

Global Energy: 2018 Outlook

January, 2018

Tim Guinness (Co-manager)

Will Riley, CA (Co-manager)

Jonathan Waghorn (Co-manager)

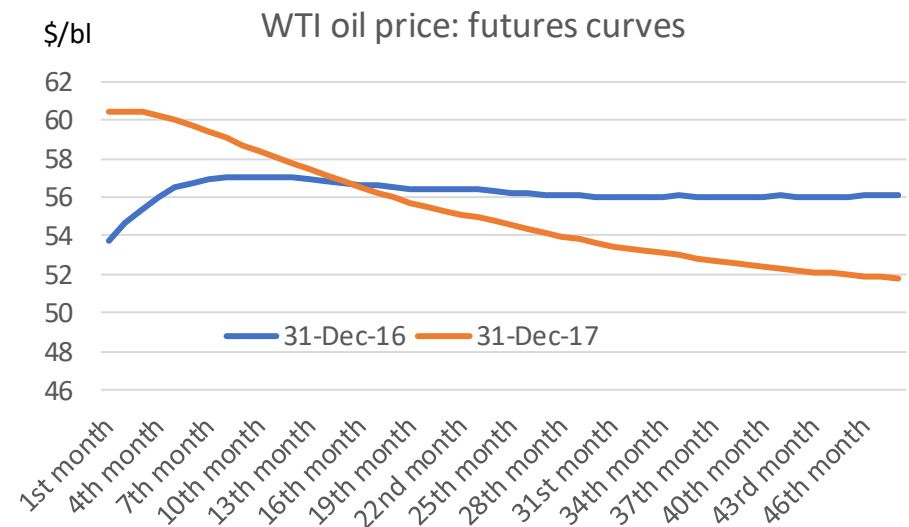
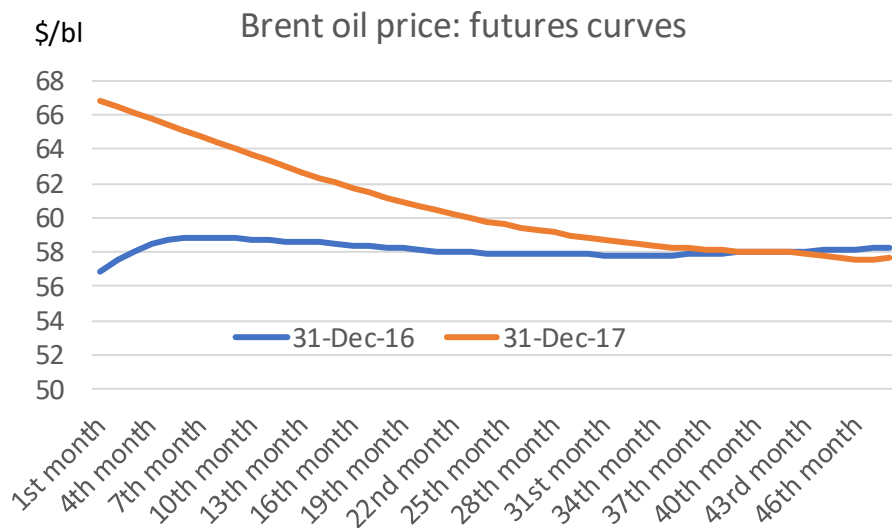


For Registered Investment Professional Use Only

- **We believe OPEC has shown clear determination to defend an oil price floor; we expect a \$55-60/bl range**
- US onshore oil production will need to grow faster in 2019/2020, in our view, to offset existing production declines and to satisfy growing demand globally for oil products
- The energy equity sector has adjusted to lower oil prices with profitability and **free cashflow generation improving**
- We see it as unlikely that extreme sector valuation levels will be sustained as the companies continue to recover

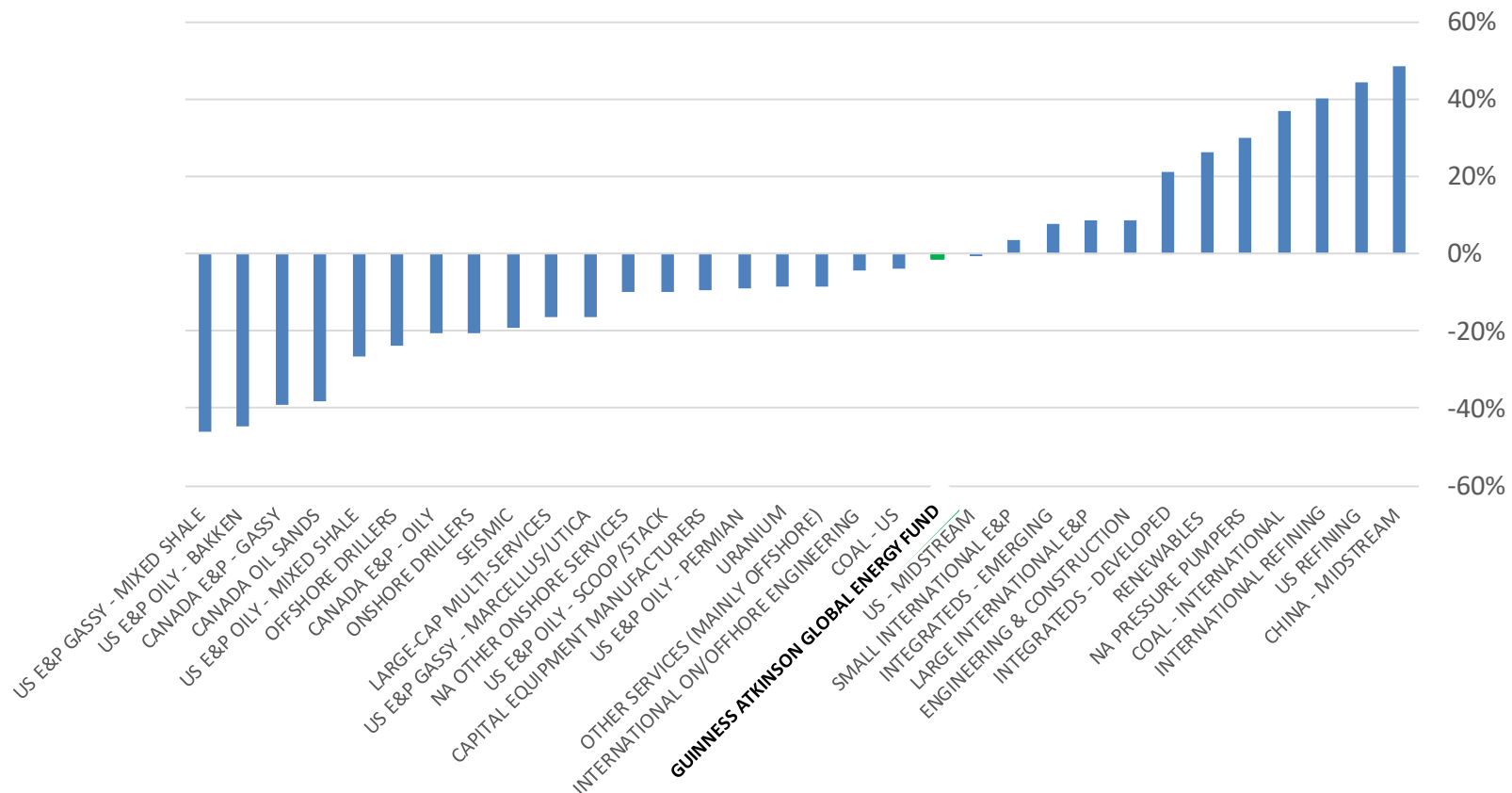
- Brent and WTI spot oil prices rose in 2017, pulled higher by a tighter market (global oil demand growth and OPEC discipline holding sway over US onshore supply growth)
- Longer dated prices fell, and the futures curve to shift from contango to backwardation

Brent and WTI oil futures curves



- Guinness Atkinson Global Energy Fund produced a return in 2017 of -1.0% (total return)
- Year of divergence between sectors: strong for integrations/refiners; weak for E&Ps/services

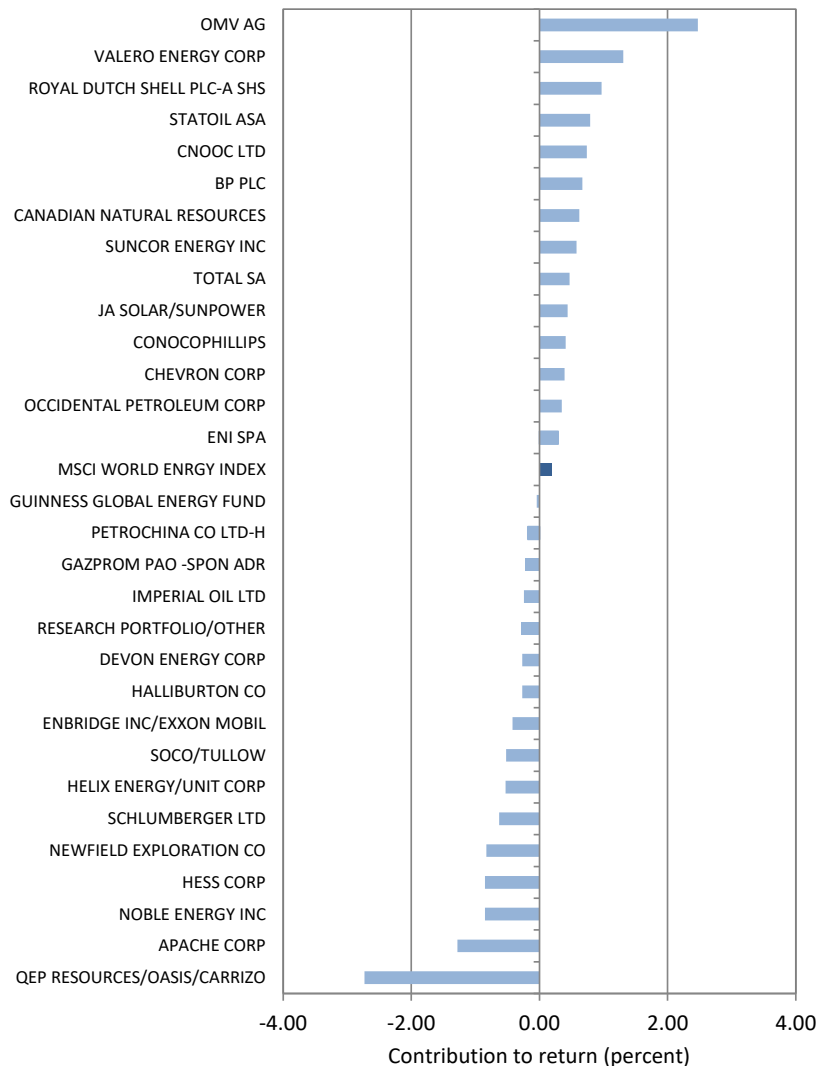
Global energy equity subsectors: median total return in 2017 (%)



Source: Guinness Atkinson Funds, Bloomberg, data as of end Dec 2017

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.

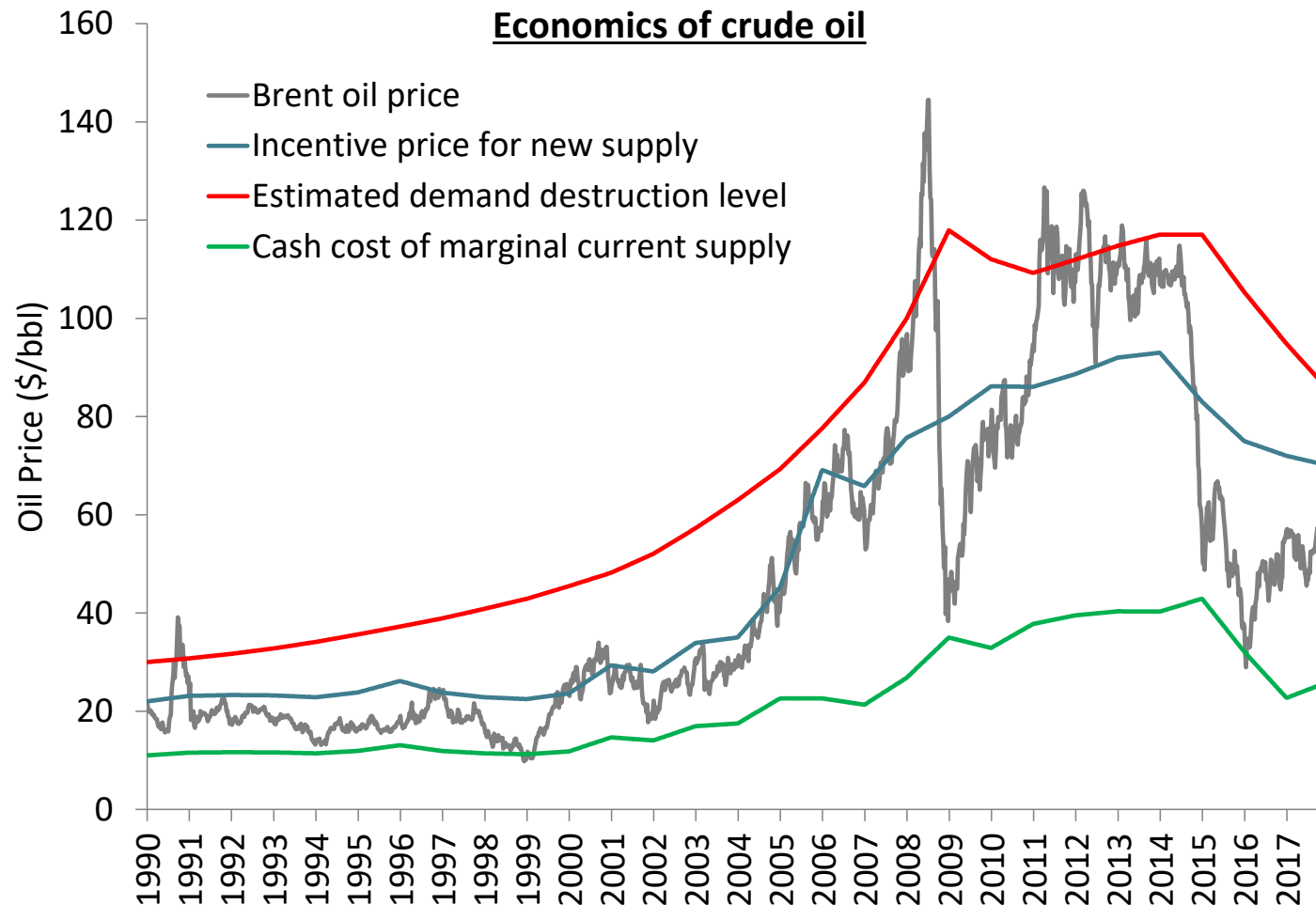
2017 indicative contribution



Source: Guinness Atkinson Funds, Bloomberg, data as of end Dec 2017

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.

- The oil price trades between the cash cost of supply and the price at which demand falls
- Marginal cost tends to determine the oil price in the longer term



Near term oil demand: world oil demand up 1.5m b/day in 2017

6

- 2017 world oil demand up around 10m b/day on pre-recession peak (2007)
- Non-OECD demand has grown unchecked for over a decade, not unseated by financial crisis
- Estimates for 2018 indicate healthy demand growth of 1.3m b/day – all from non-OECD

Global oil demand (m b/day)

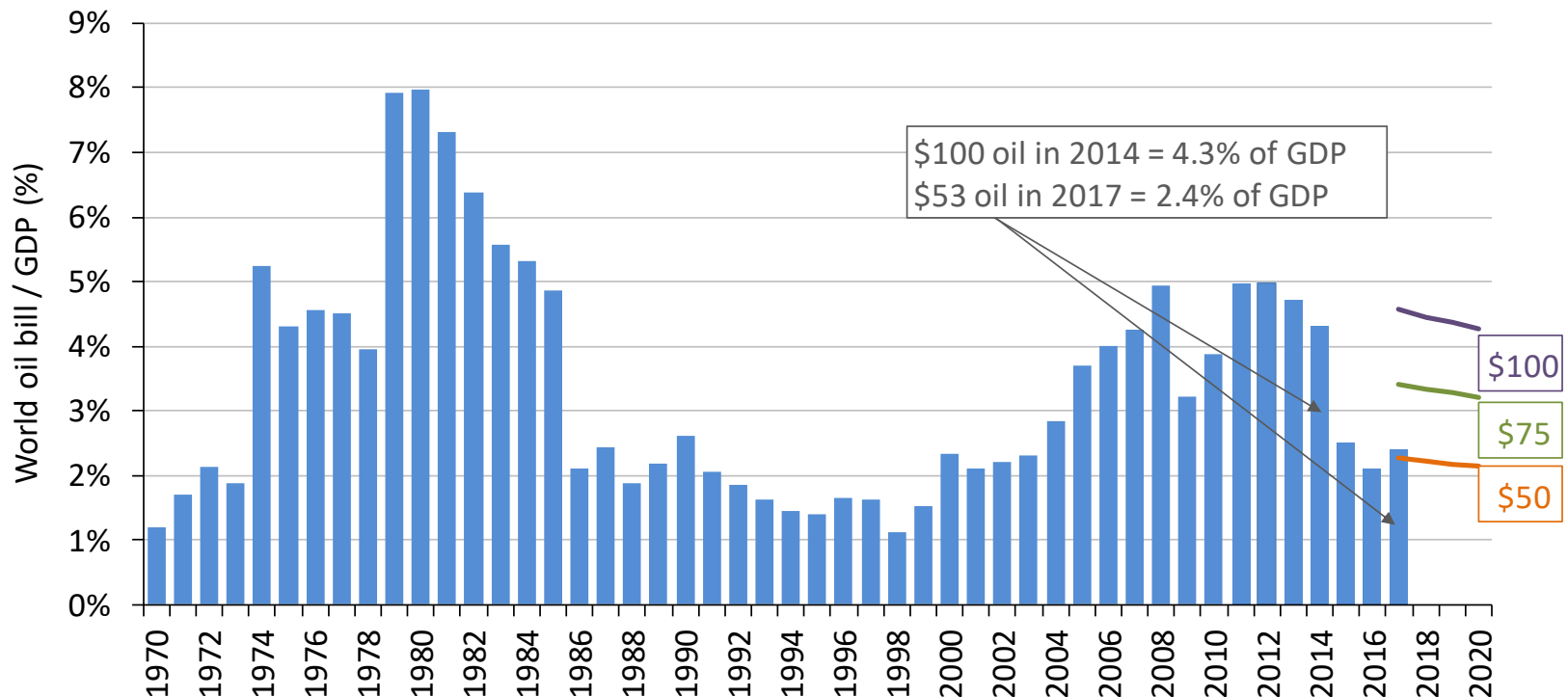
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
OECD demand														IEA	IEA
North America	25.7	25.8	24.5	25.8	24.5	23.7	24.1	24.0	23.6	24.2	24.2	24.6	24.7	24.9	25.0
Europe	15.6	15.7	15.7	15.6	15.5	14.7	14.7	14.3	13.8	13.6	13.5	13.8	14.0	14.3	14.3
Pacific	8.8	8.9	8.7	8.7	8.3	8.0	8.2	8.2	8.5	8.3	8.1	8.1	8.1	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	46.9	47.3	47.3
<i>Change in OECD demand</i>		0.3	-1.5	1.2	-1.8	-1.9	0.6	-0.5	-0.6	0.2	-0.3	0.6	0.5	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	4.6	4.5	4.8	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	0.7	0.7	0.7	0.7	0.8
China	6.4	6.7	7.2	7.6	7.7	7.9	8.9	9.3	9.9	10.4	10.8	11.6	11.9	12.4	12.8
India	2.6	2.6	2.7	2.9	3.1	3.2	3.3	3.5	3.7	3.7	3.8	4.2	4.6	4.7	5.0
Other Asia	6.4	6.4	6.6	6.9	6.8	7.1	7.5	7.6	7.6	7.9	8.0	8.2	8.4	8.7	8.9
Latin America	4.9	5.0	5.2	5.3	5.6	5.7	6.1	6.2	6.5	6.6	6.8	6.7	6.6	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	8.3	8.3	8.5
Africa	2.8	2.9	2.9	3.3	3.3	3.4	3.5	3.5	3.8	3.8	3.9	4.1	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	47.3	48.5	49.4	50.6	51.9
<i>Change in non-OECD demand</i>		1.0	1.3	1.7	1.0	1.0	2.3	1.3	2.1	0.8	1.7	1.2	0.9	1.2	1.3
Total Demand	82.5	83.8	85.1	87.2	86.4	85.5	88.4	89.2	90.7	91.7	93.1	95.0	96.3	97.8	99.1
<i>Change in demand</i>		1.3	1.3	2.1	-0.8	-0.9	2.9	0.8	1.5	1.0	1.4	1.9	1.3	1.5	1.3

Source: IEA Oil Market Report Dec 2017

Forecasts are inherently limited and cannot be relied upon.

- We believe Saudi is targeting a price that gives a “reasonable” world oil bill
- Ten year average world oil bill* is 4.2%, 20yr average is 3.2%, 30yr average is 2.8%
- If oil averages \$75 it will mean in 2020 the world oil bill is 3.1% of GDP
- If oil averages \$50 it will mean in 2020 the world oil bill is 2.1% of GDP

The world oil ‘bill’ as a percentage of world GDP

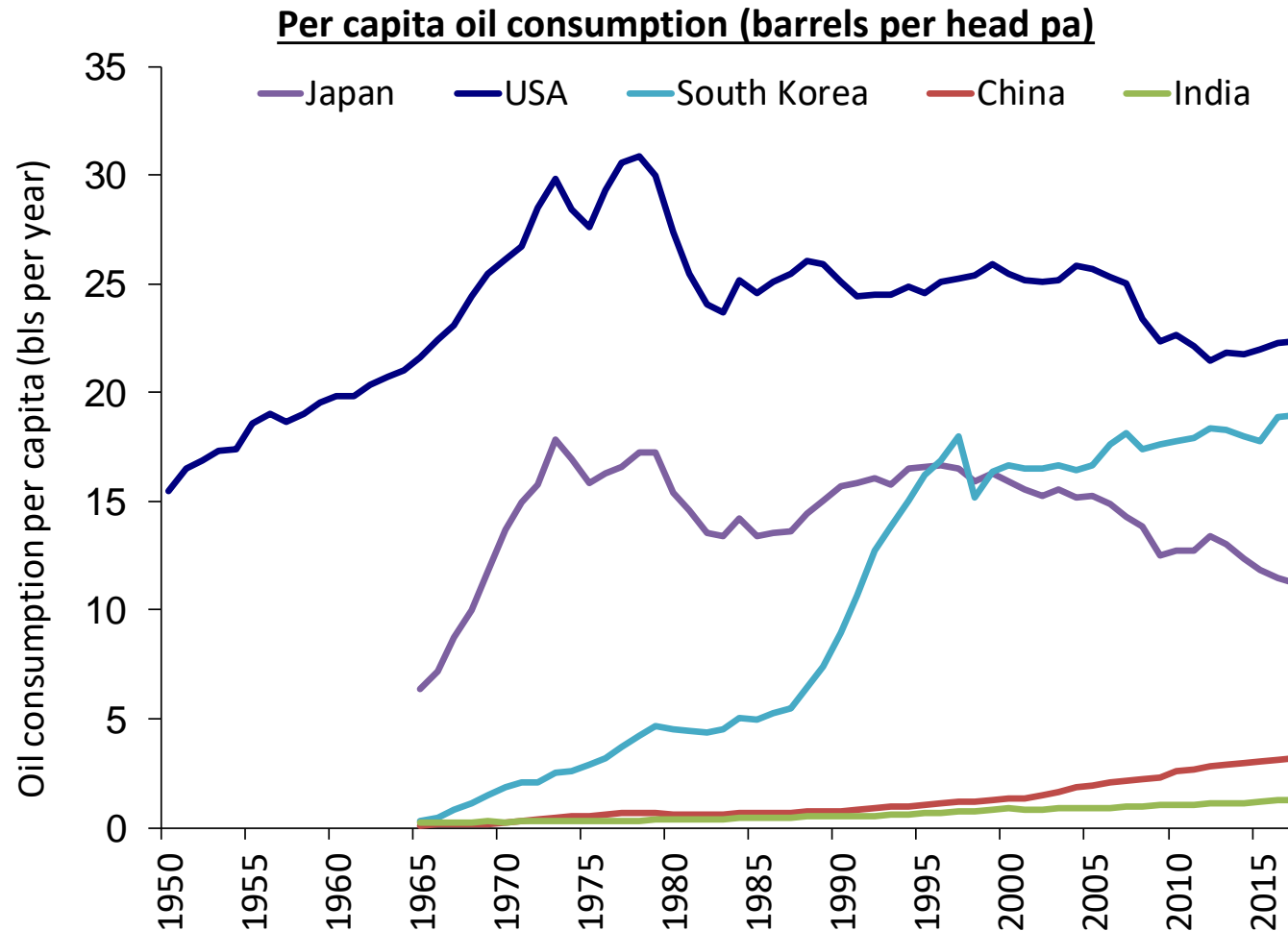


Source Bloomberg LP; Guinness Atkinson Funds, data as of Dec 2017

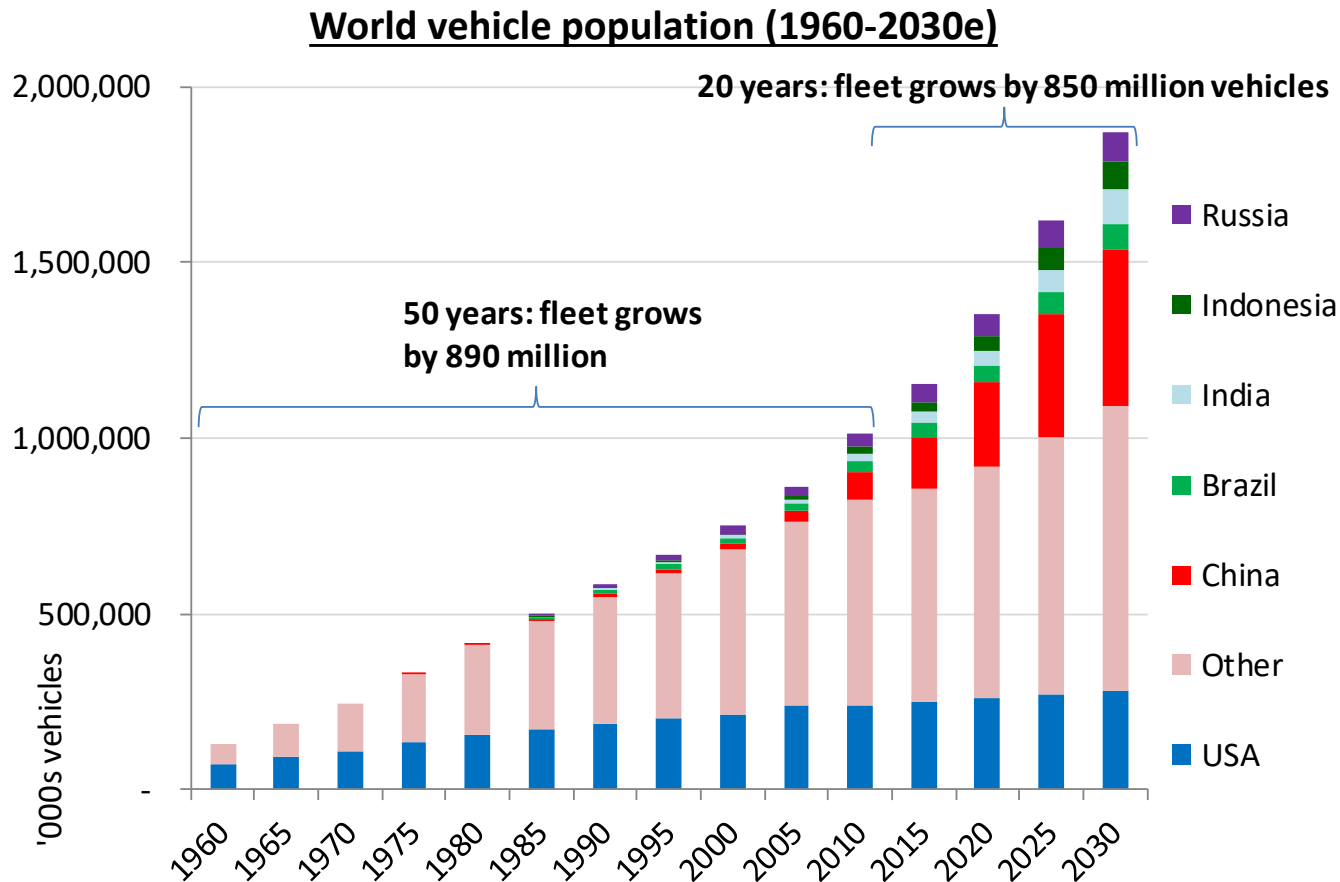
*World oil bill = total global spend on oil consumption / world GDP

Forecasts are inherently limited and cannot be relied upon.

- Non-OECD oil demand has grown at 3.8%pa since 1965, vs the OECD at 1.5%pa
- Per capita oil demand in China & India remains at a fraction of developed OECD levels

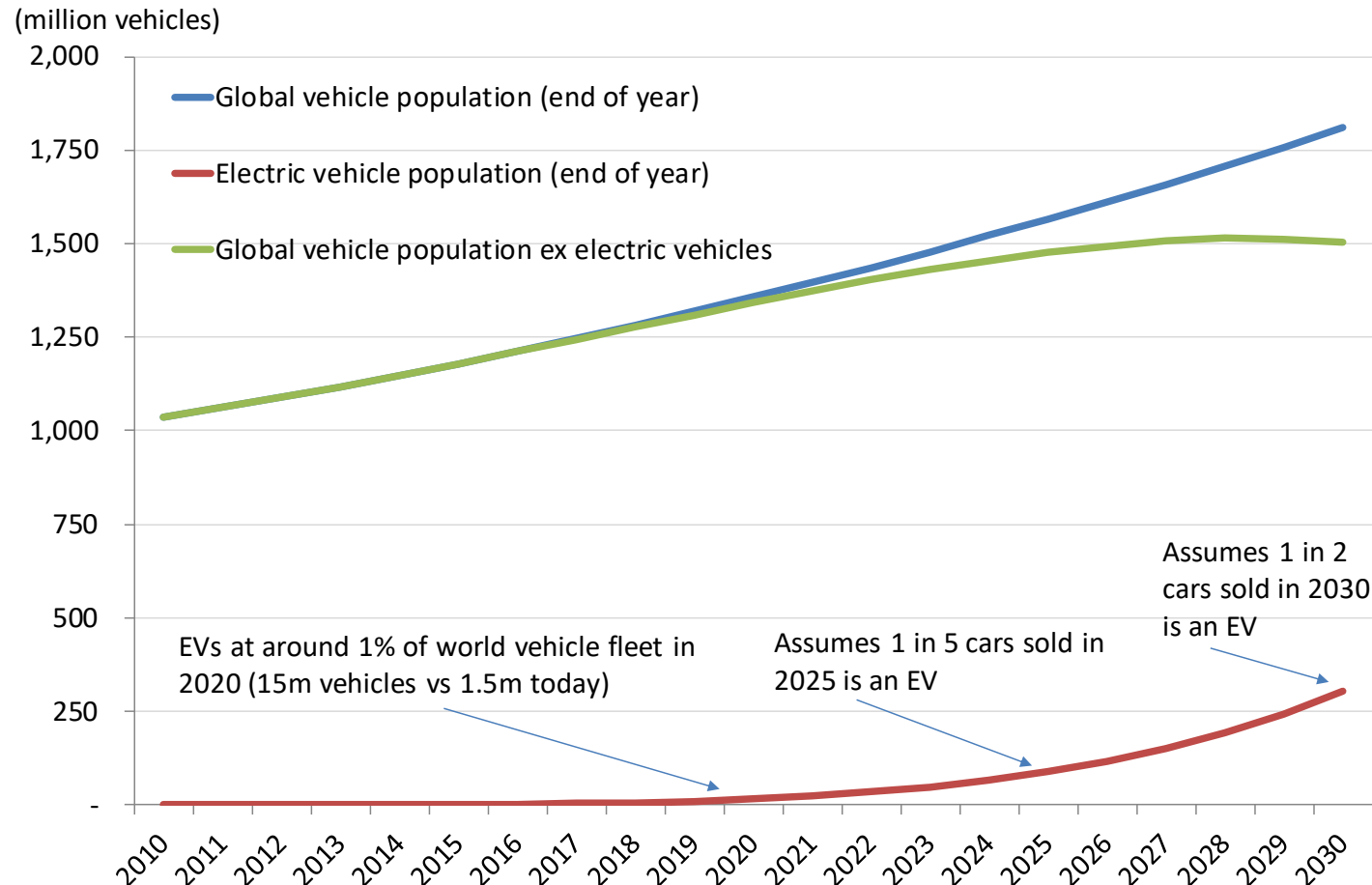


- Long term oil demand will be driven by the non-OECD adopting mass transportation
- The global vehicle population grew by 890m from 1960 to 2010...
... but we think could grow by 1,000m in the next twenty years



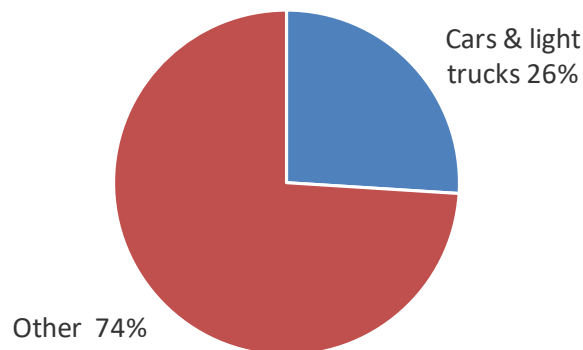
- Crude oil is 60% used in transportation and there are limited substitutes currently
- We expect the global fleet of ICE vehicles to expand by around 20% over next 10 years

Electric vehicles vs non-electric vehicles



- Passenger vehicles account for less than 30% of oil demand. Other key sources of demand (heavy transport; petrochemicals) more closely linked to GDP growth

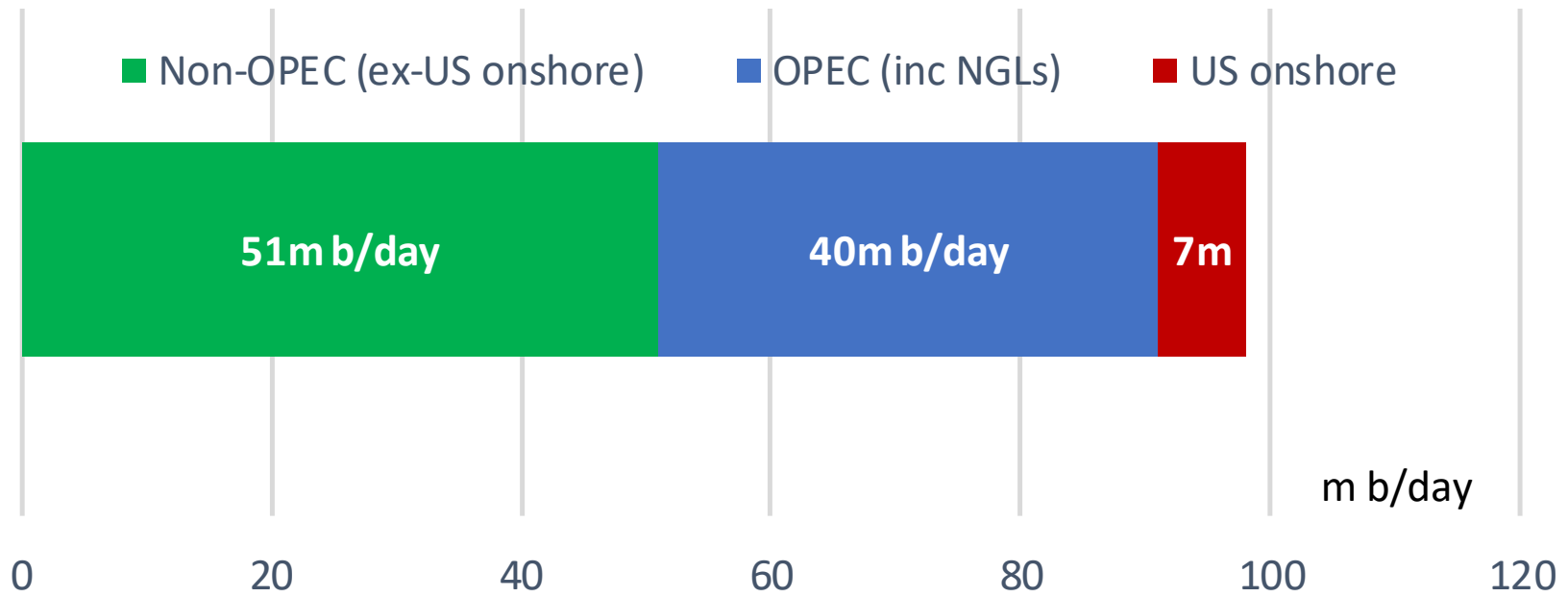
Structure of global oil demand



Source of demand	%
Power	6%
Petrochemicals	13%
Other industry	11%
Cars & light trucks	26%
Heavy vehicles	18%
Air travel	6%
Shipping	6%
Rail	1%
Other	13%
Total	100%

- **Global truck fleet** rising from 377m in 2015 to 600m in 2030 **(+c.60%)**
- **Air revenue passenger kms** rising from 9trn in 2015 to 15trn in 2030 **(+c.70%)**
- **Seaborne trade** rising from 54trn ton miles in 2015 to 90trn ton miles in 2030 **(+c.70%)**
- **Ethylene demand** rising from 141m tons to 230m tons in 2030 **(+c.65%)**

Global oil supply in 2017 (m b/day)



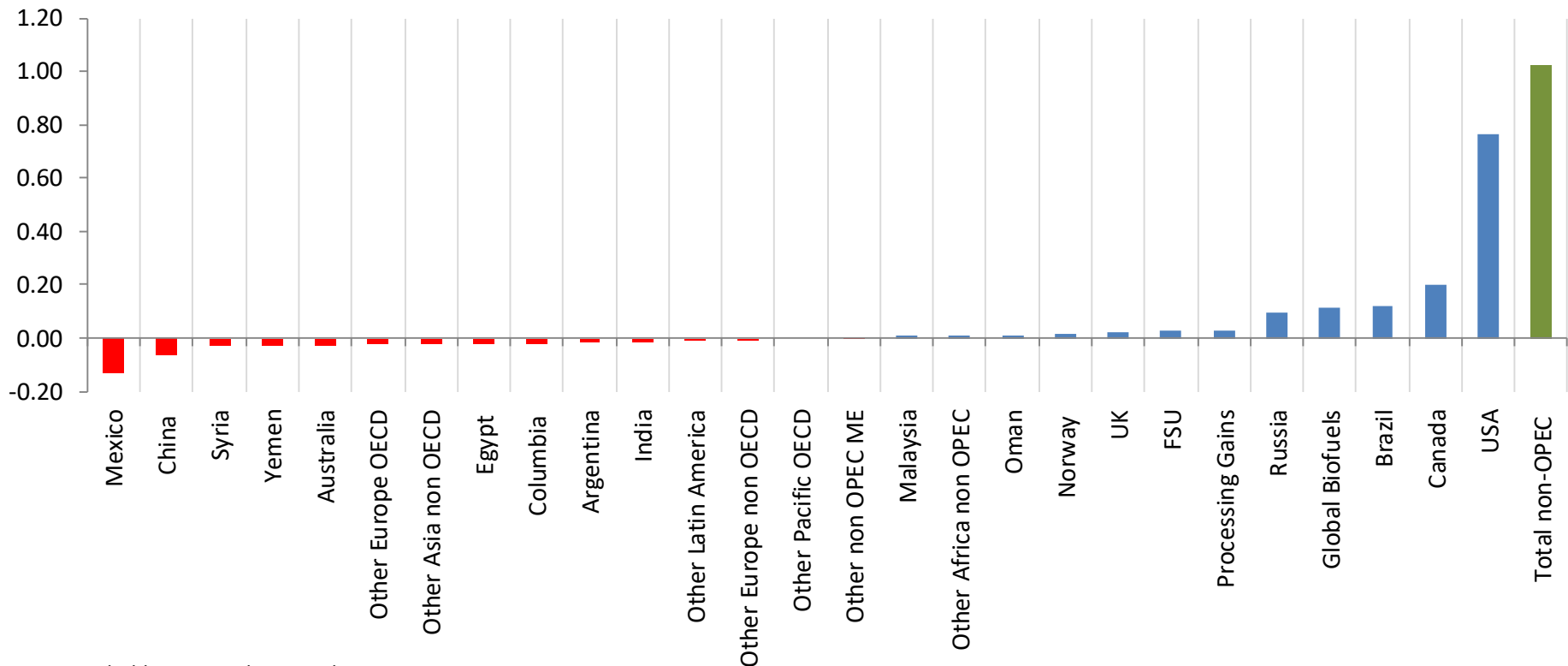
1) Non-OPEC (ex-US onshore): holding up thanks to legacy projects, but facing decline

2) OPEC (inc natural gas liquids): low cost production, but in countries struggling to breakeven fiscally

3) US onshore: shorter cycle, able to grow at \$50/bl

- North America delivered nearly all of non-OPEC oil production growth over the last six years
- Despite \$100 oil and high capex levels, other non-OPEC countries had flat production

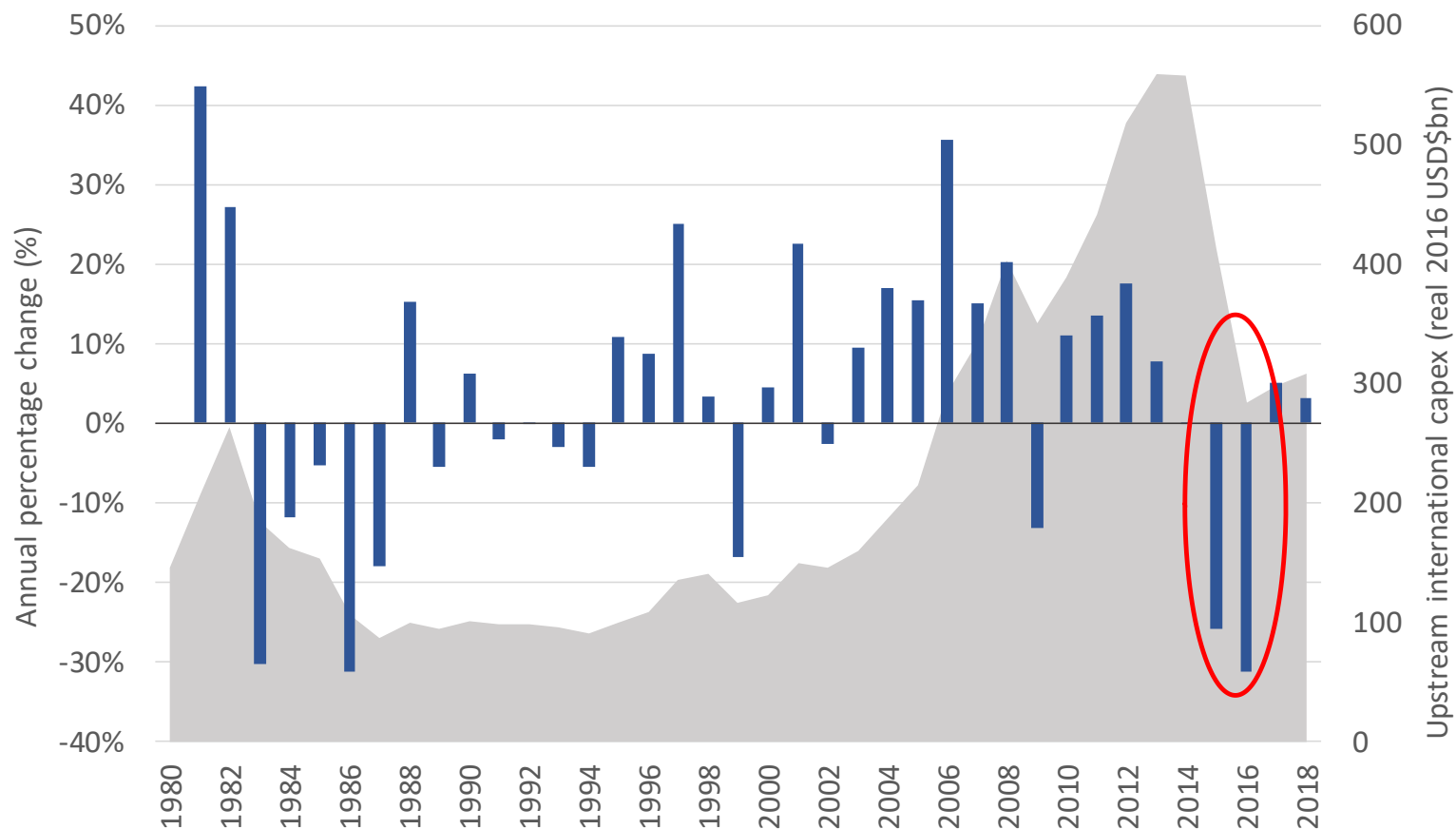
Non-OPEC oil growth: 2017 vs 2012 pa (m b/day)



Sector holdings are subject to change.

- Global upstream capex has fallen by more than 20%pa in both 2015 and 2016

Year over year change in global upstream capex



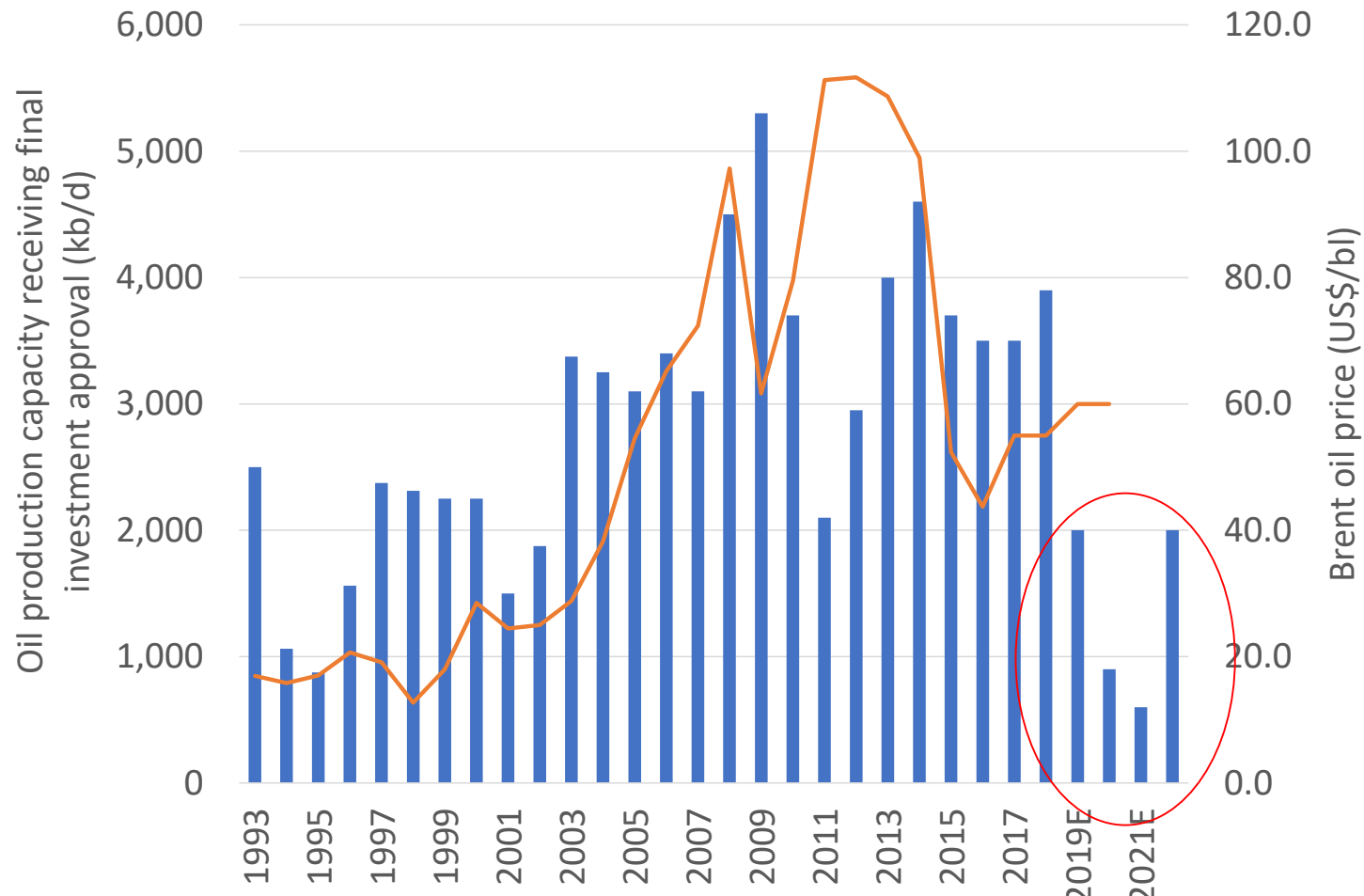
*“The 2017 E&P spend for this part of the global production base, which still makes up around 50 million barrels-per-day of production is expected to be down 50% compared to 2014. **At no other time in the past 50 years has our industry experienced cuts of this magnitude and this duration.**”*

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 2017)

- Non-OPEC supply (ex-US) project start-ups still strong in 2017/18 then sharp drop in 2019/20

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

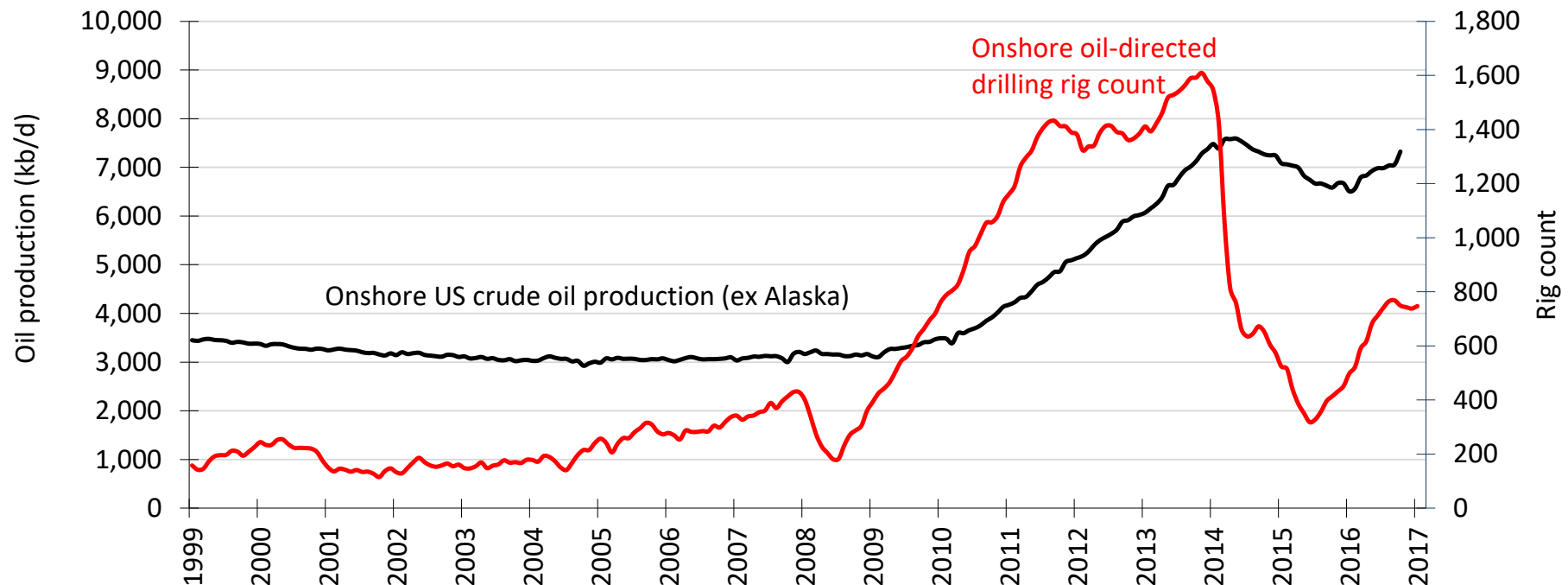


Source : Kessler Energy, Guinness Atkinson Funds, Jan 2018

Forecasts are inherently limited and cannot be relied upon.

- The decline of US onshore oil production in 2015/16 now reversed to growth
- The US oil directed rig count has recovered from low of 330 mid-2016 to 750 in Sept 2017

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

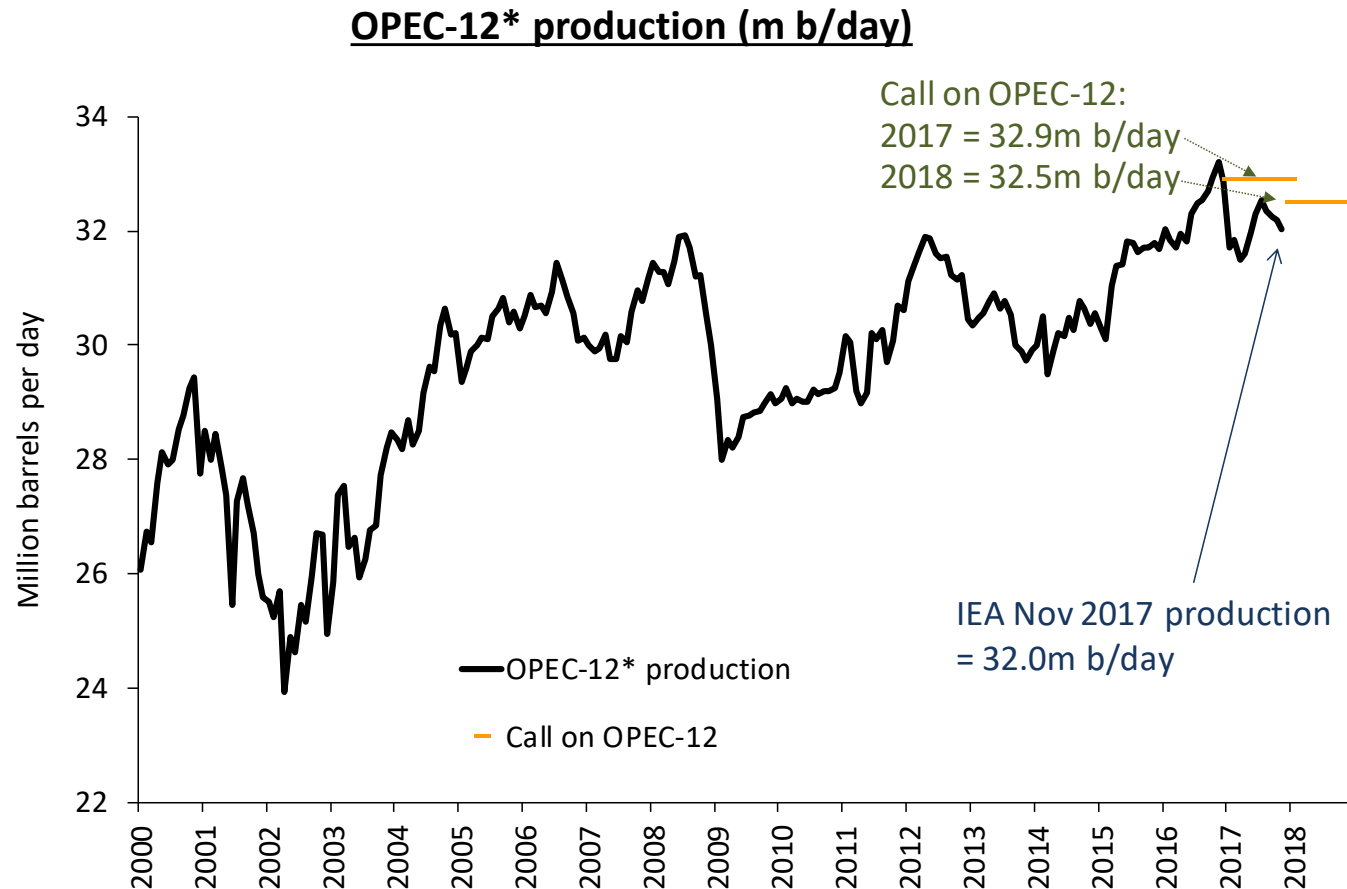


- We expect marginal investment (from higher oil prices) to be invested in US shale
 - The resource is available, payback is quick and technical, fiscal and political risks are low
- Efficiency gains will compete with cost inflation and infrastructure access
- We believe that a trajectory towards \$60/bl will be required, to:
 - Offset the increasing decline rates of new wells in order to sustain the growth trajectory
 - Deliver more growth in 2019/2020 as non-OPEC ex-US sees production declines

Potential trajectories for US onshore oil production

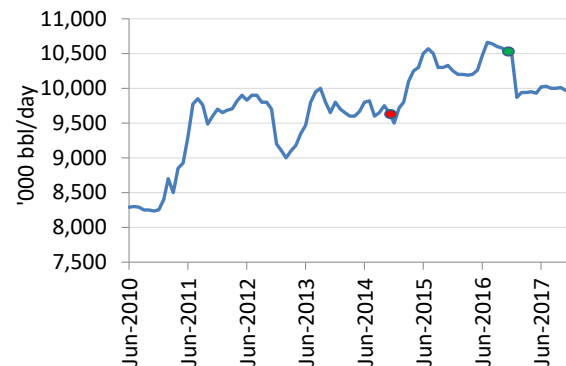
Brent oil price	Production change
\$30-40/bl	Declining 0.3-0.5m b/day
\$40-50/bl	Broadly flat
\$50-60/bl	Increasing around 0.6-1.2m b/day
\$60-70/bl	Increasing around 1.2-1.6m b/day

- OPEC-12 production was 1.2m b/day lower in Nov 2017 than in Nov 2016
- This is despite growth of 0.5m b/day from Nigeria and Libya
- “Call on OPEC” for 2018 is now 32.5m b/day; 0.5m b/day above Nov 2017 production

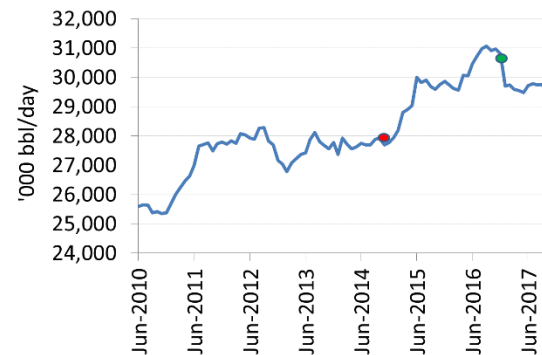


- OPEC oil production grew by nearly 2.0 m b/day after the Nov 2014 meeting, peaking in Dec 2016
- Ex Nigeria & Libya, OPEC cut in 2017 by 1.2m b/day
- Nigeria & Libya have recovered and are now part of the quota system again

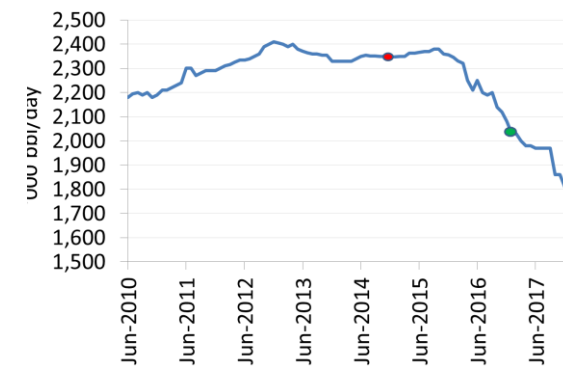
Saudi Arabia



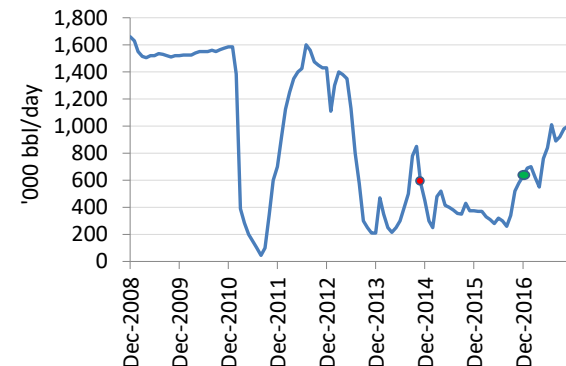
OPEC ex Nigeria/Libya



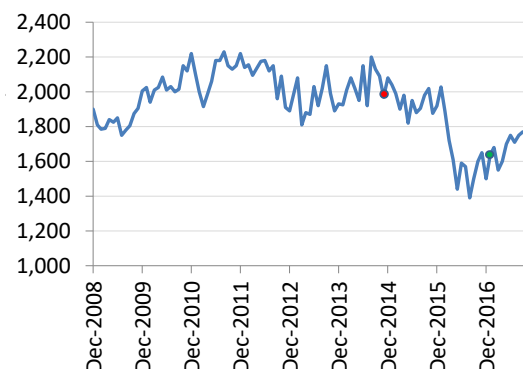
Venezuela



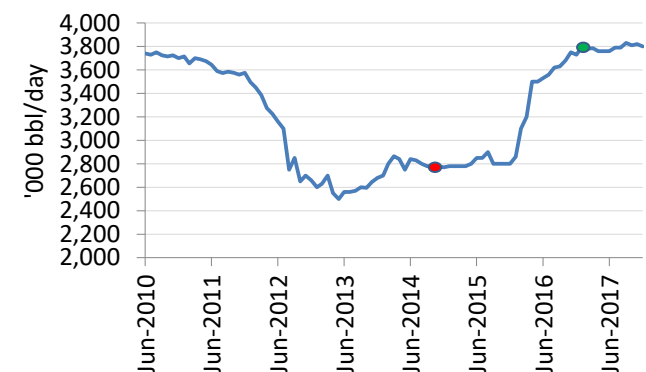
Libya



Nigeria



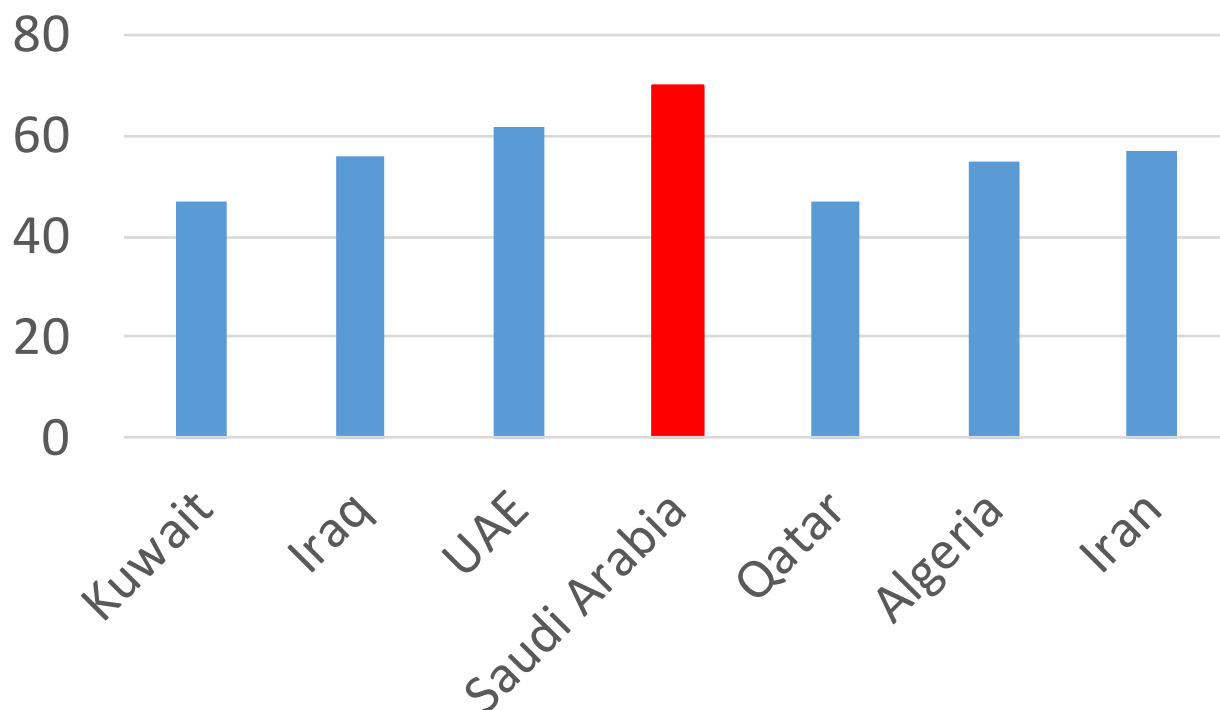
Iran



Source: Bloomberg, December 2017, red dot indicates November 2014 OPEC meeting; green dot indicates Jan 2017 quota change

- 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 2018 is estimated to be \$70 per barrel

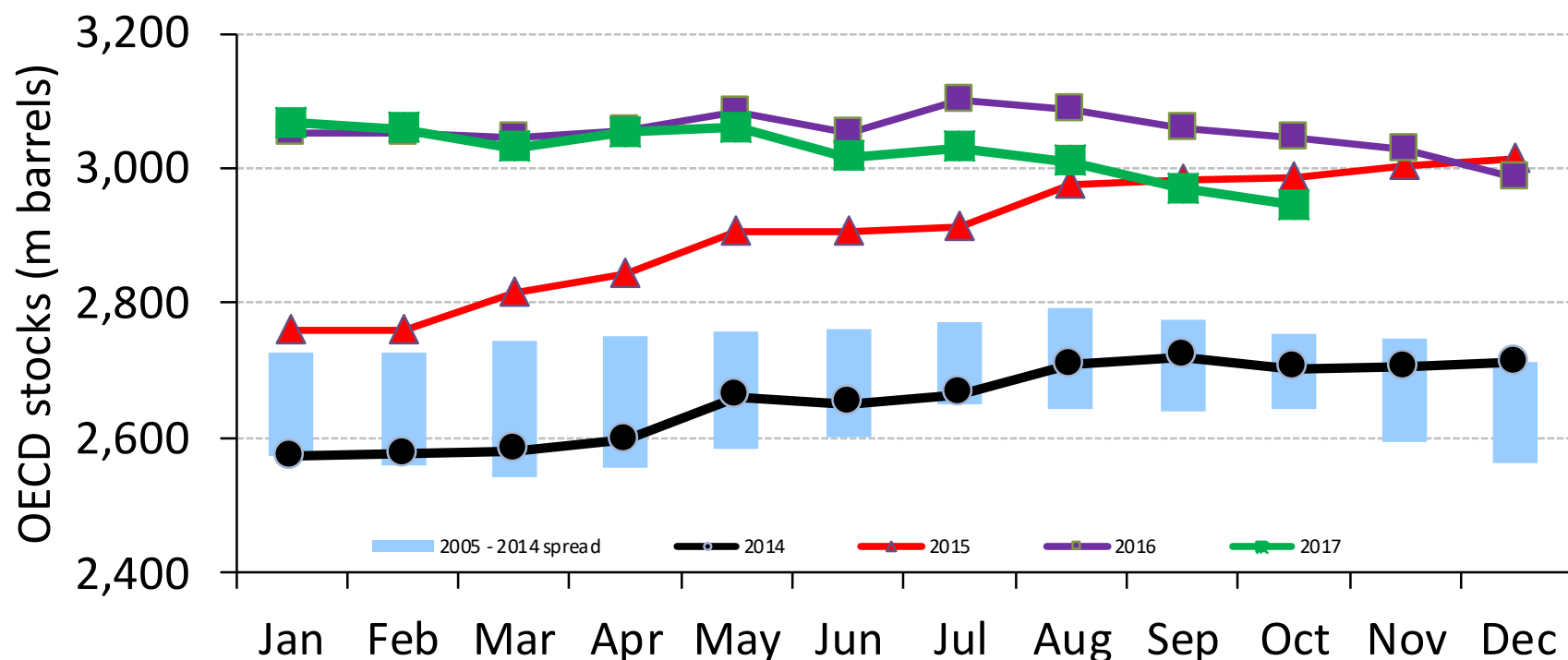
OPEC (selected) fiscal breakeven oil prices - 2018 (\$/bbl)



Oil supply/demand: OECD inventories need 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, inventory levels tightening thanks to OPEC cuts, albeit slower than first hoped

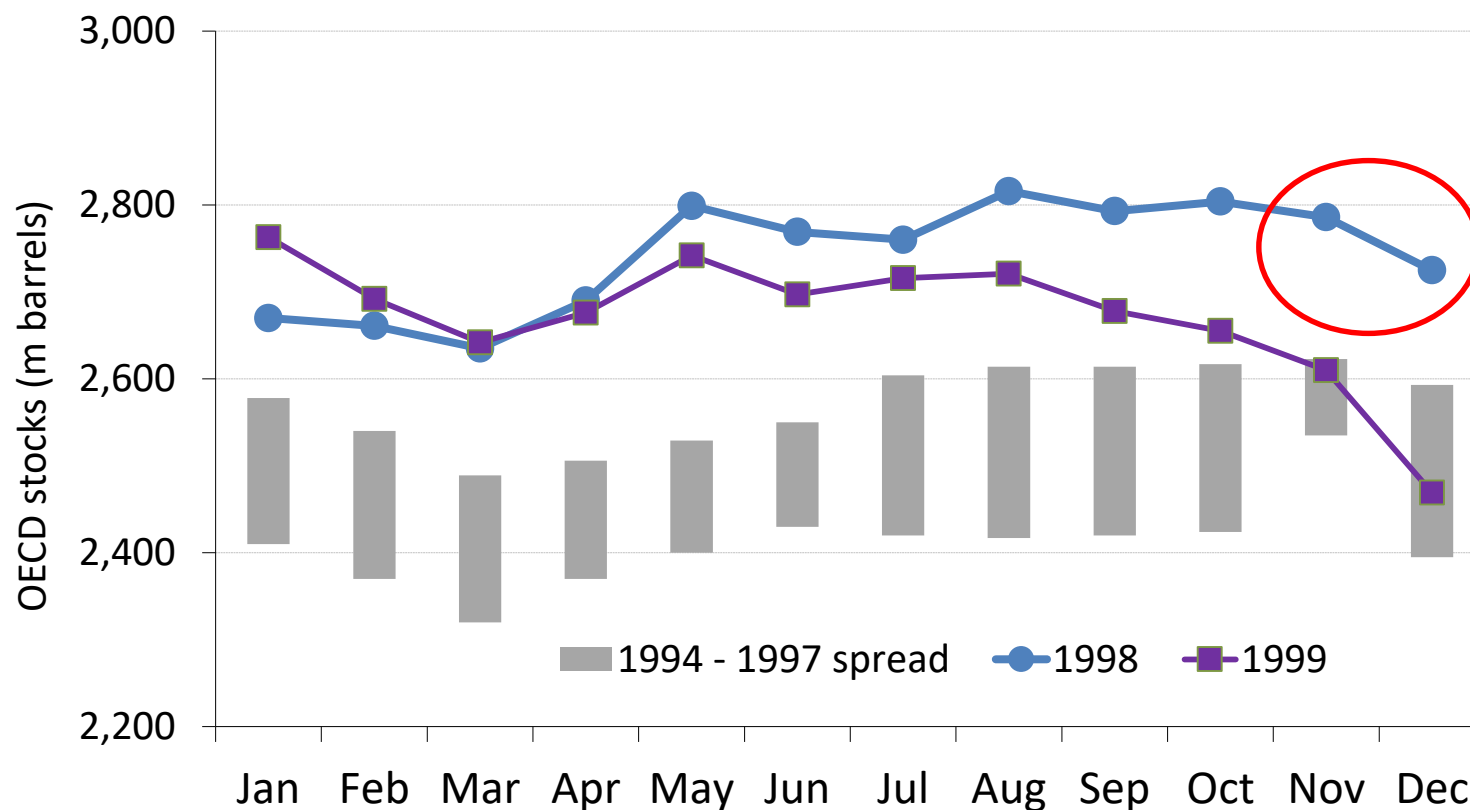
OECD oil inventories (million bbls)



Inventories - parallel with 1998-99 down cycle

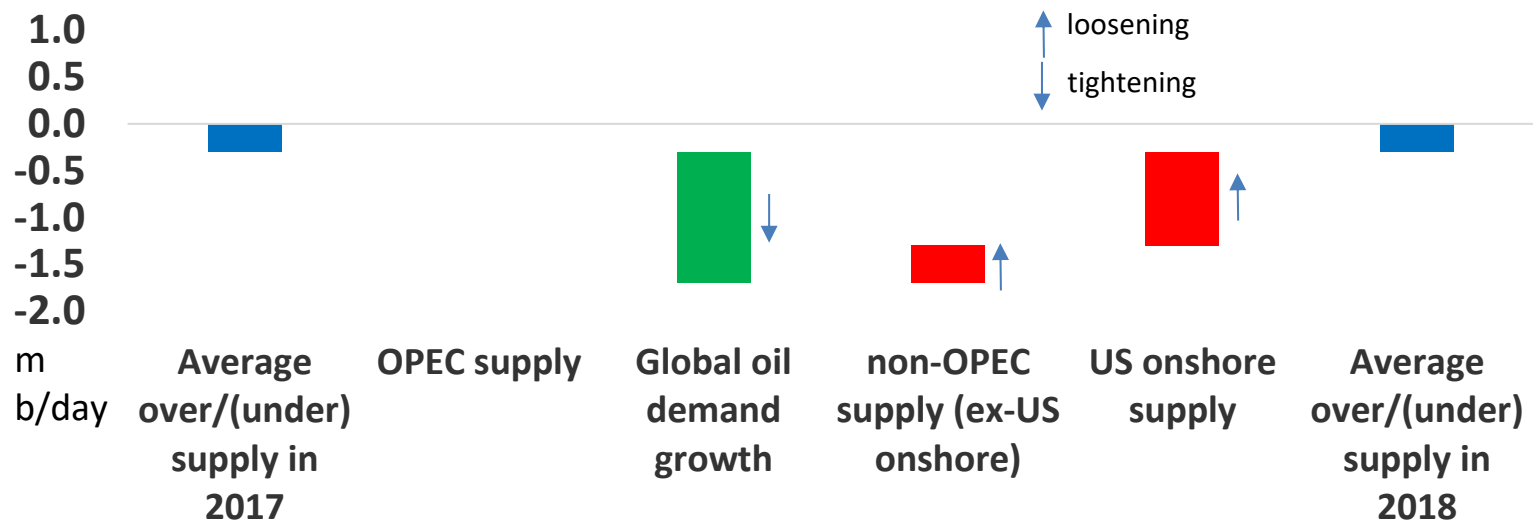
- In the 1998/99 downcycle, oil inventories peaked at around 300m above average...
.... very similar to magnitude of oversupply in 2015/16
- Oil price recovery and end of 1998 coincided with inventories starting to fall

OECD oil inventories 1994-1999 (million bbls)



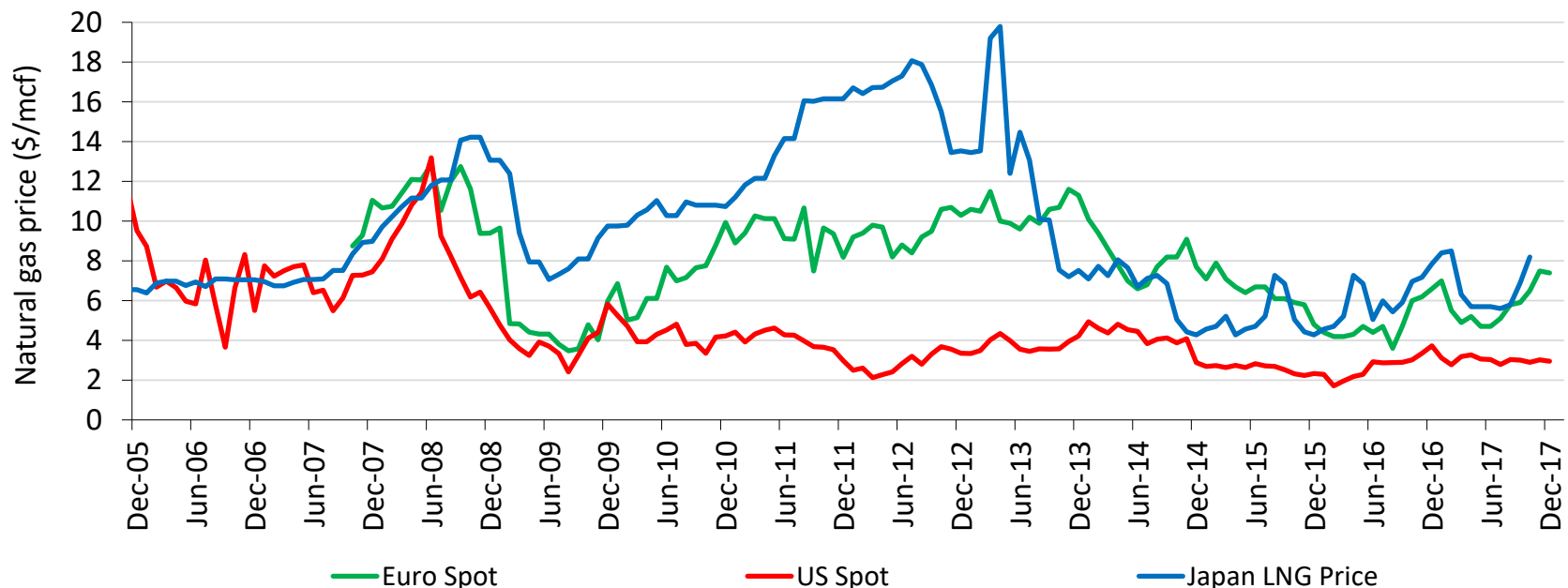
- As usual, the picture of oil supply and demand in 2018 will be dynamic
- Our 'base' case shows that the oil market is likely to be undersupplied in 2018, by something around 0.3m b/day
- We assume that the market averaged 2017 in undersupply (c.0.3-0.5m b/day)
- 'Core' OPEC cuts and growing global oil demand tighten the market
- US shale, Canada and Brazil loosen the market

2018 global oil market balance (assuming OPEC deal is adhered to)



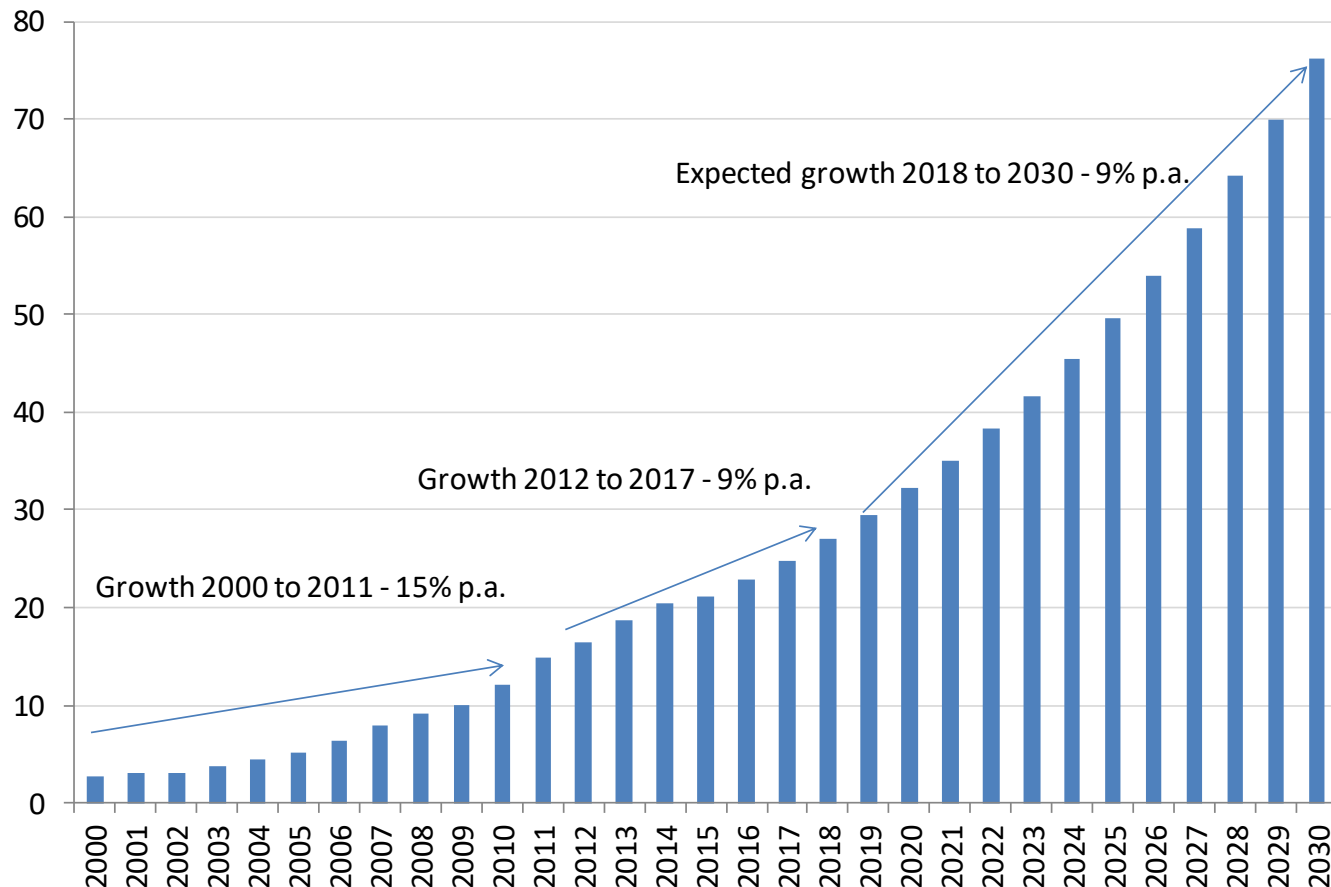
- The gap between US and international gas prices widened in 2017
- US continues to see high levels of new supply, economic at \$3/mcf, from the Marcellus
- New US LNG export facilities starting up over next three years, with major wave in 2019

Global natural gas prices (US\$/mcf)

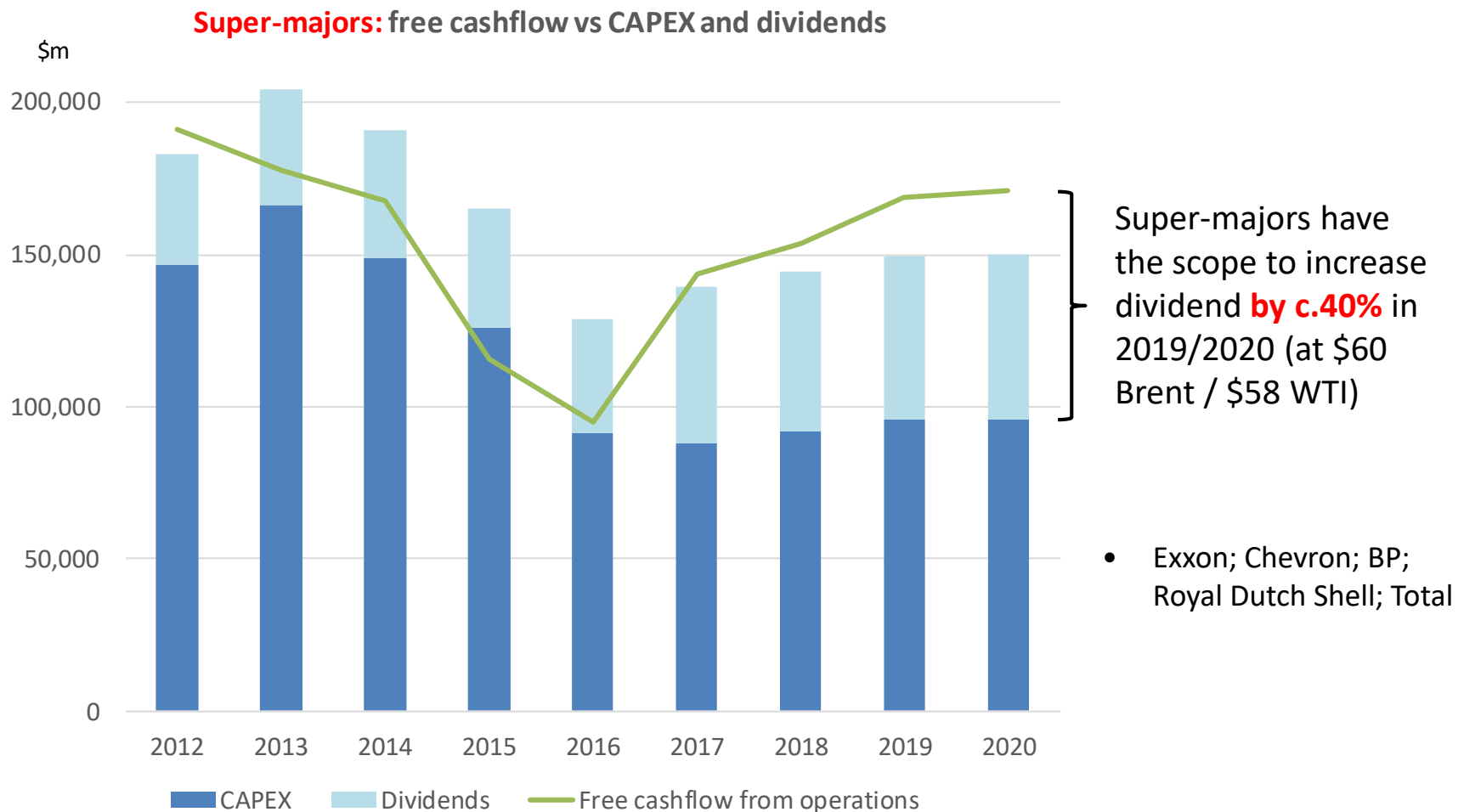


- Gas in China taking share from coal; tripling from 25 Bcf/day in 2017 to 75 Bcf/day in 2030, in our view
- This implies a market share for gas in China of around 16% in 2030 (up from 7% in 2017)

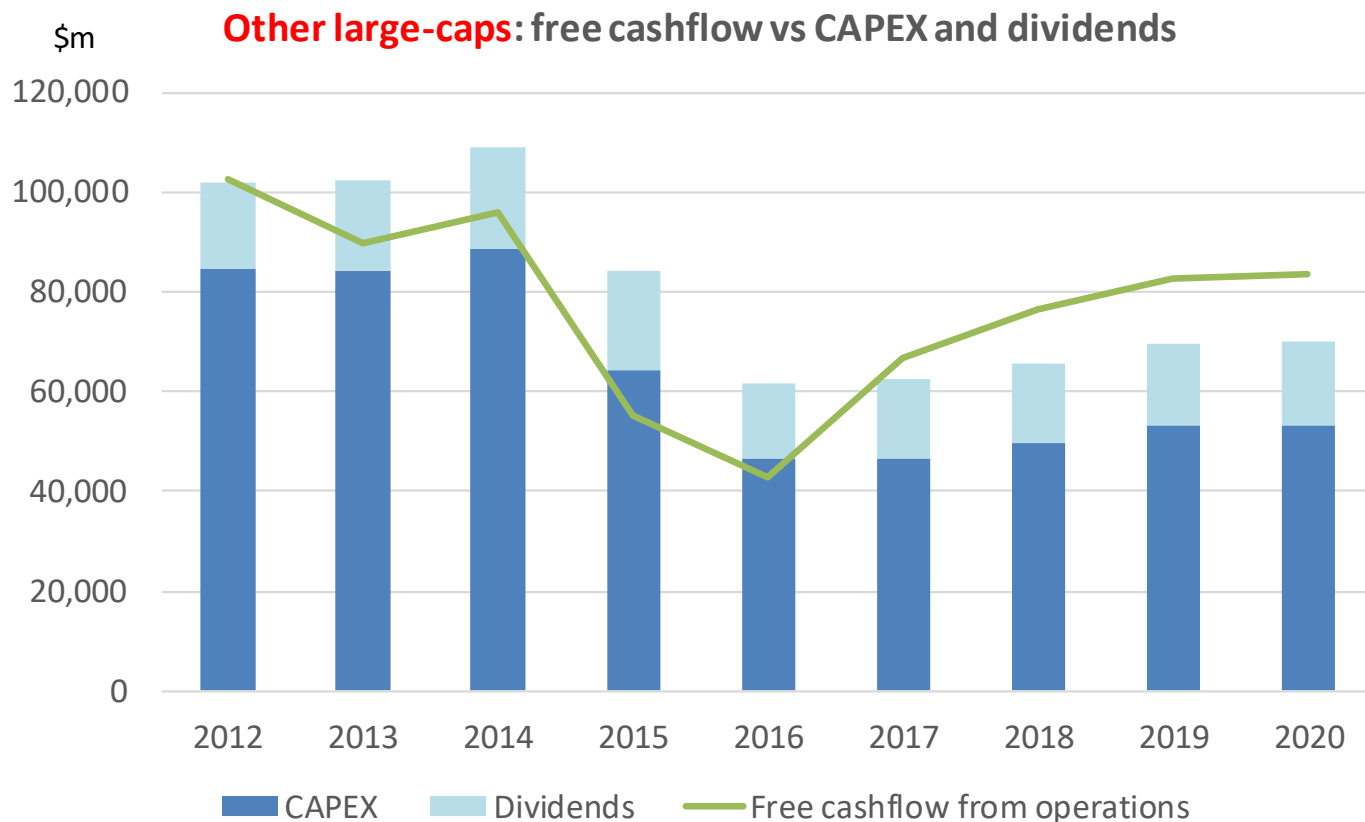
China natural gas demand (bcf/day)



- Super-major oil and gas companies are emerging from a period in which dividend was being paid by debt to a period where they will have the ability to raise dividends by up to 40% (at \$60 Brent)



- Other large cap oil and gas companies also emerging from a period in which dividend was being paid by debt to one of expanding FCF – greater scope to expand dividends than majors (at \$60 Brent)

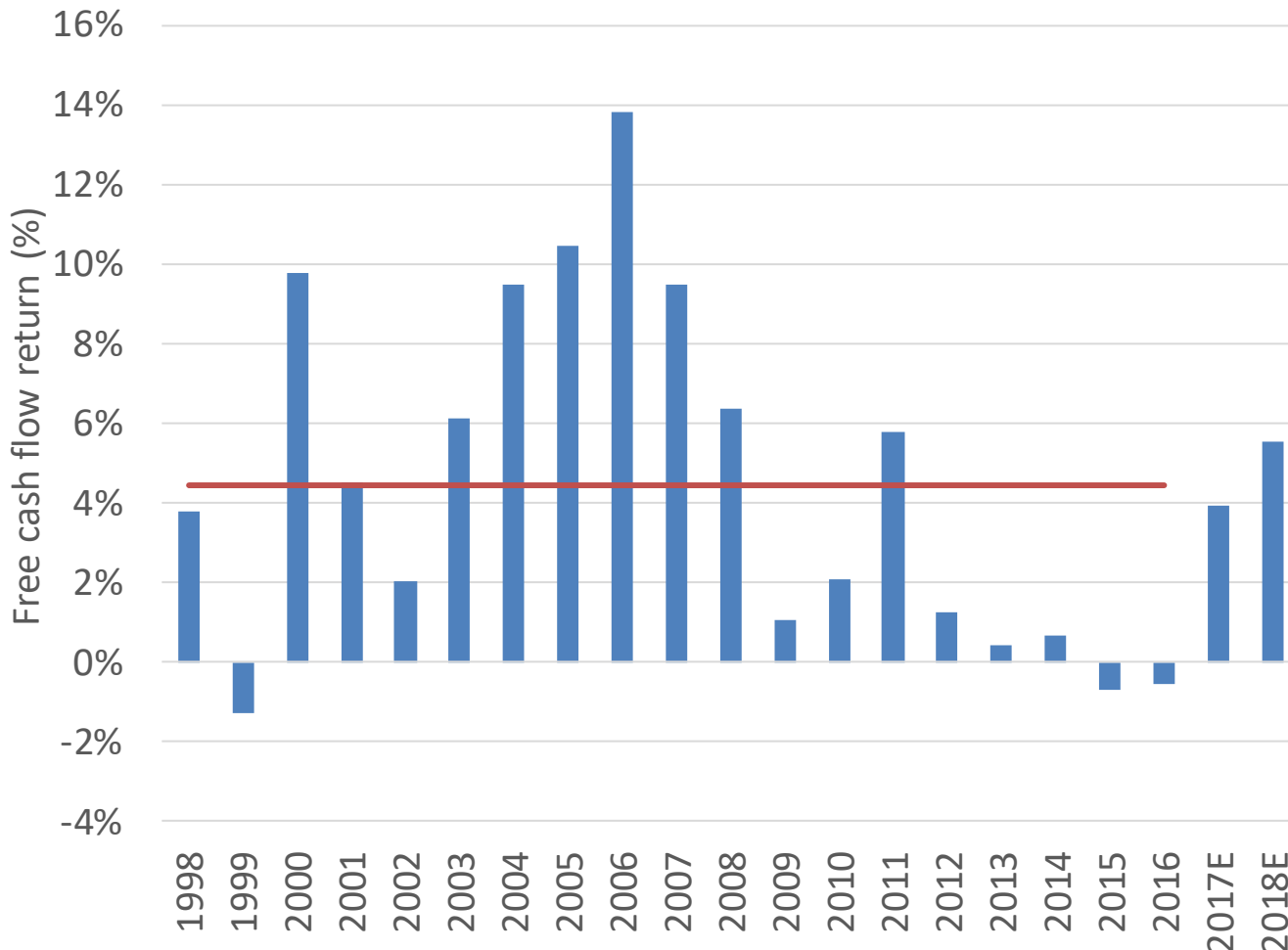


Other large caps have the scope to increase dividend **by c.80%** in 2019/2020 (at \$60 Brent / \$58 WTI)

- Statoil; ENI; OMV; Conocophillips; Occidental; Suncor; CNOOC; Imperial Oil; Canadian Natural Resources

- FCF (cashflow from operations less CAPEX) return was essentially zero between 2012 and 2016, but has now returned to the longer-term average, as companies have adjusted

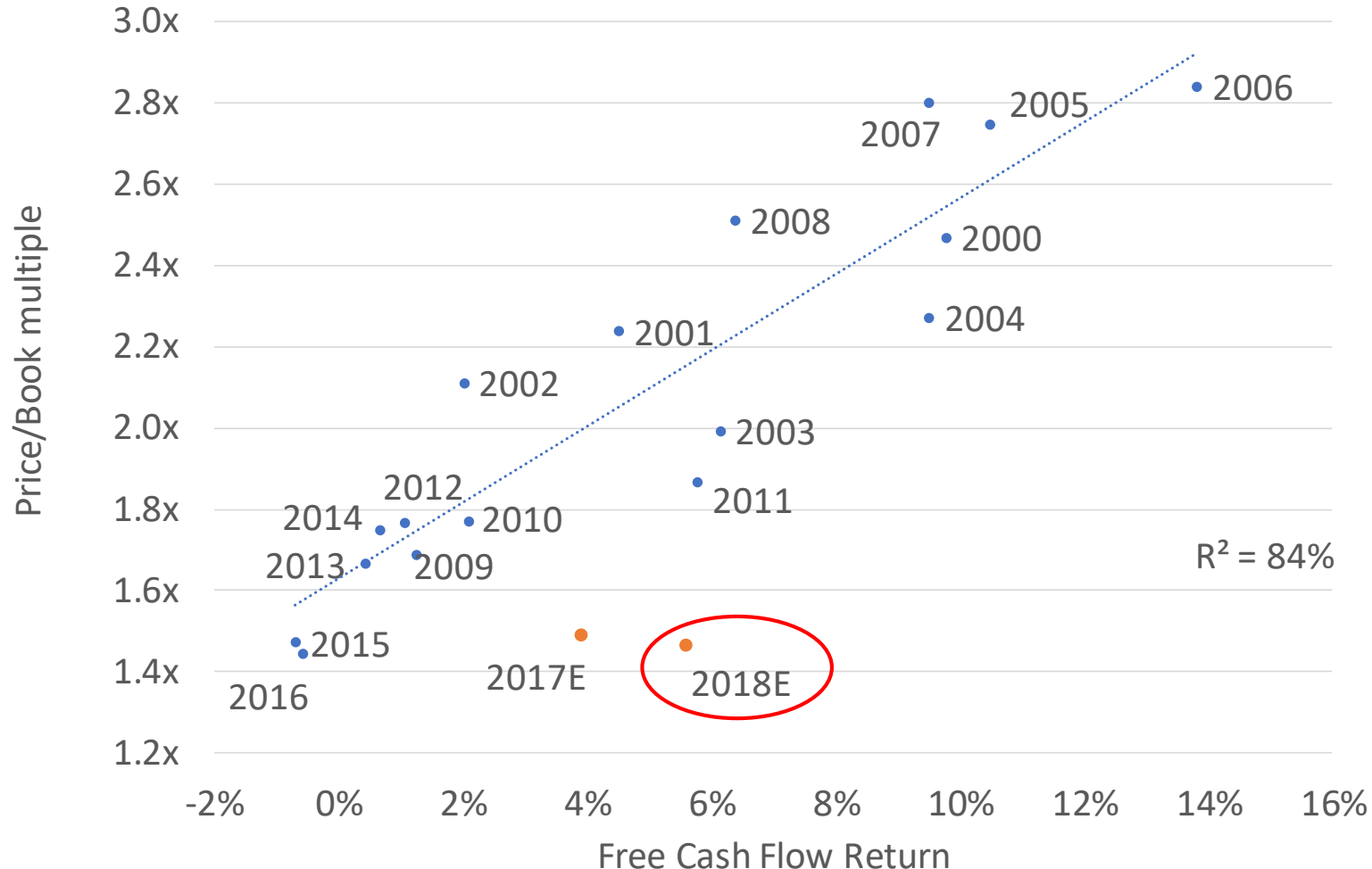
FCF return of current Guinness Atkinson Global Energy fund portfolio holdings



Source: Bloomberg, Company Data and includes analysis of all 'full position' holdings (for which 1998-2016 data is available) in the Guinness Atkinson Energy fund as of June 30, 2017. Forecasts are inherently limited and cannot be relied upon.

- The long-term relationship between FCF return and P/B implies c.40% upside

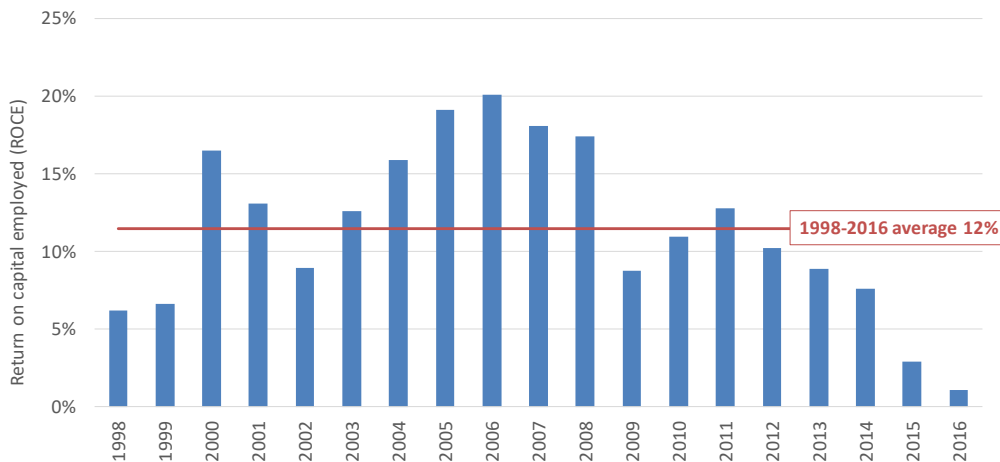
FCF return of current Guinness Atkinson Global Energy fund portfolio holdings



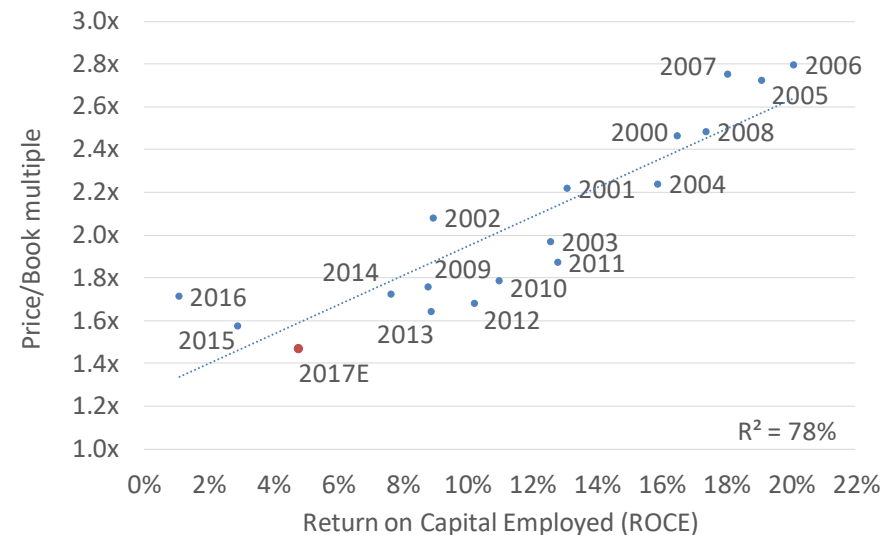
Source: Bloomberg, Company Data and includes analysis of all 'full position' holdings (for which 1998-2016 data is available) in the Guinness Atkinson Energy fund as of June 30, 2017. Forecasts are inherently limited and cannot be relied upon.

- The combination of lower oil prices and legacy higher cost structures leave ROCE depressed
- 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 Global Energy portfolio



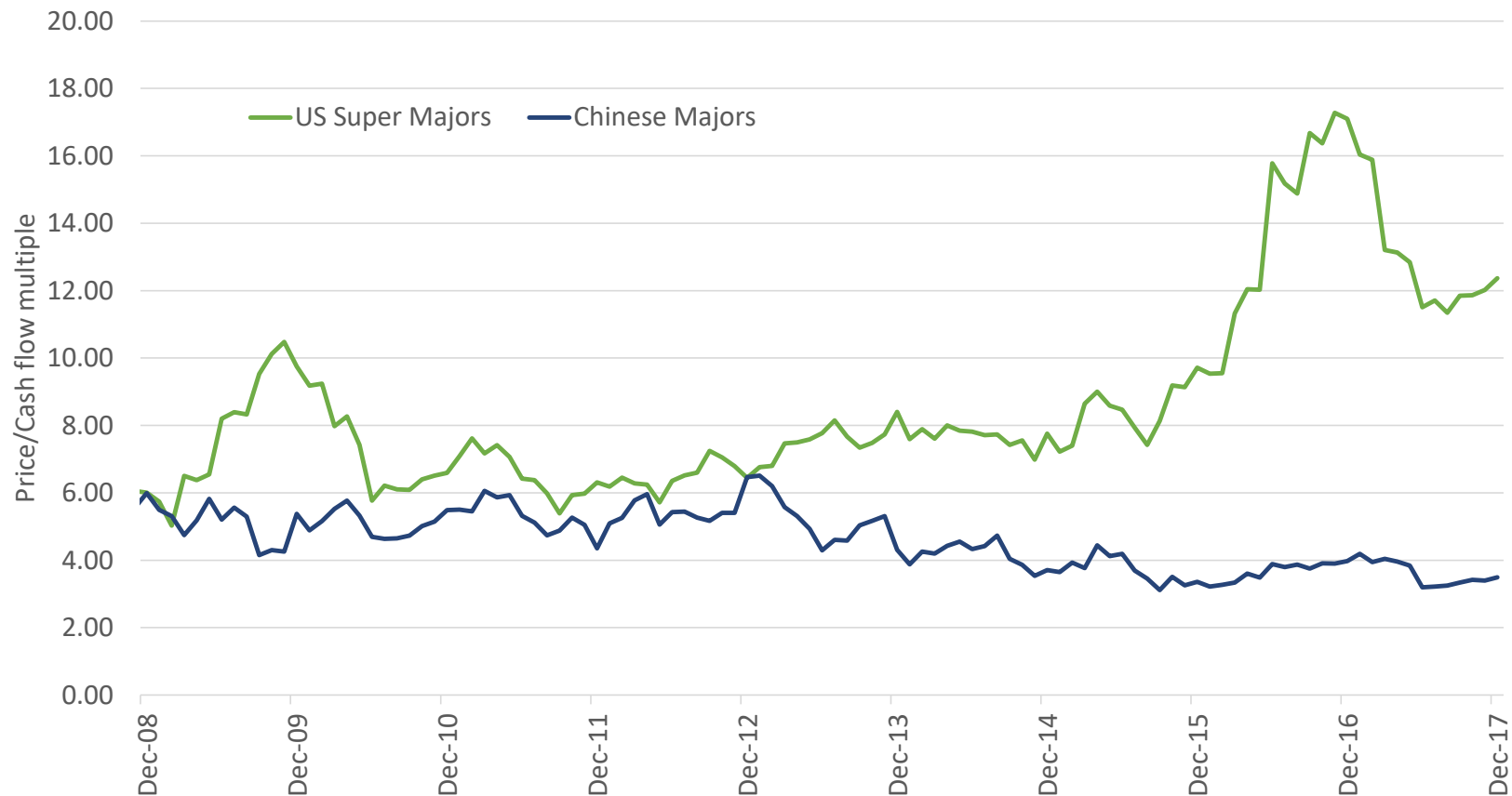
ROCE vs P/B multiple for Guinness Atkinson Global Energy portfolio



















Energy equities: Importance of looking globally for opportunities 32

- Not all energy super-majors are valued the same: for example, there has been a major divergence since 2008 between the P/CF of US vs Chinese major oil & gas companies
- As a result, we have shifted our portfolio towards China and away from US

US & Chinese oil & gas majors: price to cashflow multiple



Theme	Example holdings	Weighting (%)
1 Expanding free cashflow yields from large-cap oil & gas	  	29.2%
2 North American shale oil & gas growth	  	27.4%
3 Growing return on capital from oil & gas majors	  	17.7%
4 Emerging market natural gas demand growth	 	10.8%
5 Strong refining margins resulting from global GDP growth	 	7.2%
6 Deleveraging balance sheets	 	2.7%
7 Growth in global solar market		1.4%
8 Other (incl cash)		3.5%

Top 10 holdings as of 12/31/2017: 1. Suncor Energy 3.66% 2. Conocophillips 3.63% 3. Halliburton Co 3.63% 4. Petrochina Co Ltd 3.62% 5. Devon Energy 3.62% 6. Royal Dutch Shell PLC 3.60% 7. Schlumberger Ltd 3.60% 8. OMV AG 3.58% 9. CNOOC Ltd 3.57% 10. Occidental Petroleum Corp 3.55%

The mention of any individual securities should neither constitute nor be construed as a recommendation to purchase or sell such securities, and the information provided regarding such individual securities is not a sufficient basis upon which to make an investment decision.

Fund and index performance, as of December 31, 2017

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

	Q4 2017	1 Year	5 Years*	10 Years*	Since Inception (June 30, 2004)*
Global Energy Fund	5.85%	-1.06%	-1.67%	-2.10%	6.82%
MSCI World Energy Index	6.85%	5.93%	2.21%	0.26%	6.75%
S&P 500	6.63%	21.80%	15.77%	8.48%	8.74%

Expense ratio: 1.53% (gross); 1.45% (net) *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

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 Atkinson 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

Corporate Office (California)

Sarah Sollesa

sarah.sollesa@gafunds.com

1-818-716-2741

**21550 Oxnard Street
Suite 850
Woodland Hills
California 91367**

Investment management team (London)

Tim Guinness

tim.guinness@gafunds.com

+44 (0) 20 7222 7978

Will Riley

will.riley@gafunds.com

+44 (0) 20 7222 3451

Jonathan Waghorn

jonathan.waghorn@gafunds.com

+44 (0) 20 7222 3457

**14 Queen Anne's Gate
London
SW1H 9AA**

For your protection, calls to these numbers may be recorded

- **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 December 31, 2017): \$1.6bn**
- **Staff of 30, including 14 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.

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.

For Institutional Use Only. Not for use with the retail public.

Distributed by Foreside Fund Services, LLC