Commodities Research

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The convenience of unconventional

Commodity cycles and their implications

International Energy Forum & Bank of Canada Joint Workshop

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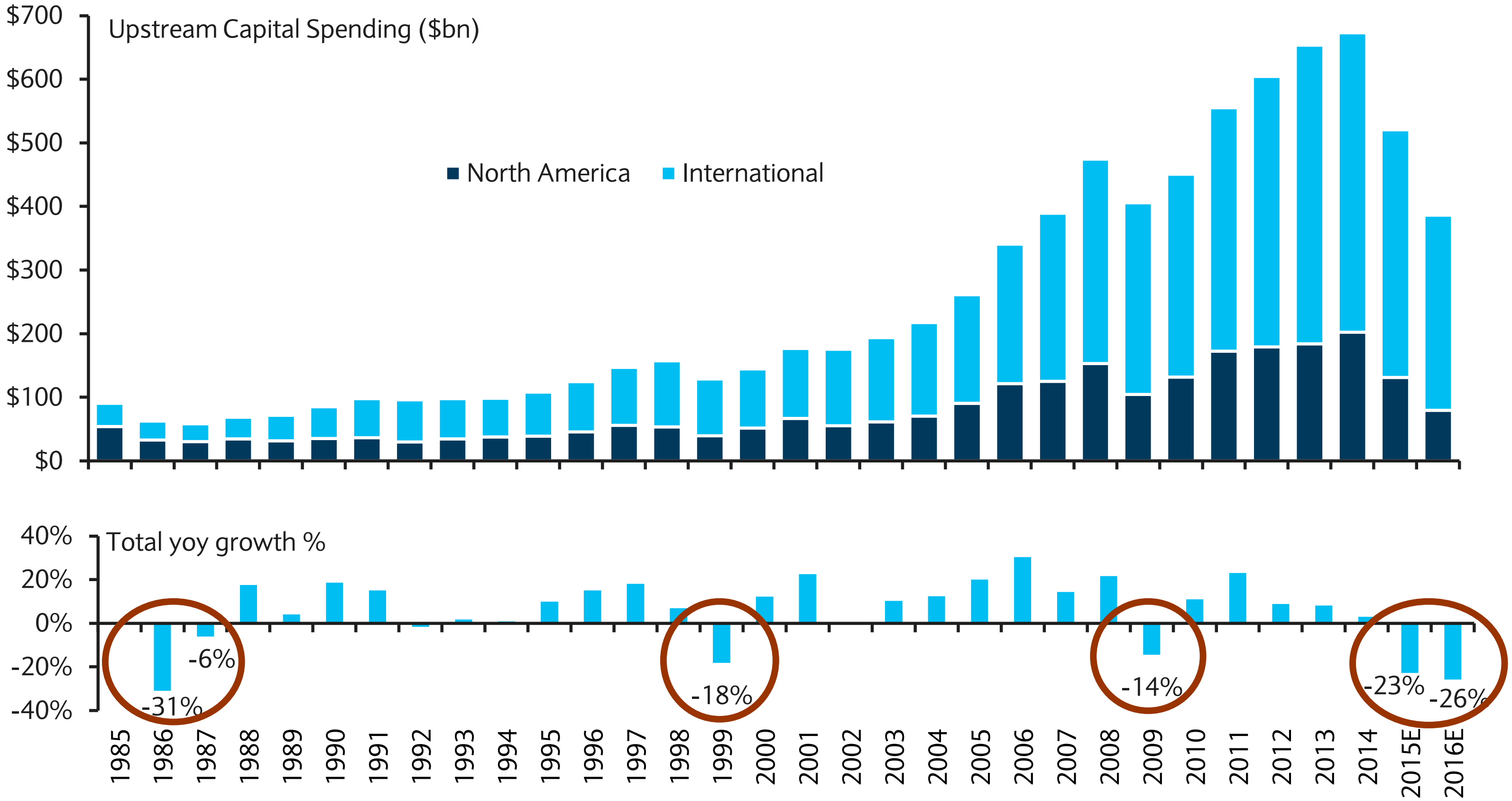
Unprecedented upstream capex cuts, NAM hit hardest

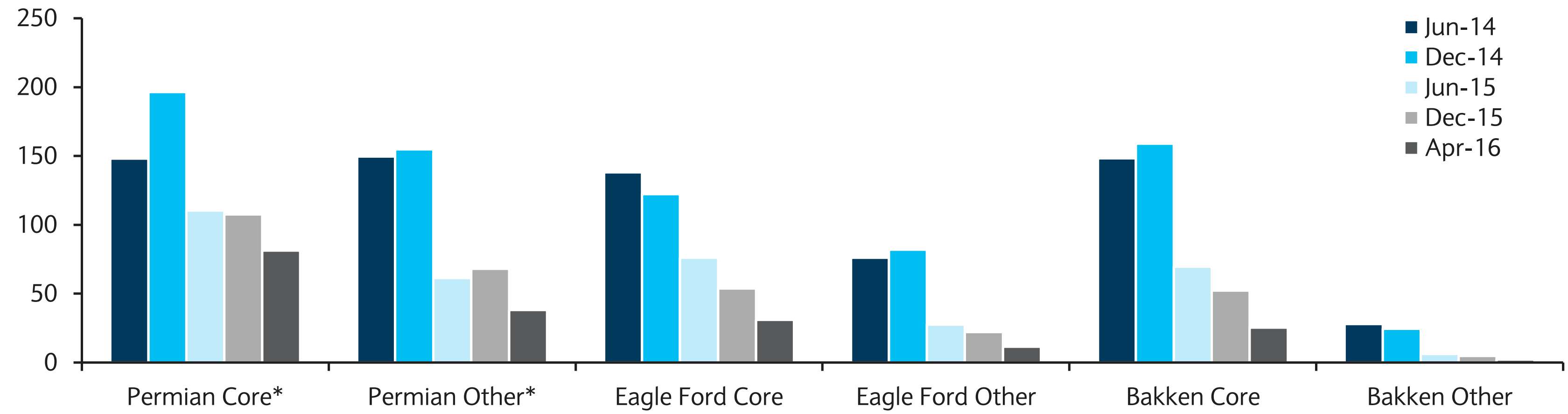
2016 marks the first consecutive y/y decline in upstream capex spending since 1986, but the magnitude is much larger today



Note: Includes estimates as well as reported revised and unrevised spending. May not include all reported revisions
Barclays Interim 2016 EP Spending Update (03/18/16) Source: Barclays Equity Research

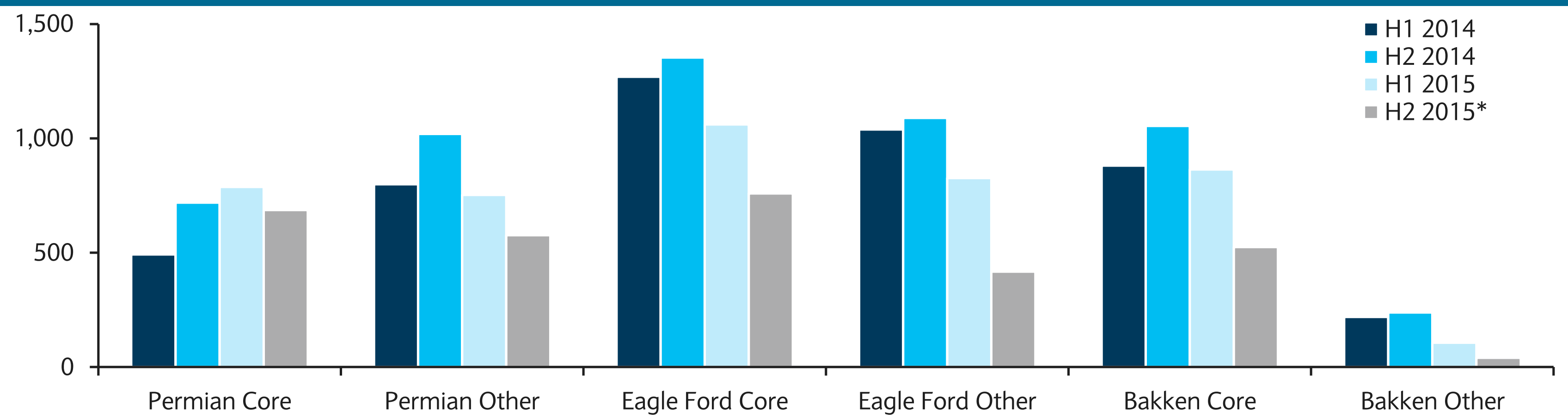
Production decline lags rig count declines; focus is on the core

Rig counts have declined precipitously since 2014…



Note: includes only horizontal rigs. Source: Baker Hughes, Barclays Research

…but the number of wells brought online has not slowed by the same magnitude

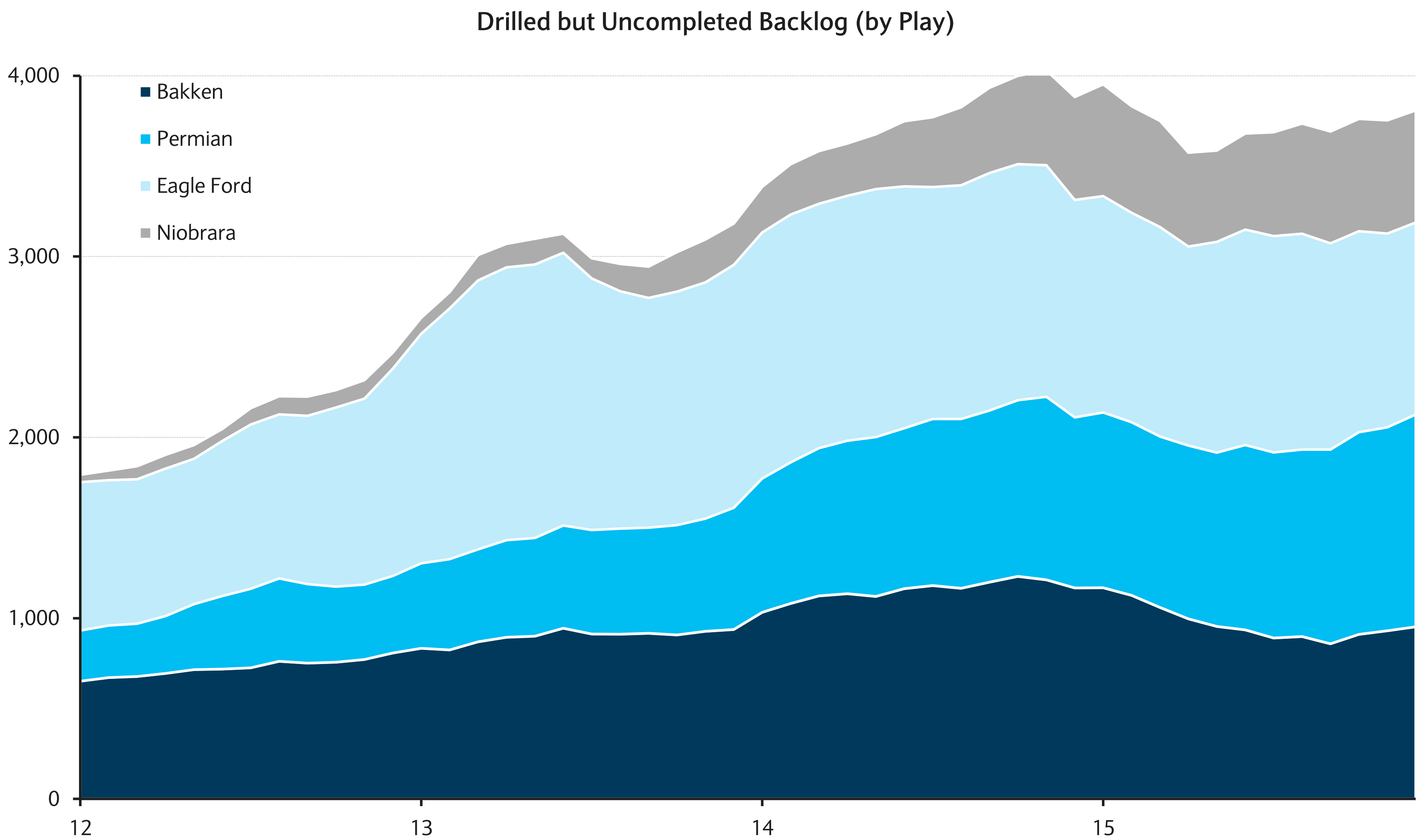


Activity in core acreage has fallen less than activity in the non-core

Source: DrillingInfo (as of 04/11/16, subject to upward revisions due to delayed reporting), Barclays Research

US DUC backlog remains sizeable, economics range widely

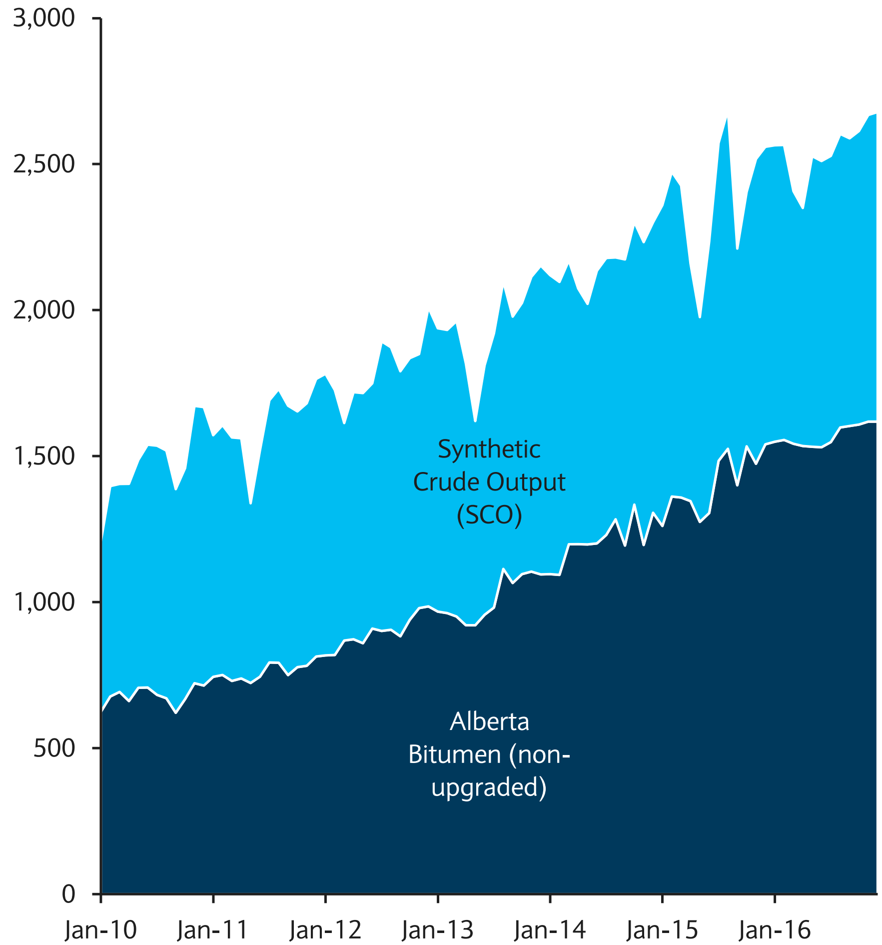
Without new drilling activity, producers could complete 200 wells per month that, over the course of a year, might add around 600 kb/d to year end output, but this a blue-sky scenario



Source: Rystad Energy, Barclays Research

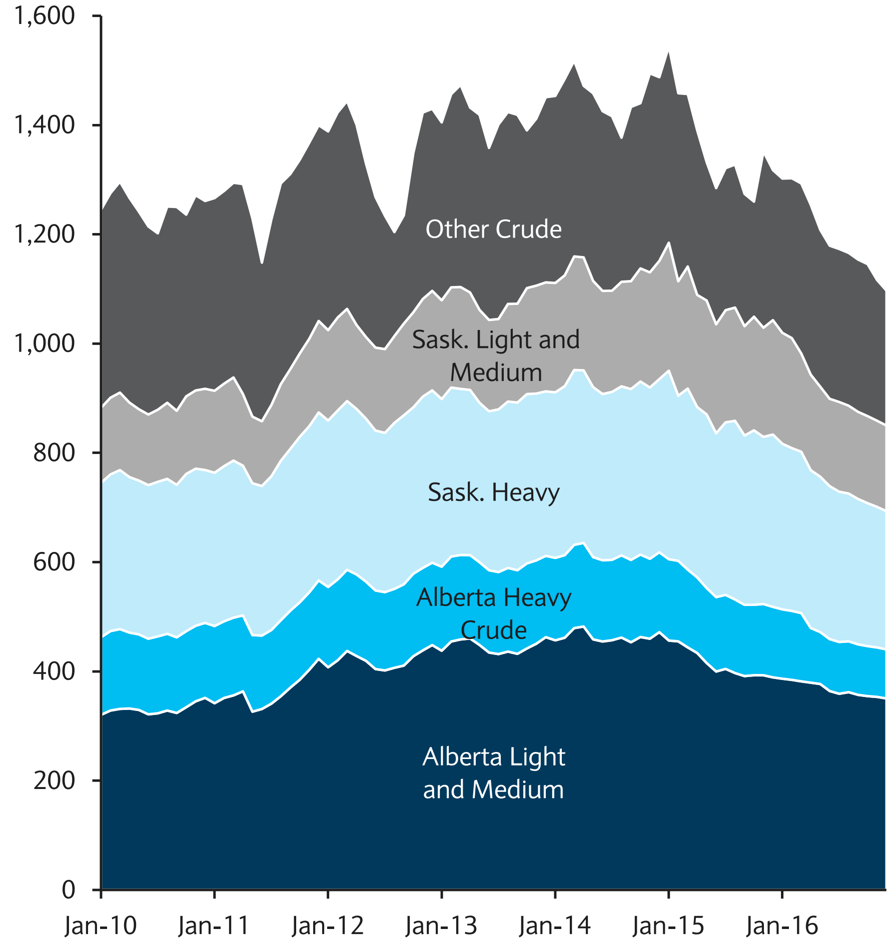
Canadian production: Offsetting trends, flat growth

Bitumen output continues to rise (kb/d)



Source: NEB, CNLOPB, AER, Barclays Research

But lack of investment is causing other production to decline (kb/d)



Source: NEB, CNLOPB, AER, Barclays Research

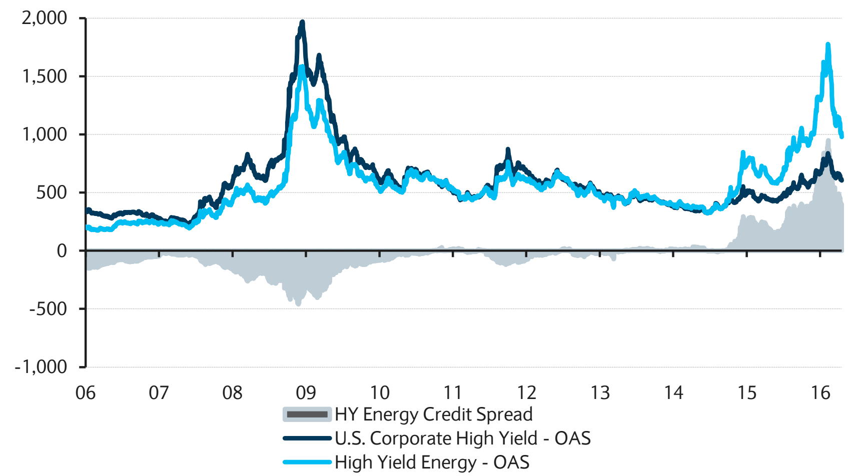
Financial channel: Effect on oil producers

Stress For Leveraged Producers at prices below $40

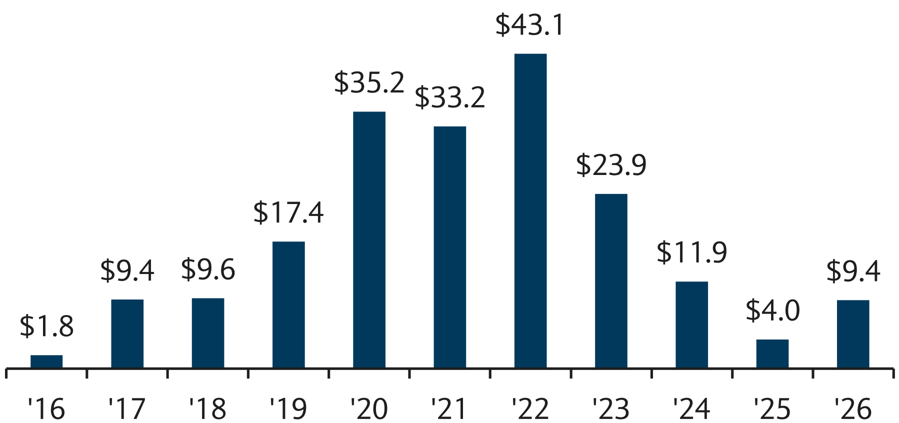
Broad Implications

- Barclays Credit Research estimates defaults of 5-20% or greater, accelerating in 2017 if oil stays below $40
- Bank revolver reductions will be main determinant of defaults, as only $1.8bn debt matures in 2016 (but $36bn in 2017-19)
- Distressed exchanges look set to become a routine liability-management exercise in the industry
- First and second lien secured deals should become more pervasive and give better risk-adjusted returns

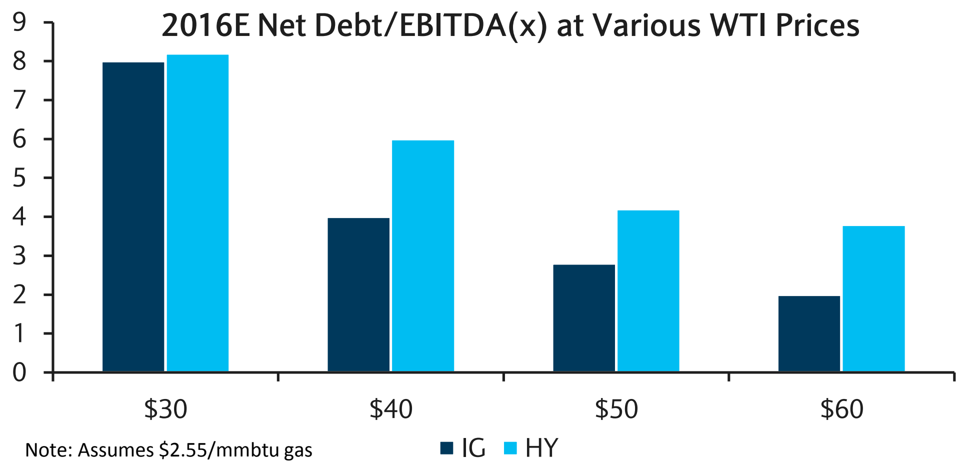
HY Energy Credit Spread



HY Energy Maturity Profile ($bn)



Hedging has disproportionately helped HY producers



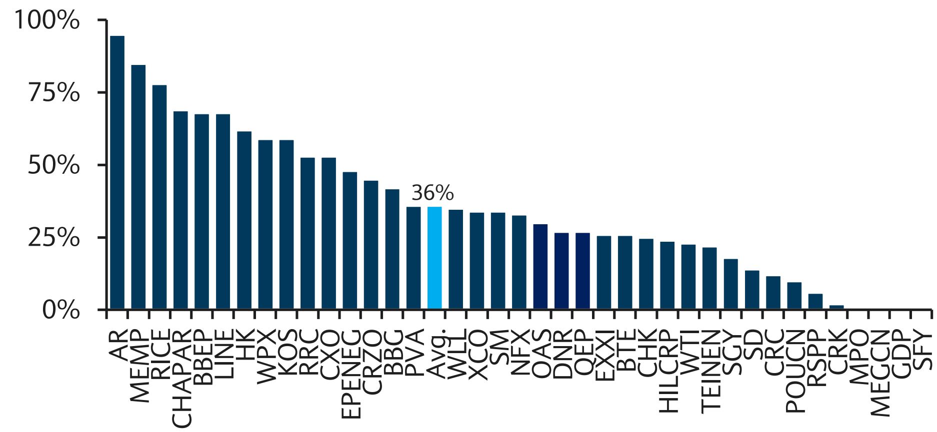
Note: Bond pricing in lower right table as of December 31. Source: Barclays Research, *US High Yield Energy Credit: 2016 Outlook*. 14 January 2016

Sector Implications: Exploration and Production

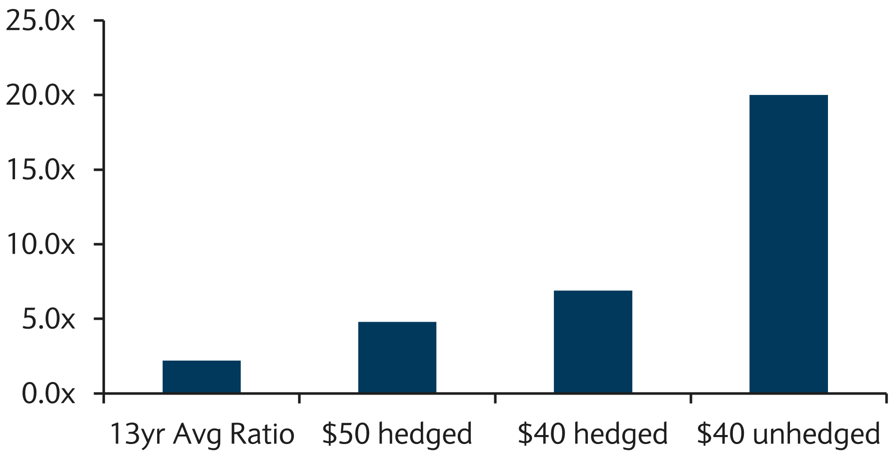
Average breakeven is almost $70/b

- Only one-third of names have breakeven <$60. Average breakeven $69 including development costs
- Leverage jumps: from 3.8x at year-end 2015 to 6.3x at $40
- At $20 WTI, leverage is 9x; at $60 WTI it falls to 3.8x
- Hedging will roll off by 2017, leaving most names more leveraged, even if prices rise

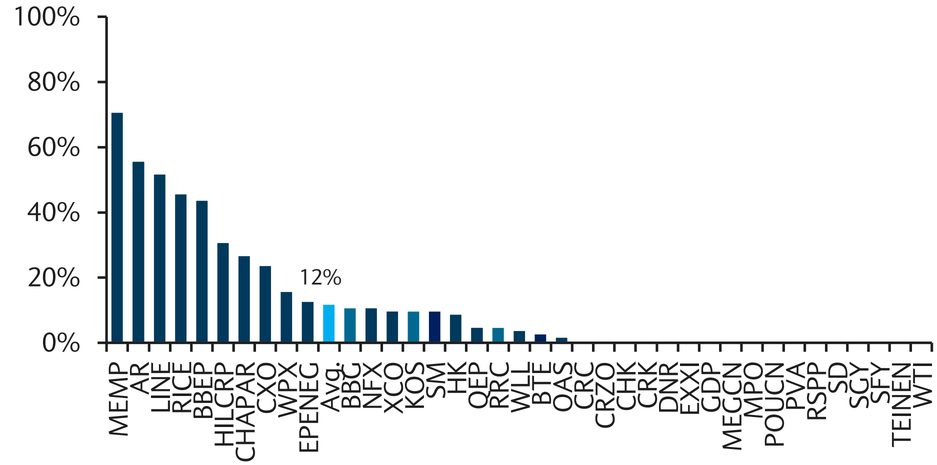
Percentage of 2016 Production Hedged



Leverage Ratio, Various Scenarios



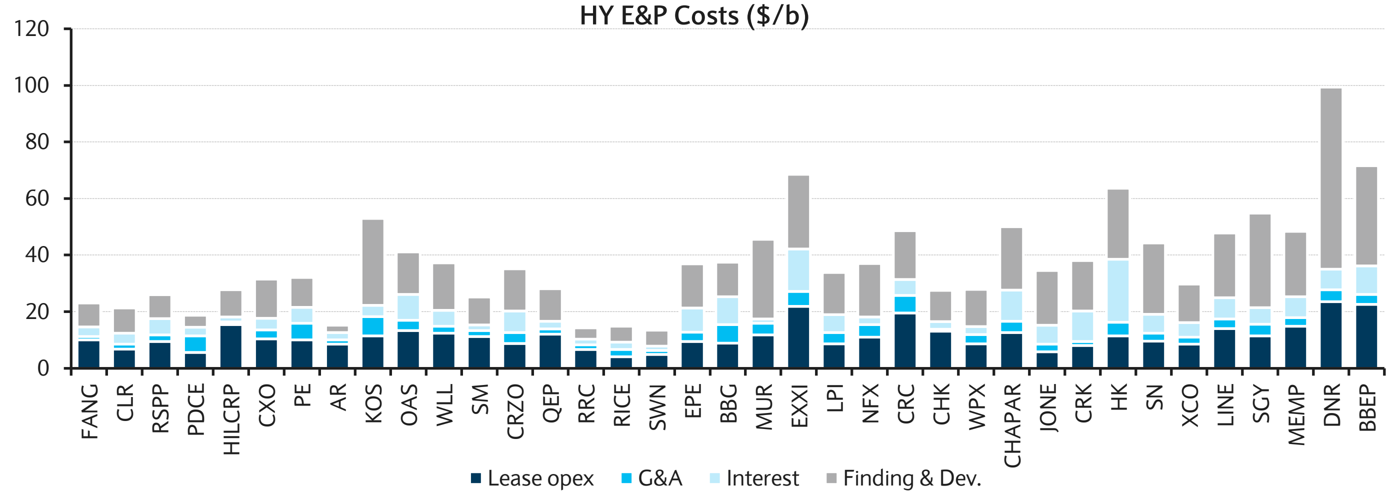
Percentage of 2017 Production Hedged



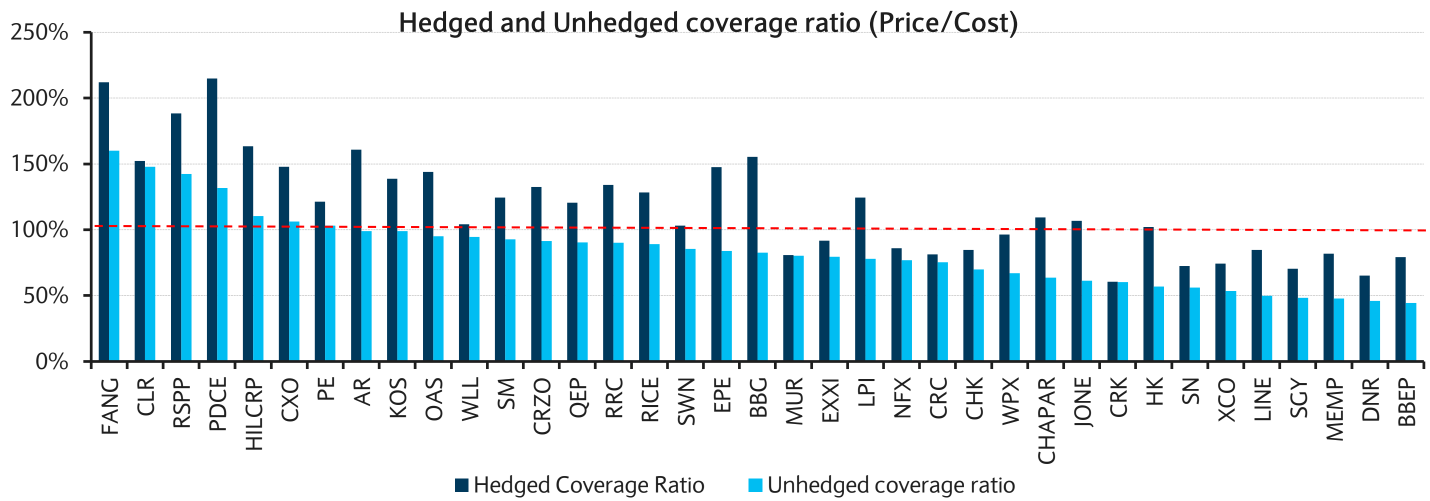
Source: Company reports, Barclays Research, *US High Yield Energy Credit: 2016 Outlook,* 14 January 2016

Few HY companies covering their costs (account for roughly 1.3-1.5 mb/d) of oil production

High Yield 2015 unit cash costs (lease operating expense, G&A and interest)+ 3-year drilling-only finding costs



At 2015 prices, only seven of the 37 companies in Barclays' HY peer group covered all-in costs on an unhedged basis. Largest companies are covered, but 780 kb/d of this production falls under an 80% ratio



Source: Barclays Research, see "*HY Oil and Gas Update,* 18 April 2016

Hedges helped Canadian mid-cap, but production still set to decline in 2017 as cash flow insufficient to replace production

Production roughly 1.1 mboe/d (~50% crude)

	% Hedged				Hedging Gains (Losses)			
	2016E		2017E		2016E		2017E	
Company	**Oil**	**Gas**	**Oil**	**Gas**	**($/boe)**	**(% of CF)**	**($/boe)**	**(% of CF)**
ARC	25%	37%	3%	33%	$5.73	44%	$2.98	19%
Athabasca	0%	0%	0%	0%	$0.00	0%	$0.00	0%
Baytex	29%	28%	3%	16%	$4.17	42%	$0.11	1%
Black Pearl	5%	0%	55%	0%	$4.23	101%	$0.00	0%
Bonavista	12%	56%	1%	37%	$4.68	59%	$1.34	17%
Crescent Point	34%	32%	10%	21%	$8.59	37%	$1.51	7%
Enerplus	55%	22%	0%	0%	$3.05	50%	$0.12	1%
Freehold	0%	0%	0%	0%	$0.00	0%	$0.00	0%
Lightstream	11%	10%	0%	0%	$1.30	nm	$0.00	0%
Paramount	24%	0%	0%	0%	$2.44	68%	$0.00	0%
Pengrowth	78%	93%	14%	77%	$16.04	103%	$3.16	39%
Penn West	18%	19%	1%	3%	$2.68	95%	$0.17	3%
Peyto	0%	47%	0%	25%	$4.58	36%	$1.04	8%
PrairieSky	0%	0%	0%	0%	$0.00	0%	$0.00	0%
Seven Generations	21%	48%	10%	31%	$2.63	21%	$0.95	6%
Trilogy	0%	0%	0%	0%	$2.26	45%	$0.00	0%
Vermilion	4%	12%	0%	0%	$3.09	17%	$0.64	3%
Whitecap	34%	51%	29%	0%	$5.79	28%	($1.09)	(6%)
Average	**19%**	**25%**	**7%**	**13%**	**$3.96**	**44%**	**$0.61**	**5%**

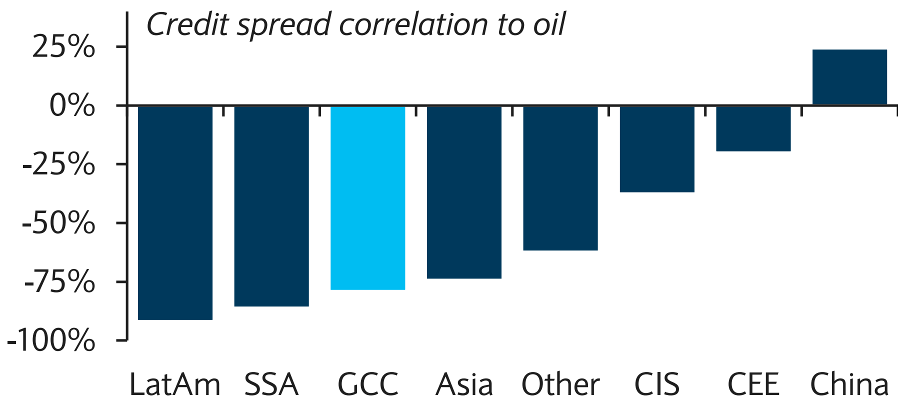
1. Excludes rail delivery contracts (20,000-22,000 bbl/d)

Source: Company Disclosure, Barclays Research

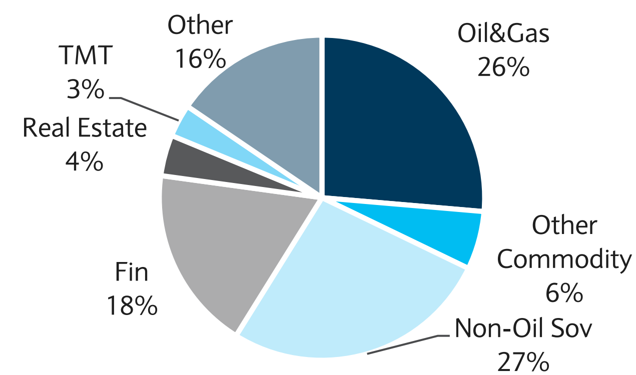
Source: Barclays Equity Research

Oil story dominates even more in EM than in the US

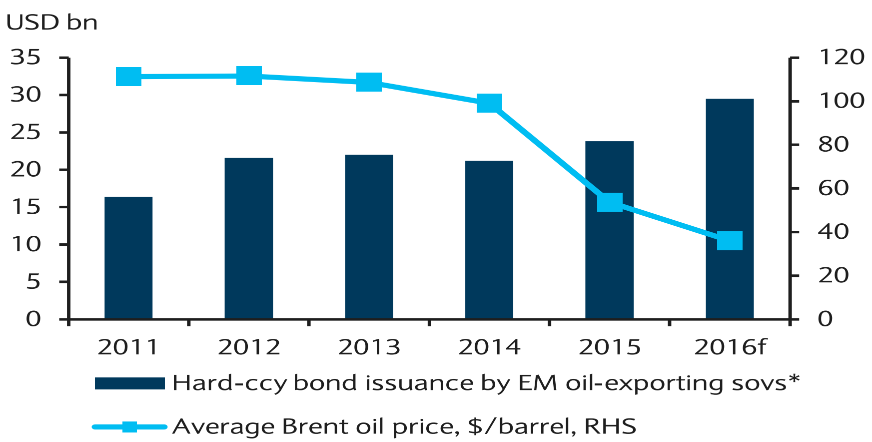
GCC Especially Sensitive to Oil



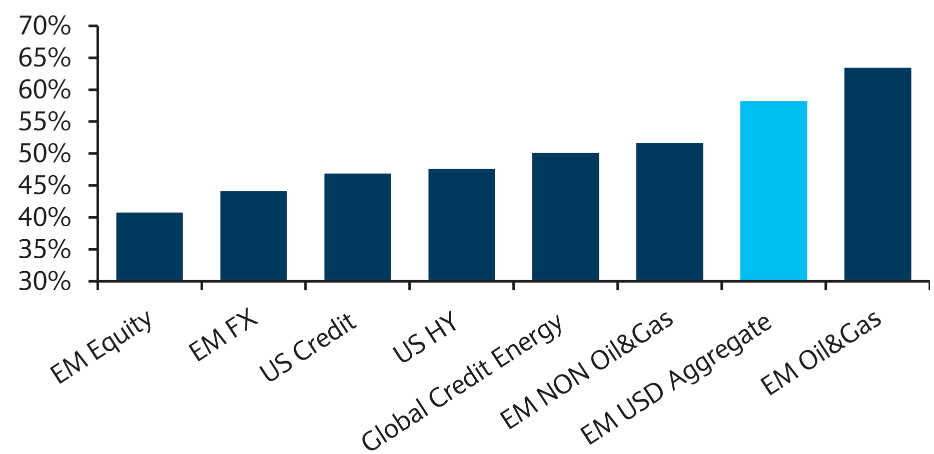
> 25% of EM Credit is Oil & Gas Related



As Oil Price Falls, Oil Exporters Are Borrowing



High Correlation With Oil Price*



Source: Barclays Research

Summary

- We expect US tight oil production to fall precipitously in 2016
- Most of high yield E&P universe does not break even at $40/b
- Credit channel plays a lagged role because of hedging and lighter maturity schedule.
- Even investment grade energy credits are under pressure in $30-40 range; E&P names will have to recapitalize or seek merger at <$40/b, <$2.50/mmcf
- Mechanisms: 20% cut in borrowing base in 1Q16 from 4Q15, higher cost of capital, not all about crude oil
- As prices rise in excess of producer expectations, not all new revenues will be used to increase capex

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