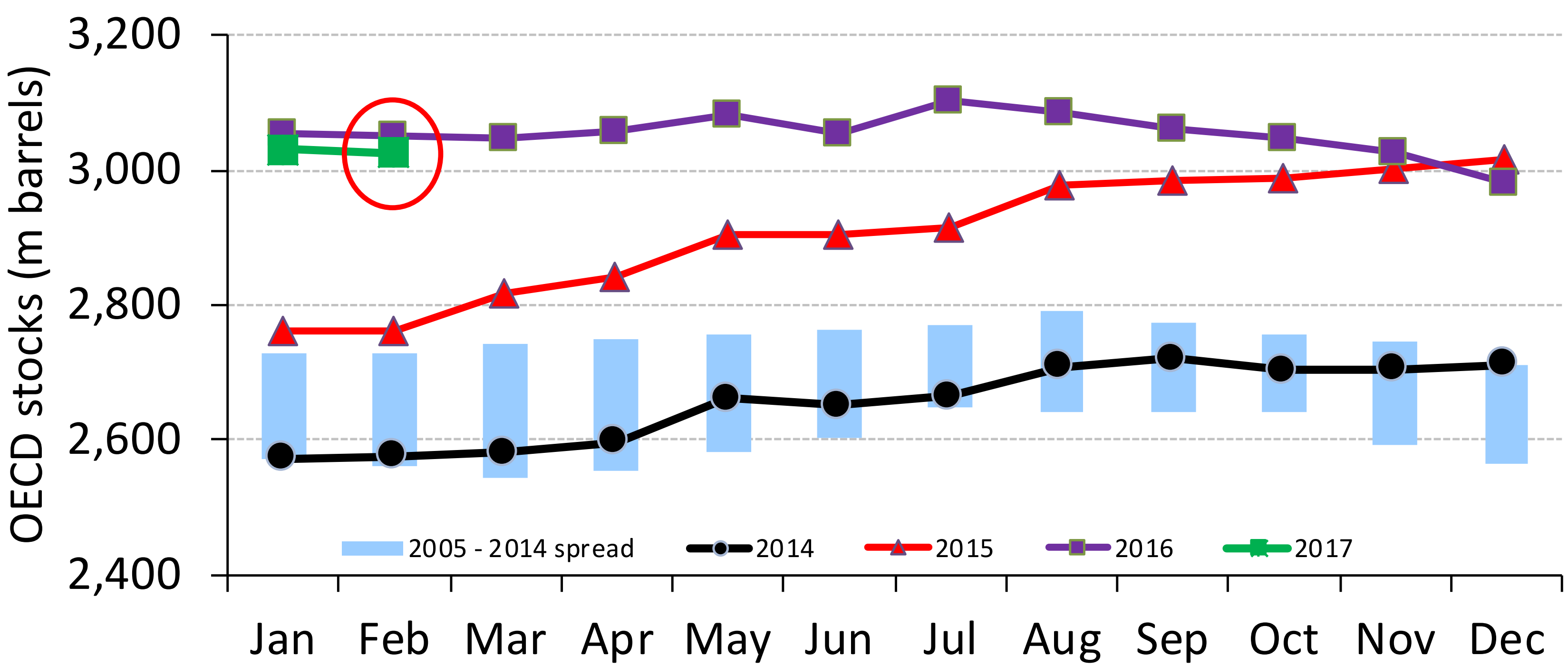
Source: Bloomberg LP, Goldman Sachs, IEA; Guinness Atkinson (data to Feb 28 2017)

* OPEC-11: Algeria, Angola, Ecuador, Iran, Kuwait, Libya, Nigeria, Qatar, Saudi , U.A.E., Venezuela

Oil supply/demand: OECD inventories starting to normalise

- In 2015, OECD inventories moved well above the top of the ten year range…
  ….the move implied average oversupply of c.0.8m b/day
- In 2016, inventories fell slightly, indicating a tightening in the second half of the year
- In 2017, we expect OPEC quota cuts to help normalised inventory levels

OECD oil inventories (million bbls)

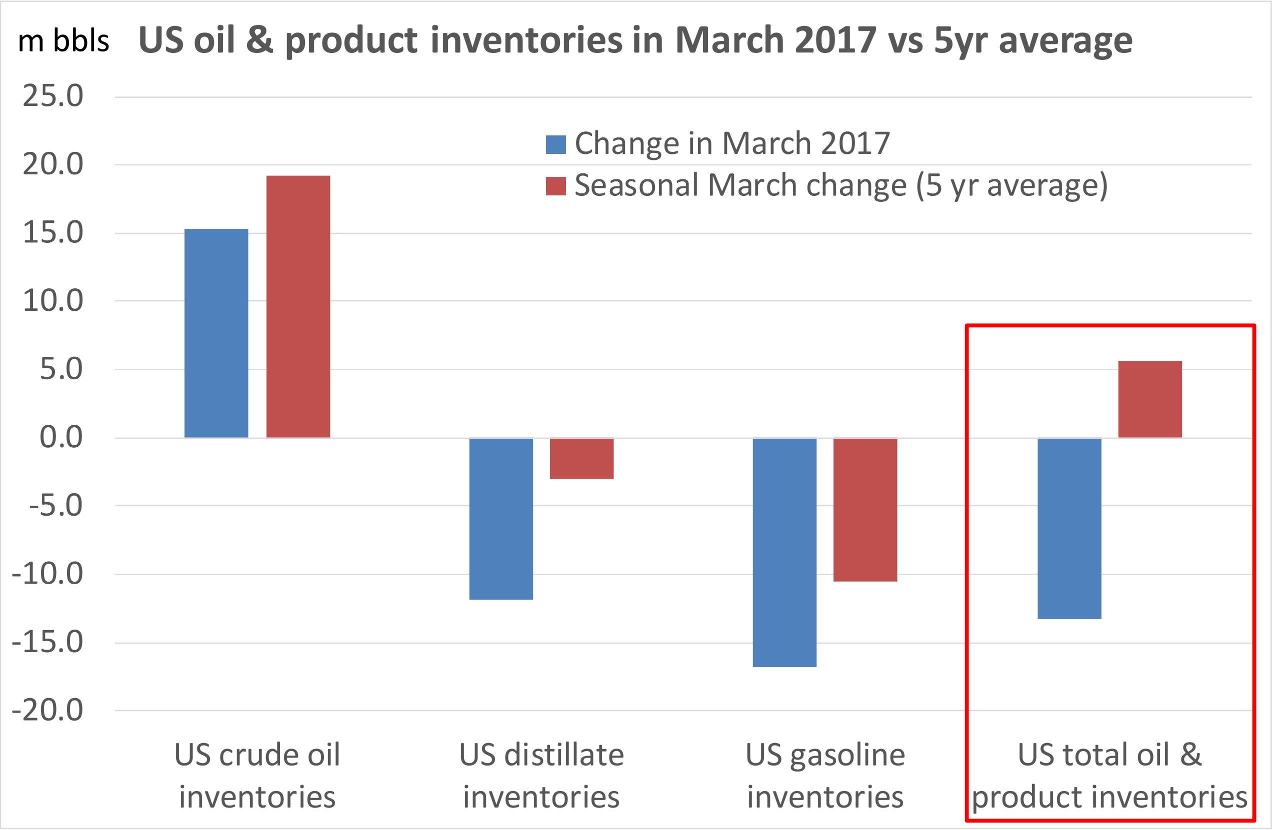


Source: IEA Oil Market Report (Mar 2017; data to Feb 28 2017); Guinness Atkinson

Oil supply/demand: US inventories starting to decline

- US crude oil inventories continued to build in March 2017, depressing the oil price
- However, oil and refined product inventories actually fell, indicating a tightening market

US oil and refined product inventories: change in March (million bbls)



Source: DoE; Guinness Atkinson (data to March 31 2017)

Near term oil demand: world oil demand up 1.4m b/day in 2017

- 2016 world oil demand up around 9.3m b/day on pre-recession peak (2007)
- Non-OECD demand has grown unchecked for over a decade, not unseated by financial crisis
- Estimates for 2017 indicate healthy demand growth of 1.5m b/day – all from non-OECD

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	24.2	24.2	24.6	24.7	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	14.1	14.1
Pacific	8.8	8.9	8.7	8.7	8.3	8.0	8.2	8.2	8.5	8.3	8.1	8.0	8.1	8.0
Total OECD	**50.1**	**50.4**	**48.9**	**50.1**	**48.3**	**46.4**	**47.0**	**46.5**	**45.9**	**46.1**	**45.8**	**46.4**	**46.8**	**46.8**
Change in OECD demand		*0.3*	*-1.5*	*1.2*	*-1.8*	*-1.9*	*0.6*	*-0.5*	*-0.6*	*0.2*	*-0.3*	*0.6*	*0.4*	*0.0*
NON-OECD demand														
FSU	3.8	3.9	4.0	4.0	4.2	4.0	4.1	4.4	4.6	4.5	4.7	4.6	4.8	4.9
Europe	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	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	10.8	11.5	11.9	12.2
India	2.6	2.6	2.7	2.9	3.1	3.2	3.3	3.5	3.7	3.7	3.8	4.0	4.3	4.5
Other Asia	6.4	6.4	6.6	6.9	6.8	7.1	7.5	7.6	7.6	7.9	8.2	8.5	8.8	9.2
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	6.6	6.7
Middle East	5.5	5.9	6.1	6.4	6.7	7.1	7.3	7.5	7.9	8.0	8.4	8.4	8.5	8.6
Africa	2.8	2.9	2.9	3.3	3.3	3.4	3.5	3.5	3.8	3.8	3.8	4.1	4.2	4.3
Total Non-OECD	**33.1**	**34.1**	**35.4**	**37.1**	**38.1**	**39.1**	**41.4**	**42.7**	**44.8**	**45.6**	**47.2**	**48.5**	**49.8**	**51.2**
Change in non-OECD demand		*1.0*	*1.3*	*1.7*	*1.0*	*1.0*	*2.3*	*1.3*	*2.1*	*0.8*	*1.6*	*1.3*	*1.3*	*1.4*
Total Demand	**82.5**	**83.8**	**85.1**	**87.2**	**86.4**	**85.5**	**88.4**	**89.2**	**90.7**	**91.7**	**93.0**	**94.9**	**96.5**	**98.0**
Change in demand		*1.3*	*1.3*	*2.1*	*-0.8*	*-0.9*	*2.9*	*0.8*	*1.5*	*1.0*	*1.3*	*1.9*	*1.6*	*1.5*

Source: IEA Oil Market Report (March 2017)

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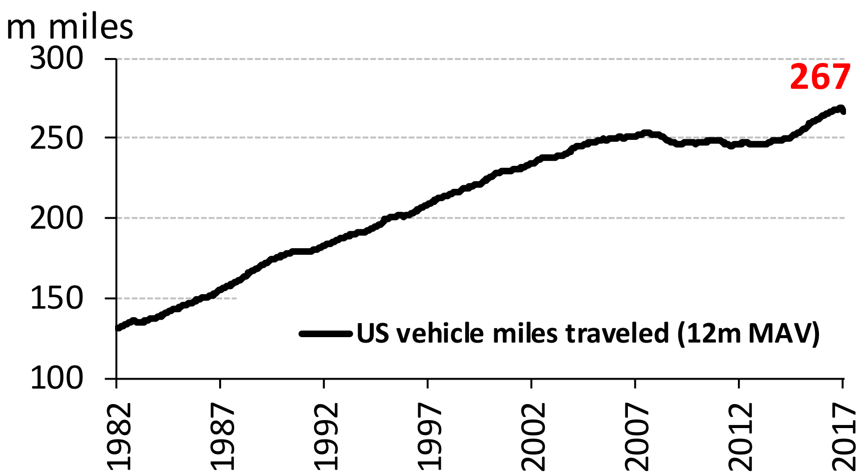
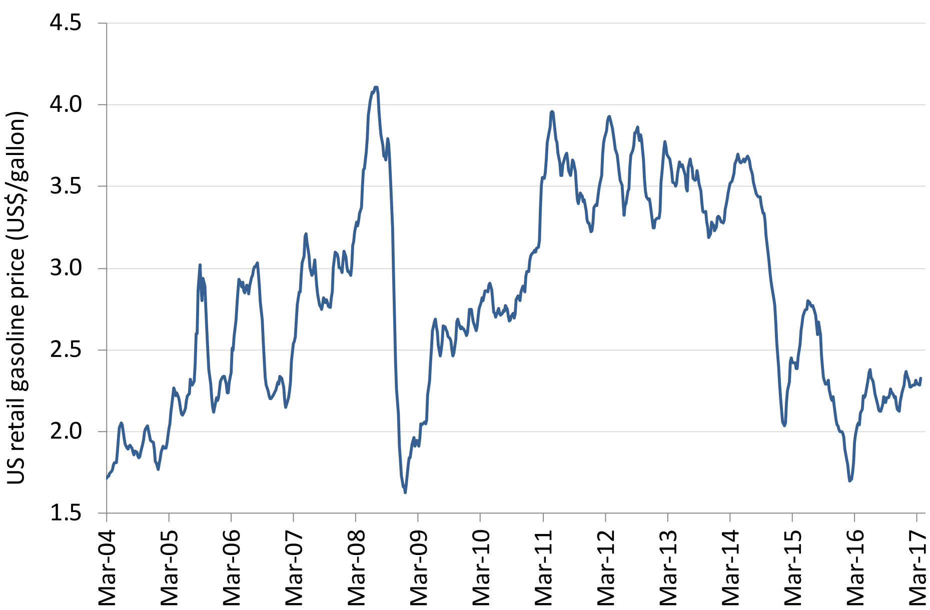
Near term oil demand: US demand picking up

- 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
- 'Vehicle Miles Travelled' in the US has resumed an upward trend since 2014
- Retail gasoline is still less than $2.50/gallon, with Brent oil prices at c.$50-55/bbl
- We would expect demand growth to stay robust as a result of weak oil prices

US total vehicle miles travelled (1981-2017)



US retail gasoline prices (US$/gallon)



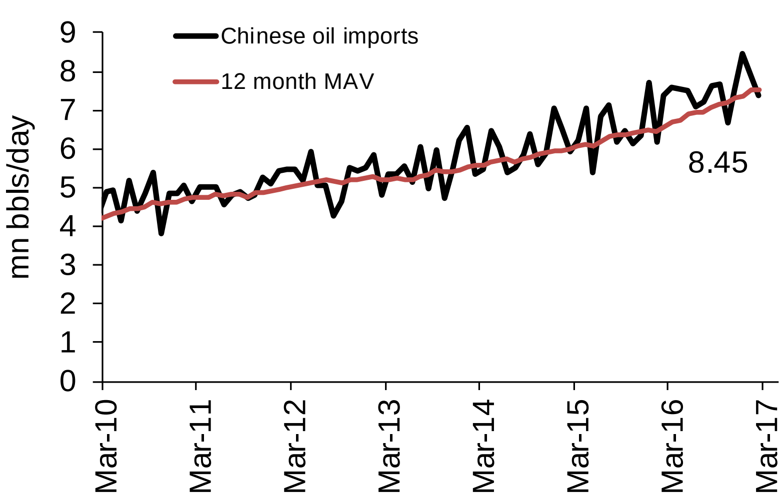
Source: Bloomberg LP; Guinness Atkinson, Apr 2017 (data to March 31 2017)

Near term oil demand: Chinese oil demand still looks ok

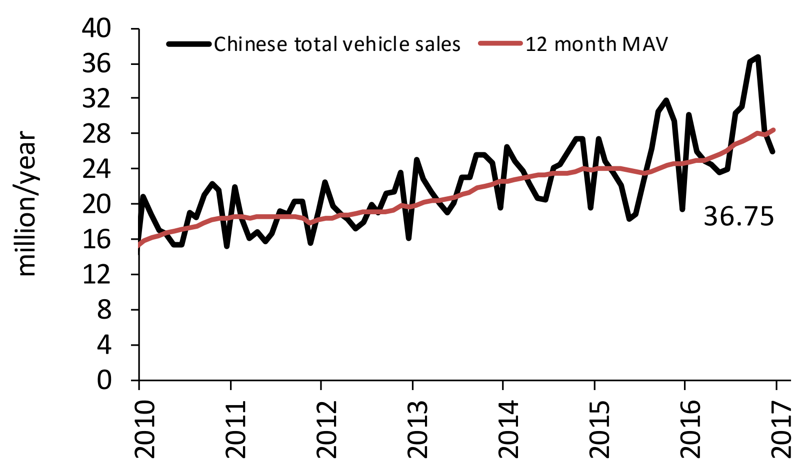
- IEA estimates for 2016 and 2017 indicate 0.3m b/day pa growth on average
- China's Strategic Petroleum Reserve was estimated to be 235mn bls in early 2016
- The rate of build appears to be around 100-200k b/day….

  ….This represents 30 days of oil import coverage; the target is 90 days by 2020

China oil imports



China total vehicle sales

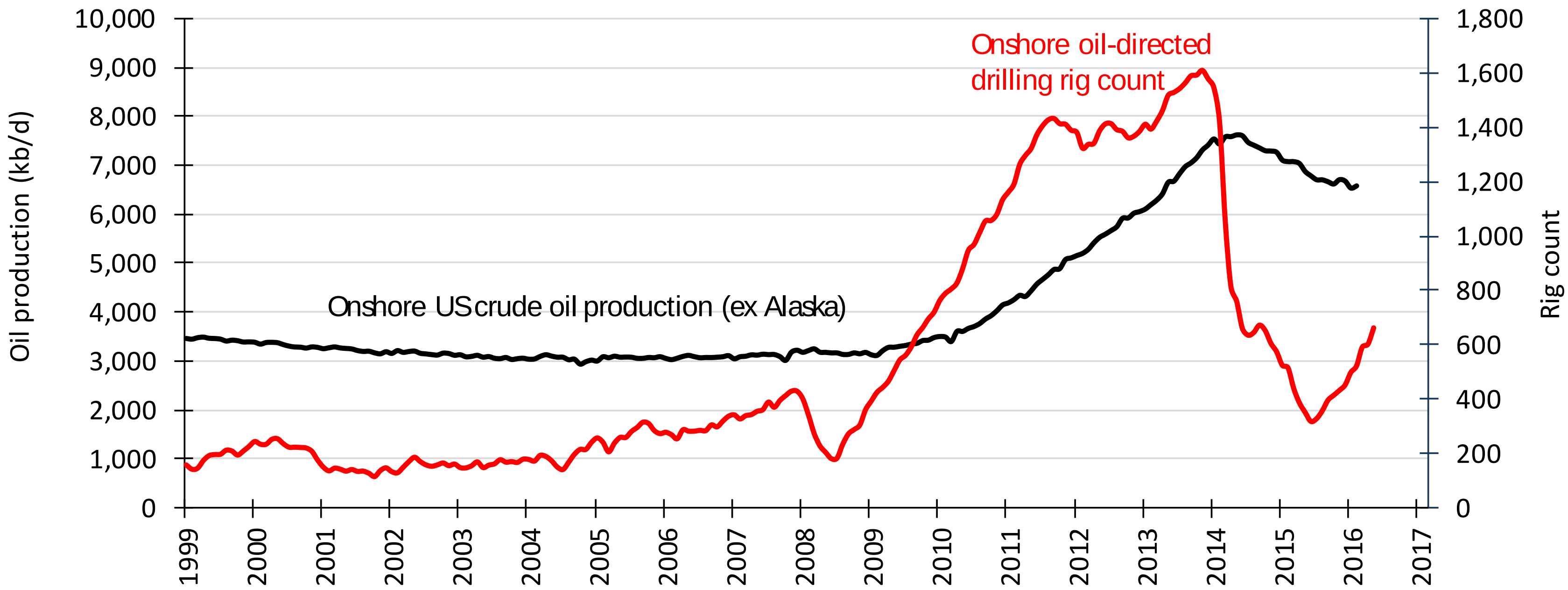


Source: Bloomberg LP; Credit Suisse; Guinness Atkinson(data as of end Feb 2017)

Non-OPEC oil supply: US onshore production and rig count

- US onshore oil peaked in Apr 2015 at 7.65m b/day and fell to 6.54m b/day in Dec 2016
- The oil directed rig count has recovered to 662 rigs at the end of March 2017
- The decline of US onshore oil production is now flattening and will start growing soon

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



Source: EIA (oil production to Jan 2017); Bloomberg (oil rig count) at end Mar 2017

Non-OPEC oil supply: US oil supply response

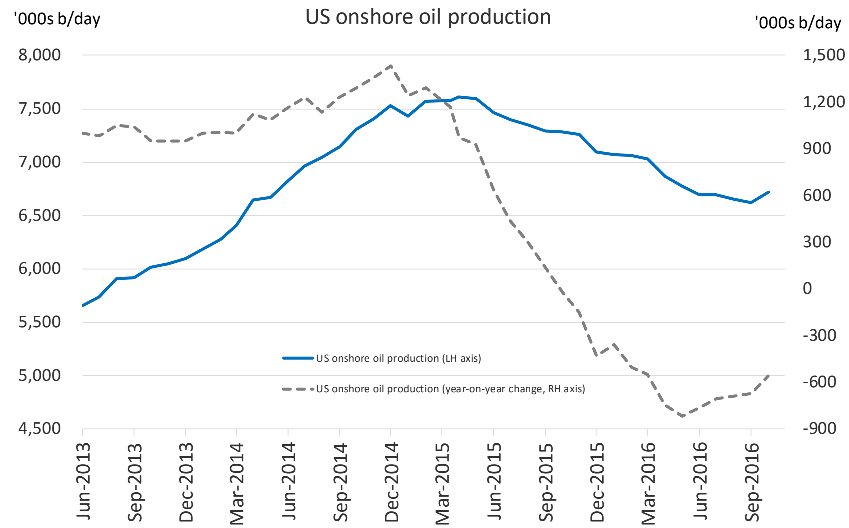
- We expect marginal investment (from higher oil prices) to be invested in US shale
  - The resource is available, payback is quick and technical, fiscal and political risks are low
- Too great a level of investment will bring too much oil onstream too quickly
- Efficiency gains will compete with cost inflation and infrastructure access
- We believe that a trajectory from $45/bl today towards $70/bl will be required
  - Delivering some growth in 2017/2018 as markets rebalance
  - Delivering more growth in 2019/2020 as non-OPEC ex-US sees production declines

Potential trajectories for US onshore oil production

Brent oil price	Production change
$40/bl	Declining around 0.3-0.5m b/day
$50/bl	Small increase
$60/bl	Increasing around 0.3-0.5m b/day
$70/bl	Increasing around 0.6-1.0m b/day

US onshore oil production (kb/day)

Actual production and annual change



Source: Guinness estimates, Company data, as of end Feb 2017

Non-OPEC oil supply (ex-US): spending

"The 2017 E&P spend for this part of the global production base, which still makes up around 50 million barrels-per-day of production is expected to be down 50% compared to 2014. At no other time in the past 50 years has our industry experienced cuts of this magnitude and this duration.

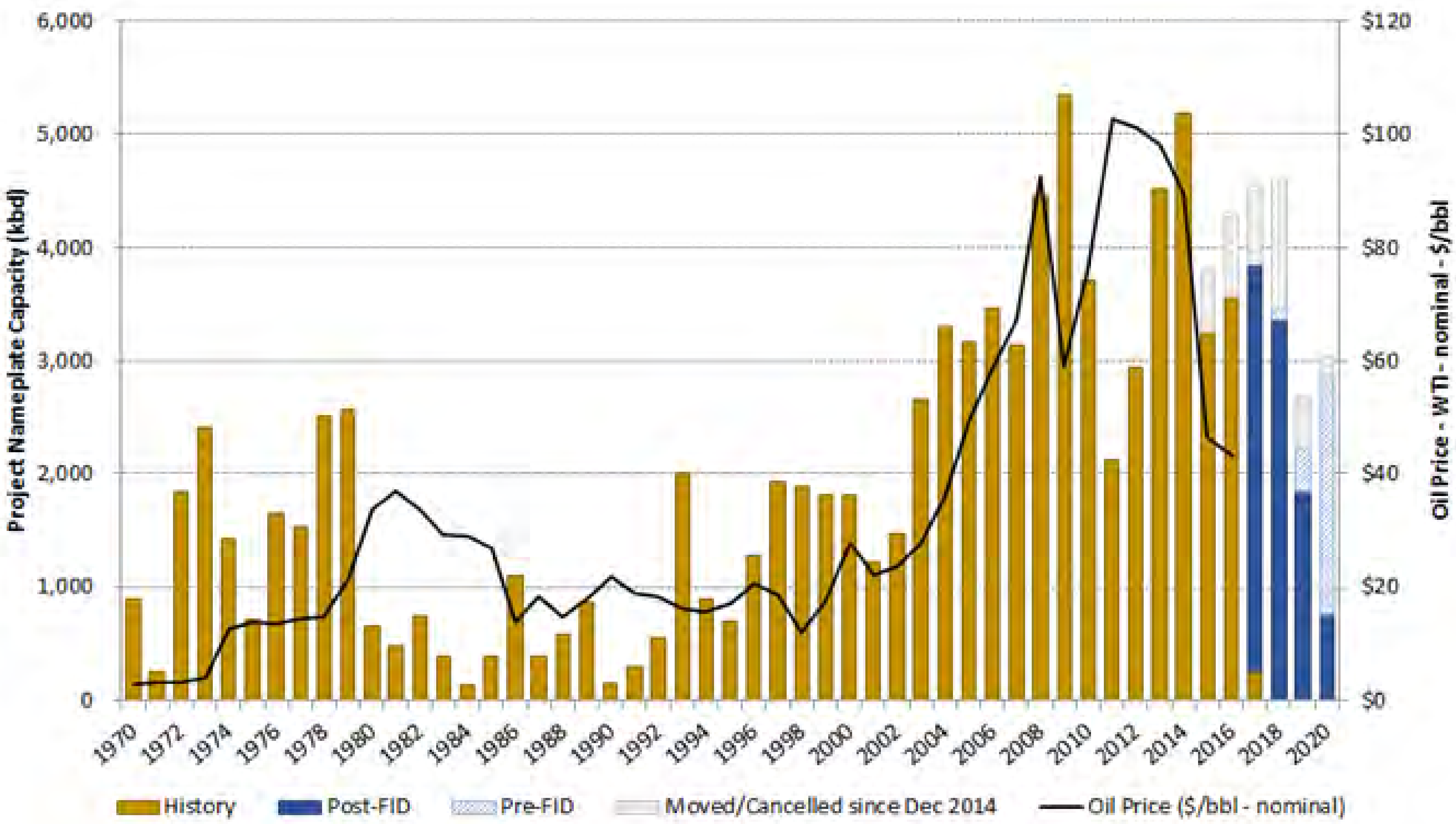
While the market continues to focus on the headline numbers which suggest that production is holding-up well even in the third successive year of underinvestment, a closer look at the underlying data reveals that the current situation is not sustainable."

Paal Kibsgaard, CEO, Schlumberger (March 27 2017)

Source : Simmons International, April 2017

Non-OPEC oil supply (ex-US): production flat to declining

Major non-OPEC (ex-US onshore) project start-up schedule

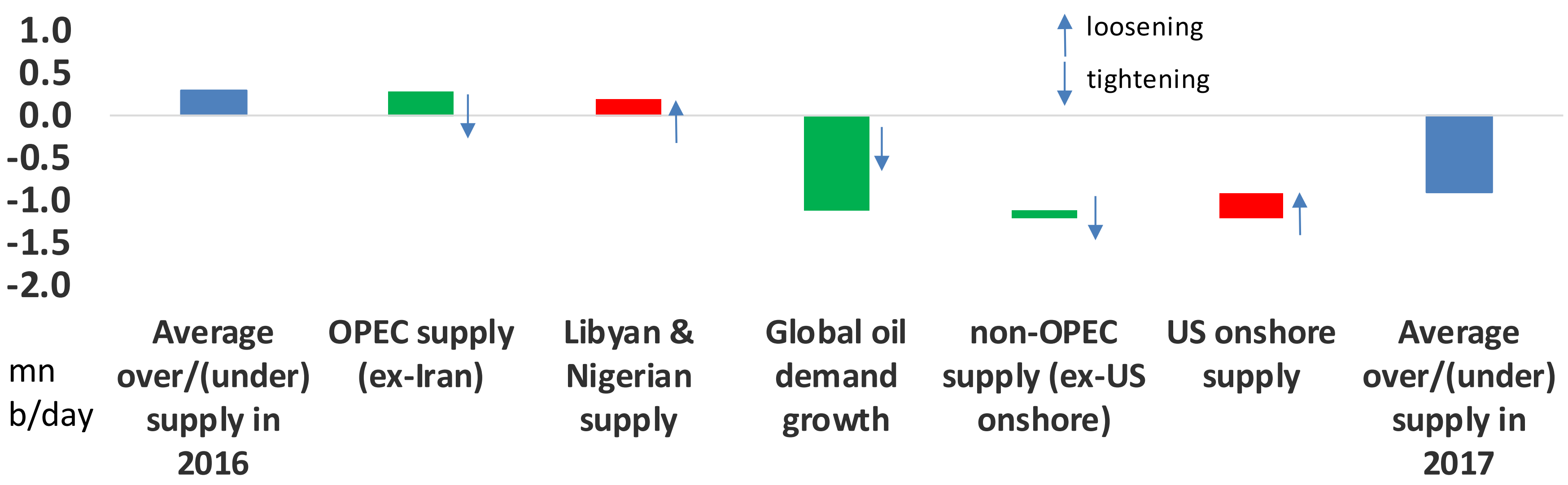


Source : Kessler Energy, Guinness Atkinson, April 2017

Inventories – the path to a tighter market in 2017

- As ever, the picture of oil supply and demand in 2017 will be dynamic
- Our 'base' case shows that the oil market is likely to be undersupplied in 2017, by something around 1m b/day
- We assume that the market averaged 2016 in slight oversupply (c.0.3m b/day)
- 'Core' OPEC cuts and growing global oil demand tighten the market
- Recovering production in Libya, Nigeria and US production growth loosen the market

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

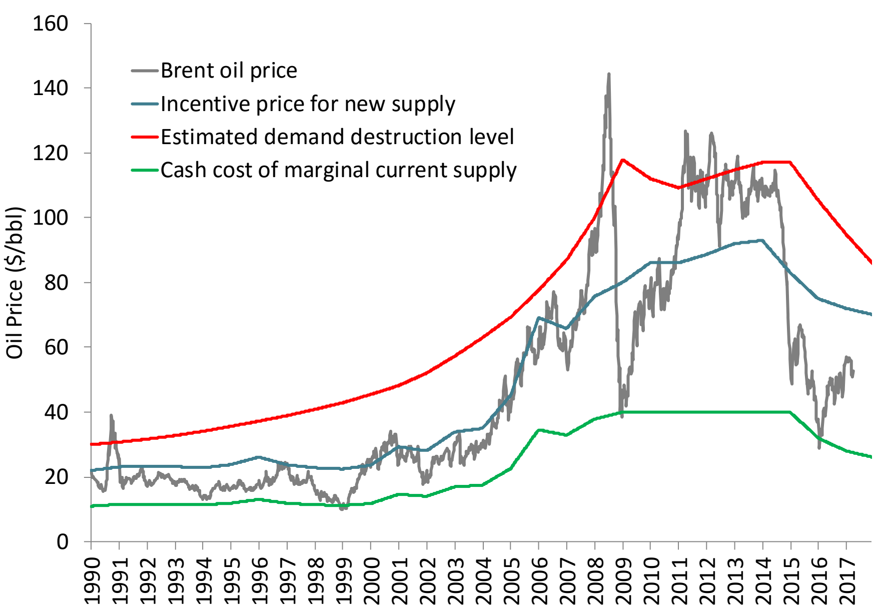


Source: Guinness Atkinson, Feb 2017

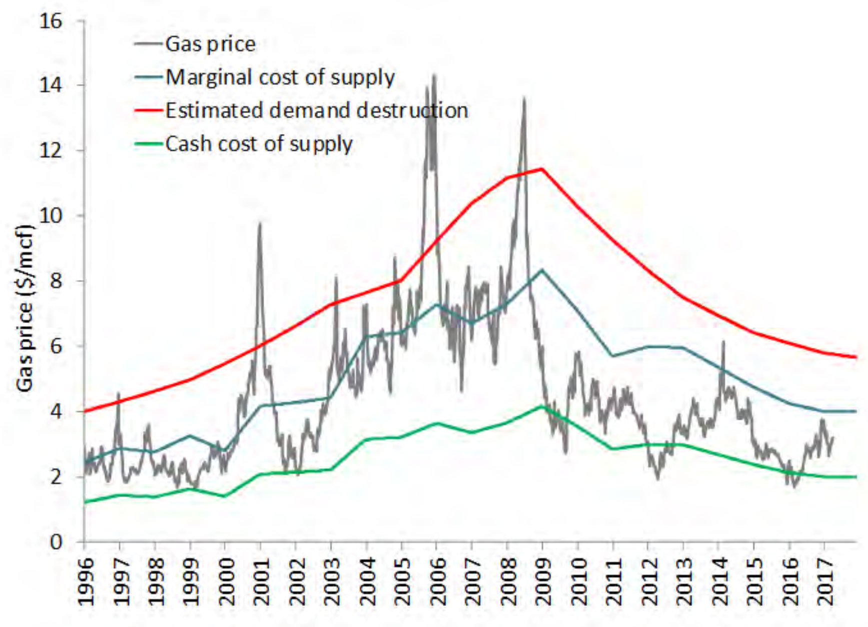
Economics: marginal cost of supply has historically defined prices

- 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 has rebounded this years from the marginal cash cost of supply, estimated to be the cost of running large scale Canadian oil sands and mature North Sea facilities
- Henry Hub natural gas is trading between cash cost and full marginal cost of supply

Economics of crude oil



Economics of US natural gas



Source: Bernstein, Guinness Atkinson, Apr 2017

Natural gas: summary views

- 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/Utica
  - Asian gas price formulae are linked to oil prices with a 6 month lag
- New US LNG facilities starting up between 2016 and 2020, but the economics of the spot price arbitrage now look significantly less attractive

Global natural gas prices (US$/mcf)

Source: Bloomberg, Guinness Atkinson (data to March 31 2017)

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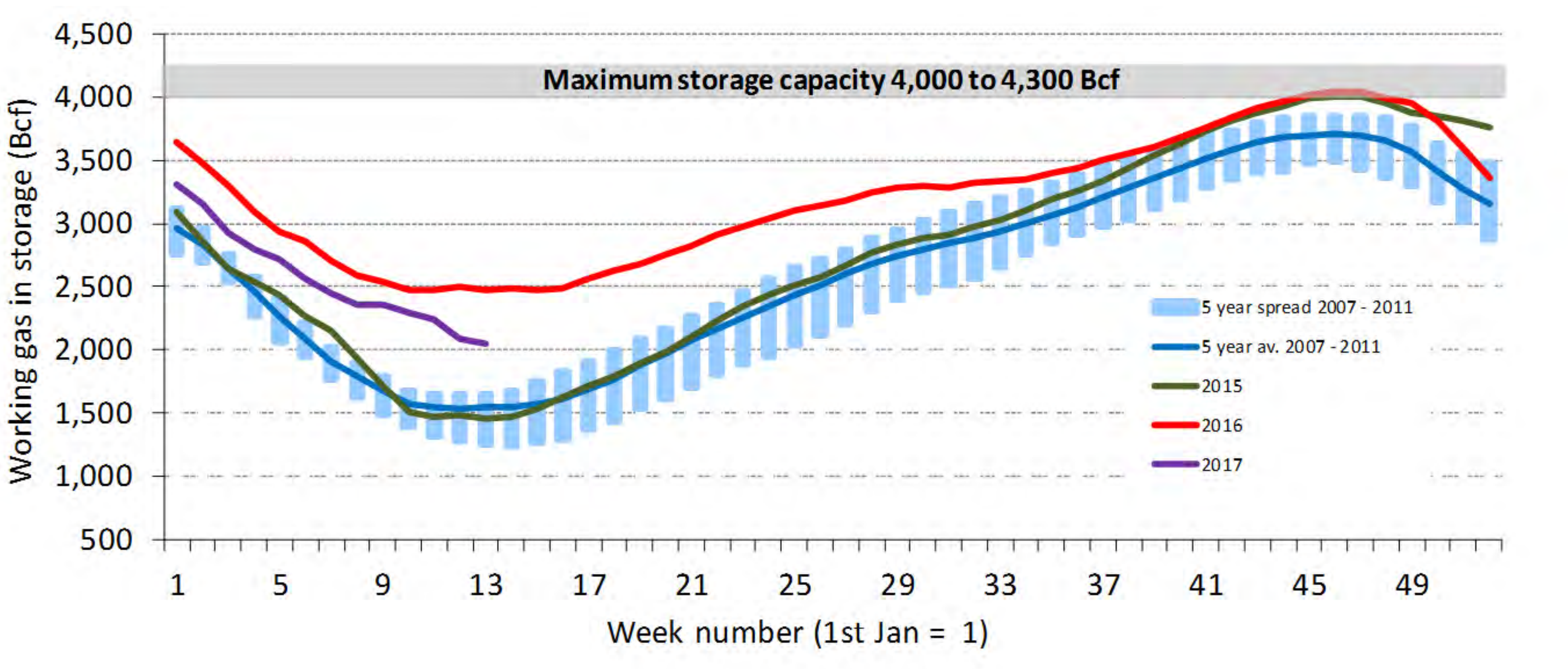
US natural gas: storage is now back above the 5 year average

- A cold start to 2016/2017 winter, plus structural undersupply saw inventories normalise….
- ...but, a warm end to 2016/17 winter has pushed inventories higher again

US natural gas inventories

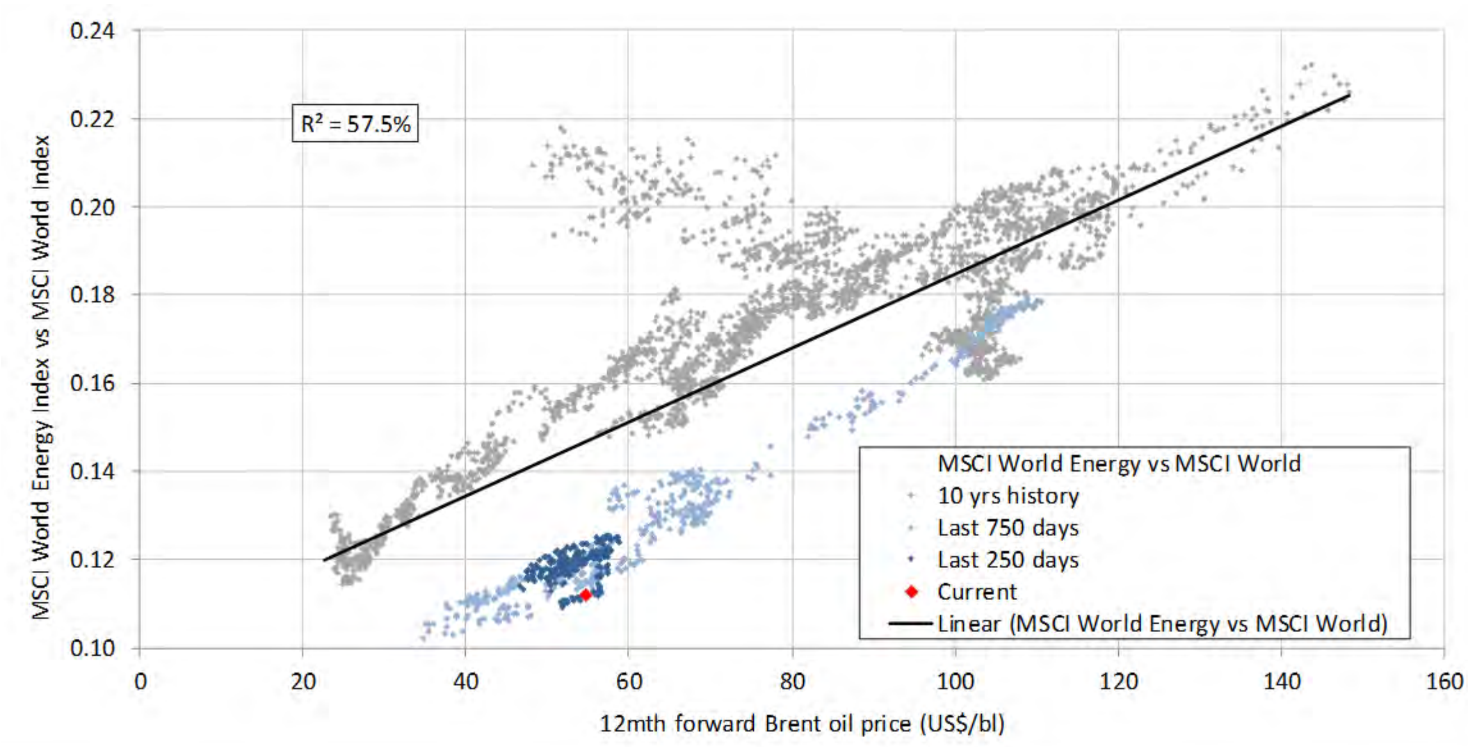


Source: IEA; Guinness Atkinson, Apr 2017

4. Energy equities: high R^2 between commodities & equities

- There is a 58% R^2 between the energy sector relative and the forward oil price
- Energy company equities have de-rated relative to current commodity prices
- There is c.35% potential upside to the long run relationship
- "We expect energy equities to close the gap when the market believes in the sustainability of higher oil prices."

<u>Oil & gas company market-relative valuations vs long dated oil prices</u>

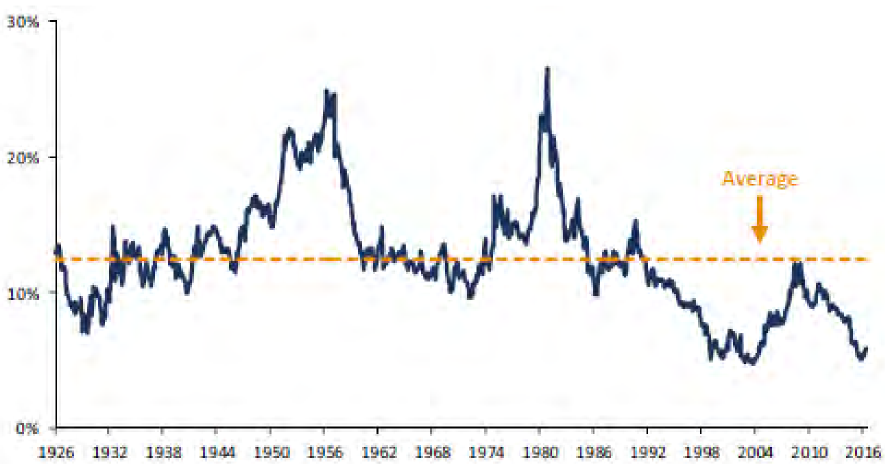


Source: Bloomberg (data as at Mar 31 2017)

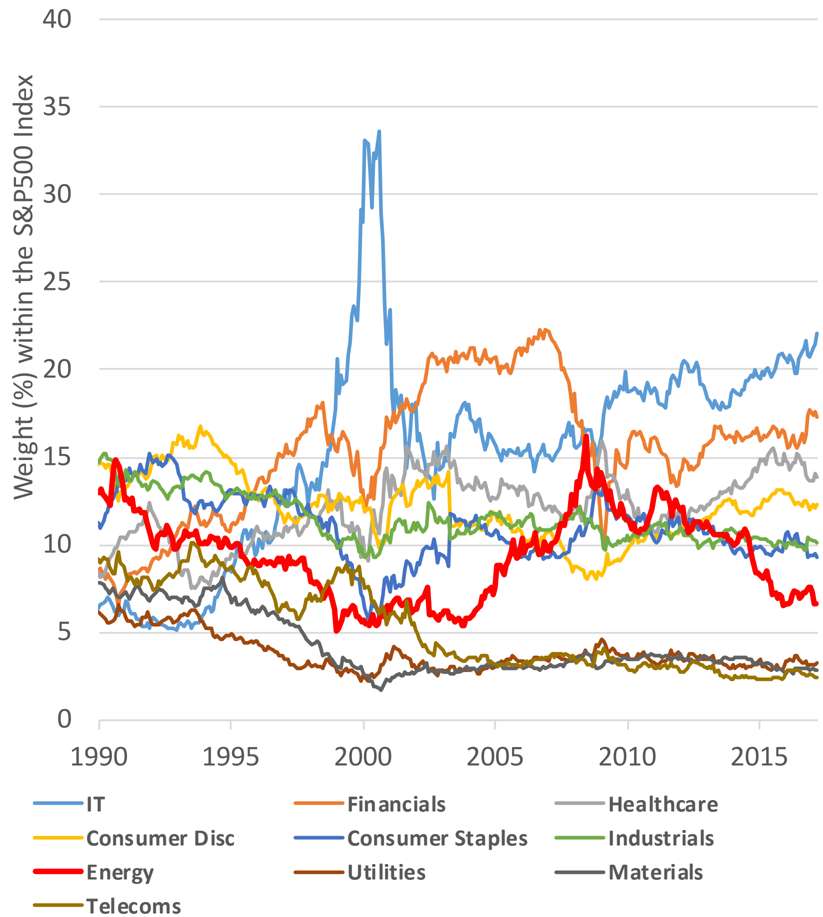
Energy equities: at low levels within global indices

- The S&P500 energy index was 6.6% of the S&P500 index at 31 Mar 2017
- 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 (1990-2017)

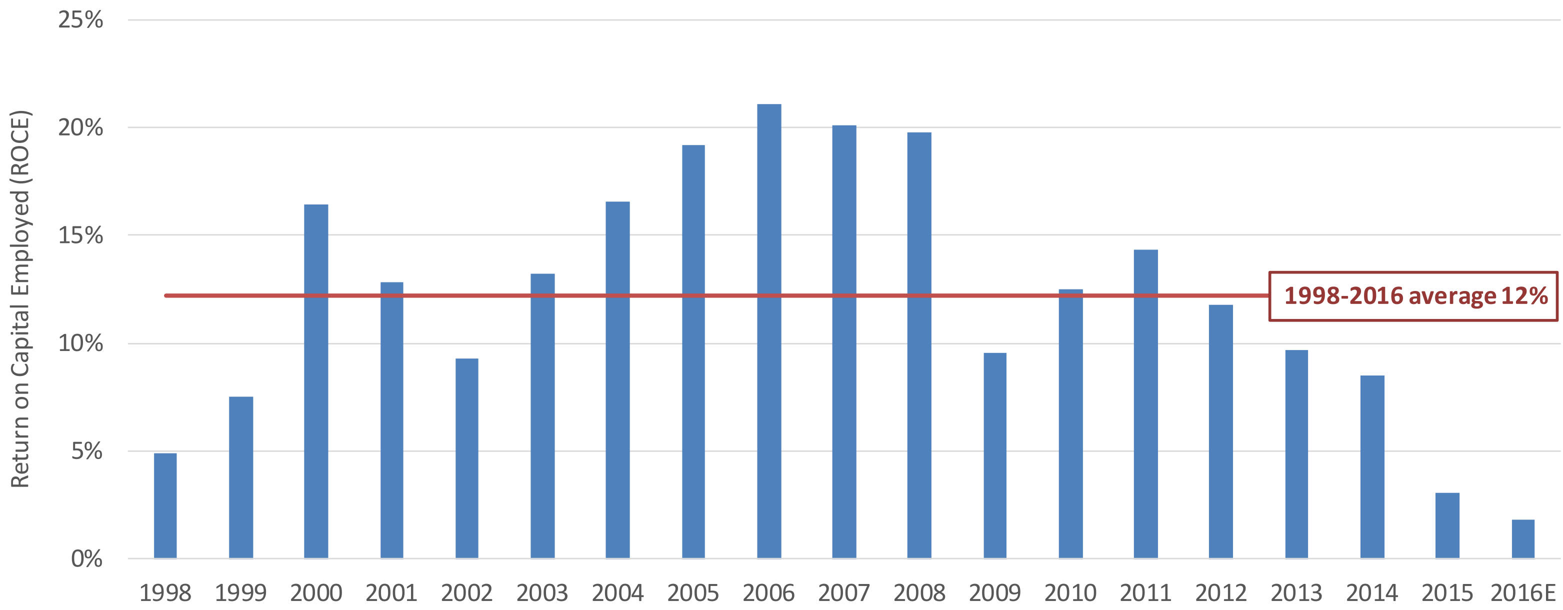


Source: GMO, S&P, MSCI, Bloomberg, Guinness Atkinson (Apr 2017)

Guinness Atkinson Energy Fund: at a trough level of ROCE*

- The combination of lower oil prices and legacy higher cost structures leave ROCE depressed
- The ROCE of the Guinness Atkinson Global Energy portfolio is currently only 2% at $43 oil in 2016
- The long run average of the same portfolio of holdings has been 12%
- We expect reported ROCE to improve as a result of
    - External factors: improvements in oil and natural gas prices
    - Internal factors: cost deflation, efficiency improvements and M&A activity

ROCE of current Guinness Atkinson Energy fund portfolio holdings



Source: Bloomberg, Company Data and includes analysis of all 'full position' holdings in the Guinness Atkinson Energy fund as of December 31 2016. *ROCE = return on capital employed. *Past performance is no guarantee of future results.*

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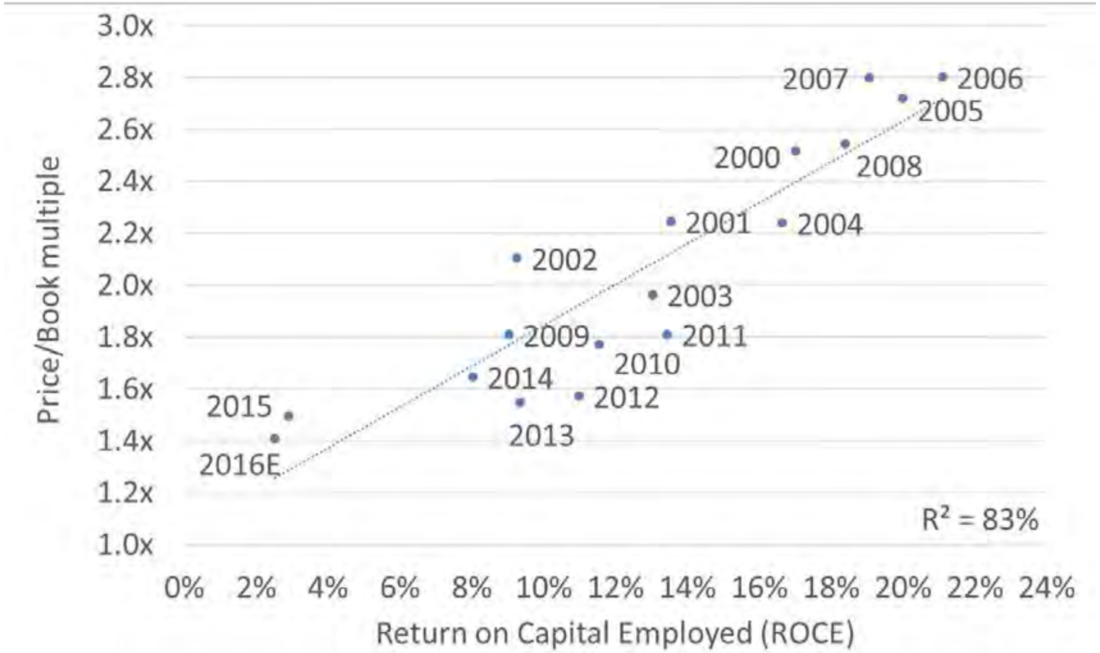
Guinness Atkinson Energy Fund: ROCE trends are important

- Return on Capital Employed (ROCE) is a key driver of valuation for the energy sector, in our view
- ROCE has been depressed as a result of cost inflation, capital enlargement and now, oil prices
- The ROCE of the Guinness Atkinson Global Energy portfolio is currently only 2% at $43 oil in 2016
- Even with $70/bl oil in 2019, all else being equal, we estimate ROCE below the long run average of 12%
- 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

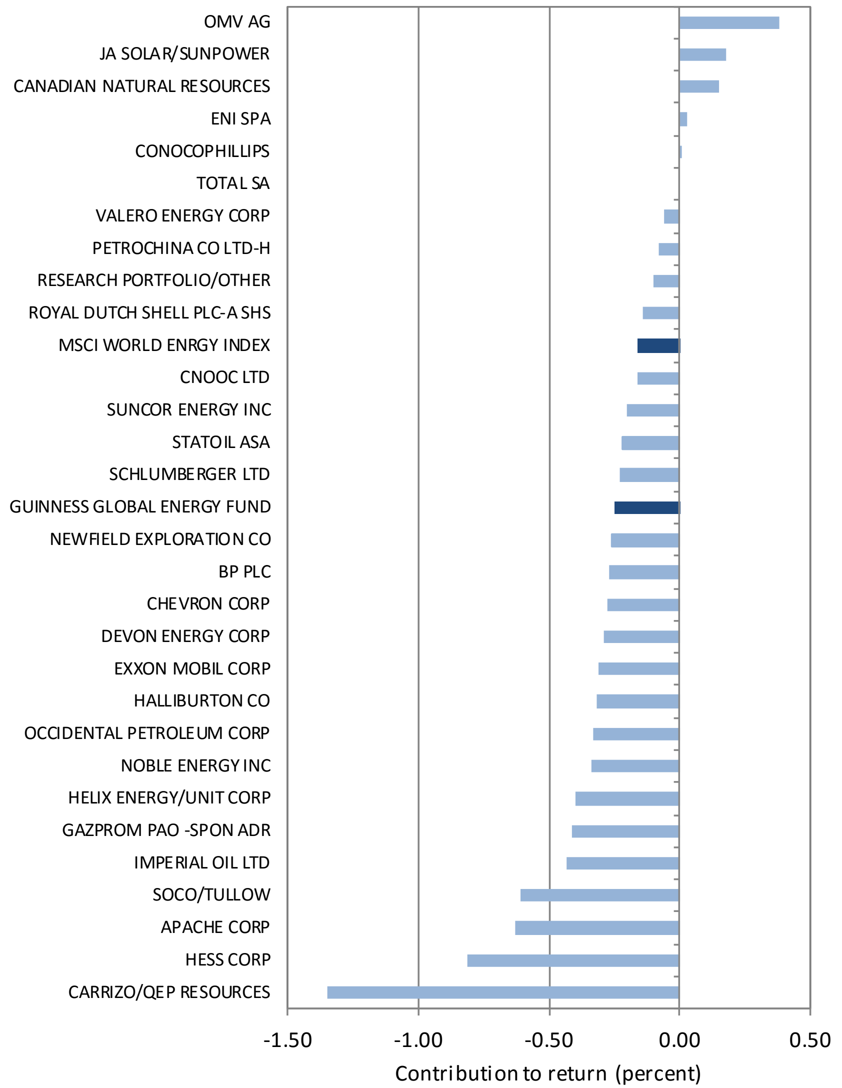
ROCE vs P/B multiple for Guinness Atkinson Energy portfolio



Source: Bloomberg, Guinness Atkinson estimates, numbers in brackets indicate forecast Brent oil ($/bl) and Henry Hub ($/mcf) gas prices. *Past performance is no guarantee of future results.*

Indicative fund contribution, per position

2017 1Q 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

Source: Guinness Atkinson, Bloomberg, data as of end Mar 2017

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Fund positioning: key themes in the fund for 2017

	Theme	Example holdings	Weighting (%)
1	Cheap large-cap oil	Apache, Suncor Energy, Canadian Natural	35.9%
2	Undervalued integrated oil & gas reserves	Shell, OMV, Total	18.0%
3	US shale oil growth	Newfield, Enbridge, Carrizo	11.5%
4	Exploration & production spending plans	Helix, Schlumberger, Halliburton	9.0%
5	Emerging market natural gas demand	PetroChina, Gazprom	7.3%
6	International mid and small cap oil producers	EnQuest, Soco plc International, CNOOC	6.5%
7	Other (incl cash)	JA Solar, Unit Corporation, SunPower	4.6%
8	Rising US natural gas price	devon	3.7%
9	US Gulf Coast refining advantages	Valero	3.5%
			100.0%

Top 10 holdings as of 03/31/2017: 1. Conocophillips 4.14% 2. CNOOC Ltd 3.90% 3. Noble Energy Inc 3.83% 4.BP PLC 3.81% 5.Gazprom PJSC 3.73% 6.Enbridge Inc 3.73% 7. Petrochina Co Ltd 3.64% 8. Apache Corp 3.55% 9. Hess Corp 3.53% 10. Eni SpA 3.48%

Source: Guinness Atkinson, at end March 2017

Fund and index performance, as of Mar 31, 2017

- Underperformance from energy vs S&P500 in Q1 2017, leaving the sector, in our analysis, a long way from historical normalised valuation levels

	Q1 2017	1 Year	5 Years*	10 Years*	Since Inception (June 30, 2004)*
Global Energy Fund	-7.64%	12.71%	-3.75%	0.07%	6.66%
MSCI World Energy Index	-4.77%	15.31%	-0.19%	1.74%	6.27%
S&P 500	6.06%	17.15%	13.26%	7.49%	8.10%

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***

Source: Bloomberg

Fund characteristics

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

Fund manager biographies

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 Atkinson 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 Atkinson 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

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For your protection, calls to these numbers may be recorded

Guinness Atkinson Asset Management

- **Guinness Atkinson Asset Management**: founded in 2003, along with UK sister firm Guinness Asset Management
- **Four core areas of expertise:** Global Equities, Energy, Asia & Financials
- **Guinness Group AUM (at March 31, 2017): $1.2bn**
- **Staff of 19, including 8 investment professionals**
- **Company is 100% owned by employees**

AUM = assets under management

Disclosure

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.

The Fund's investment objectives, risks, charges and expenses must be considered carefully before investing. The statutory and summary prospectus contains this and other important information about the investment company, and it may be obtained by calling 800-915-6566 or visiting gafunds.com. Please read it carefully before investing.

You cannot invest directly in an index.

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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