



Society of Petroleum Engineers - Ft. Worth Section

The Oil and Gas Malaise

What's that light at the end of the tunnel?

Trends & Outlook

March 16 2017

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Certified Public Accountants and Advisors

DENVER | HOUSTON | DALLAS | ORANGE COUNTY

Hein Specialty Services Group

- Valuations
 - Reserves
 - Acreage
 - Business Enterprises
 - Intangible Assets
 - Fixed Assets
 - Stock Options and Financial Instruments
- Purchase Allocations
- Financial Modeling
- ARO Analysis (CA-RfR)
- Transactions – Buy/Sell
 - Quality of Earnings
 - Financial Carve-outs
 - Post-close Adjustments
- Accounting Conversions
- Optimizer
- Solvency Opinions
- Tax Support
- Expert Witness

Topics

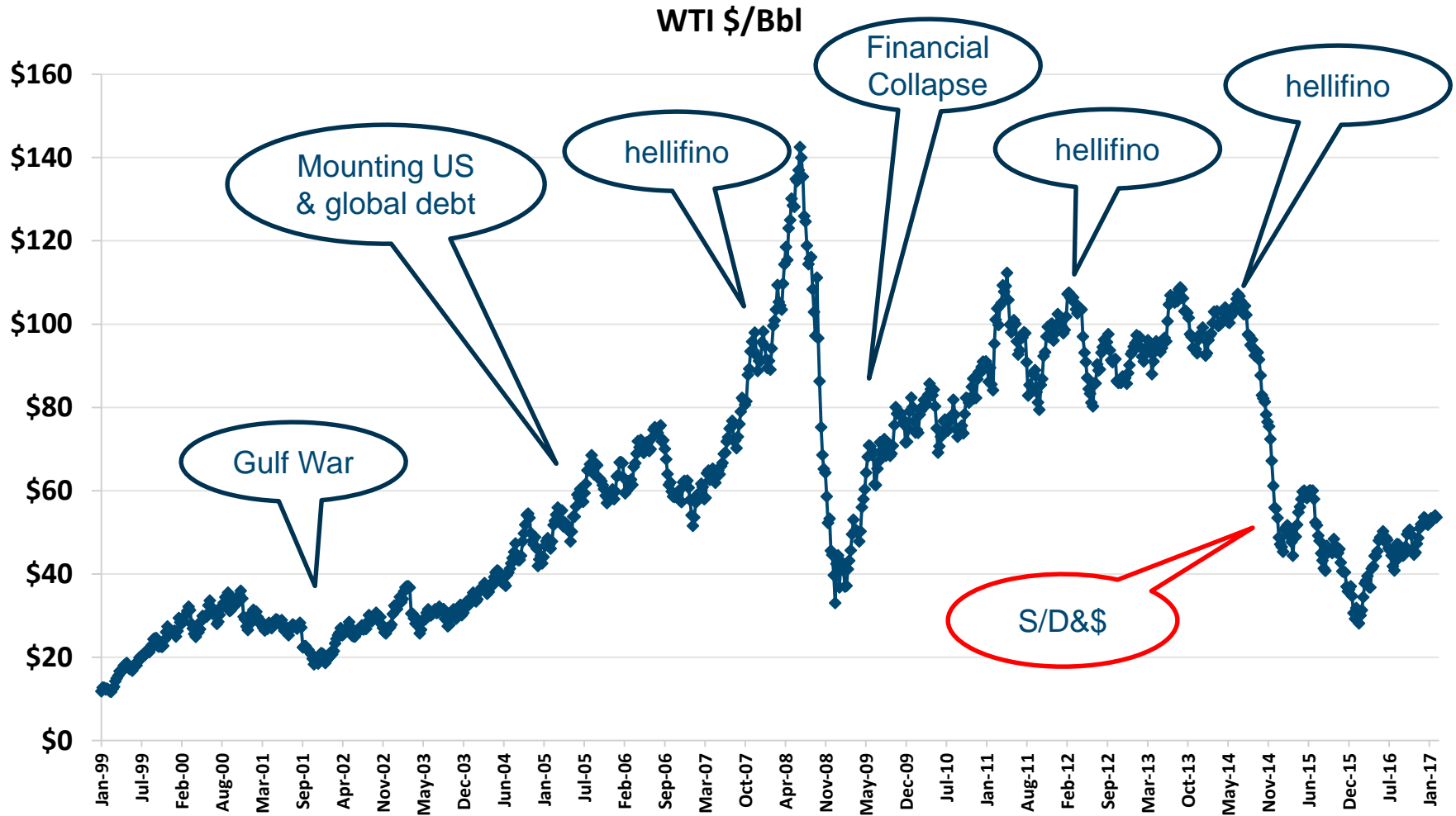
- Current State
 - *How did we get here*
 - *Debt & Equities*
 - *Transactions Markets*
 - *Where do we go from here*

What the Heck Happened and Why Did It Happen So Fast ?

- Global Demand (is inelastic and predictable)
- China's growth stunted
- Russia's currency collapse and geopolitical boldness
- OPEC
 - Iraq production increases (we did ourselves in)
 - Iran's deal and production increase
 - Saudi Arabia – virtually unlimited and cheap supply
- US oil production growth (we're too clever for our own good)

The real answer is two-fold... increased supply and money

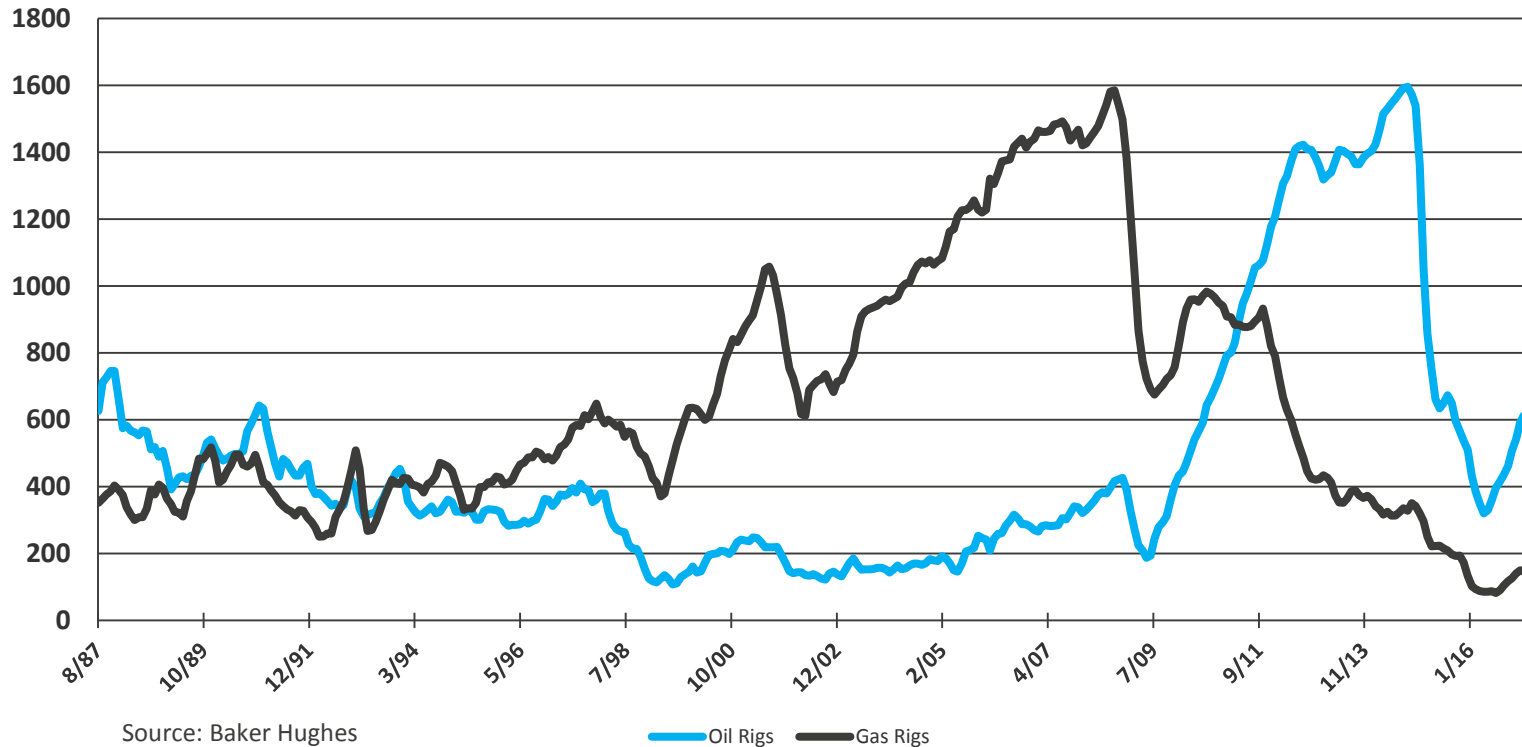
Oil Prices – Let's beat the old horse a little more



And let's kick the dog while we're at it too...

US Rig Count

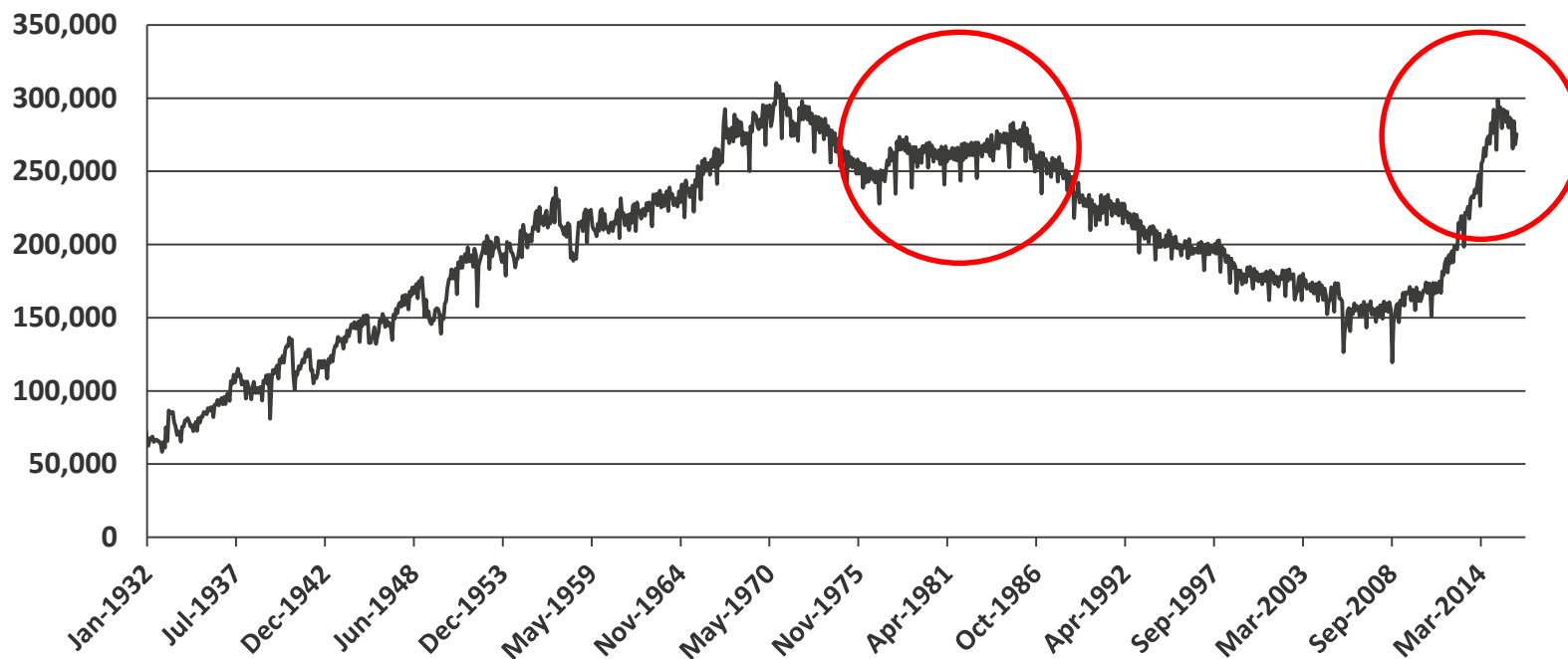
US Rig Count - Oil and Gas Split



- 768 rigs running in the US (up 288% from year ago, but down from 1,928 in 2014)
- 392 rigs running in Texas (309 in Permian), 101 in Oklahoma, 68 in Eagle Ford, 41 in Marcellus
- Rigs drilling natural gas lowest since '70's and will remain low until price >\$5

US Companies Know How to Find Oil

U.S. Field Production of Crude Oil (mbo/mo.)
1932 - January 2017



- If prices wouldn't have dropped in 2014-15, we might have kept this pace up for another few years
- Our technology and efficiency has had the effect of finding another Prudhoe Bay

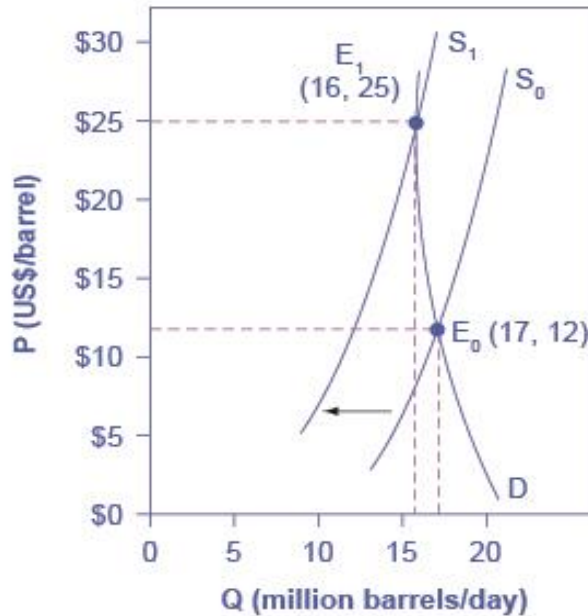
Drowning in an Ocean of Crude

- EIA claims there is a 3 BBO global stockpile of crude.
- Iran has 25 VLCCs at sea, carrying more than nearly 50 MMBO
- KSA raised output to 10mmbd in February
- Non-OPEC output to rise 400 mbd to 58.1 mmbd in '17
- 2017 global production = 98.24 mmbd
- 2017 global consumption = 98.15 mmbd

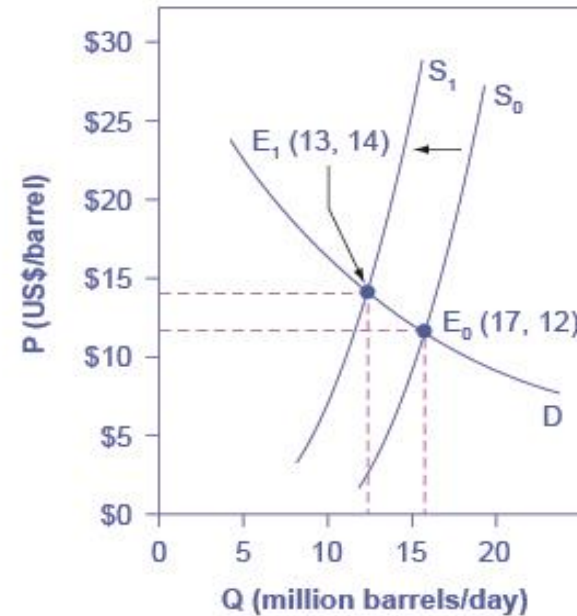


40+ tankers anchored outside Houston Port

It's Simple Economics – Law of S/D



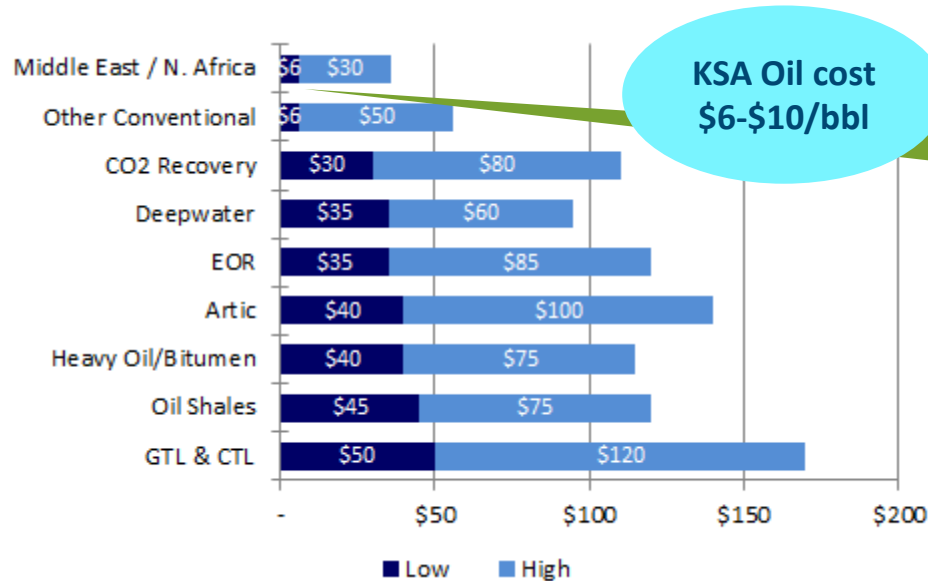
(a)



(b)

- POP QUIZ TIME: Which Law is Prevailing for E&P in 2017 ?

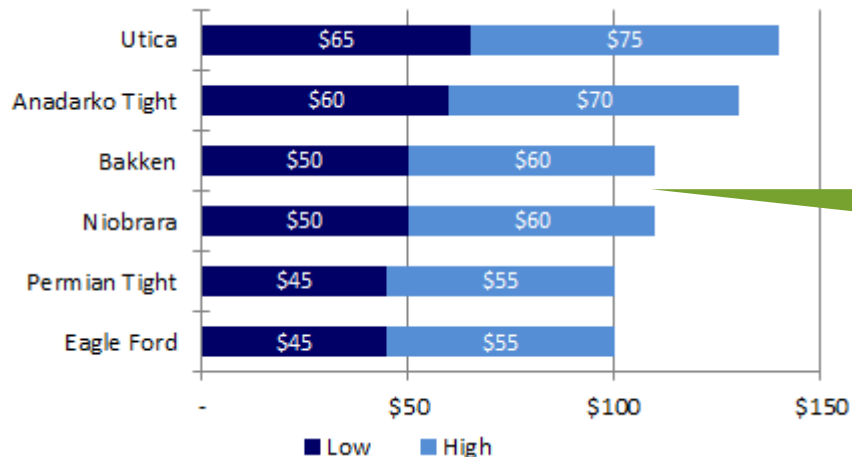
So Who Cries “Uncle” First... US or OPEC?



**KSA Oil cost
\$6-\$10/bbl**

Average ME cost/bbl = \$18

$$EL = \frac{\text{Mo. Op. Costs}}{30.4 \times \text{NI/BOE}}$$



Average US cost/bbl = \$40 to \$60

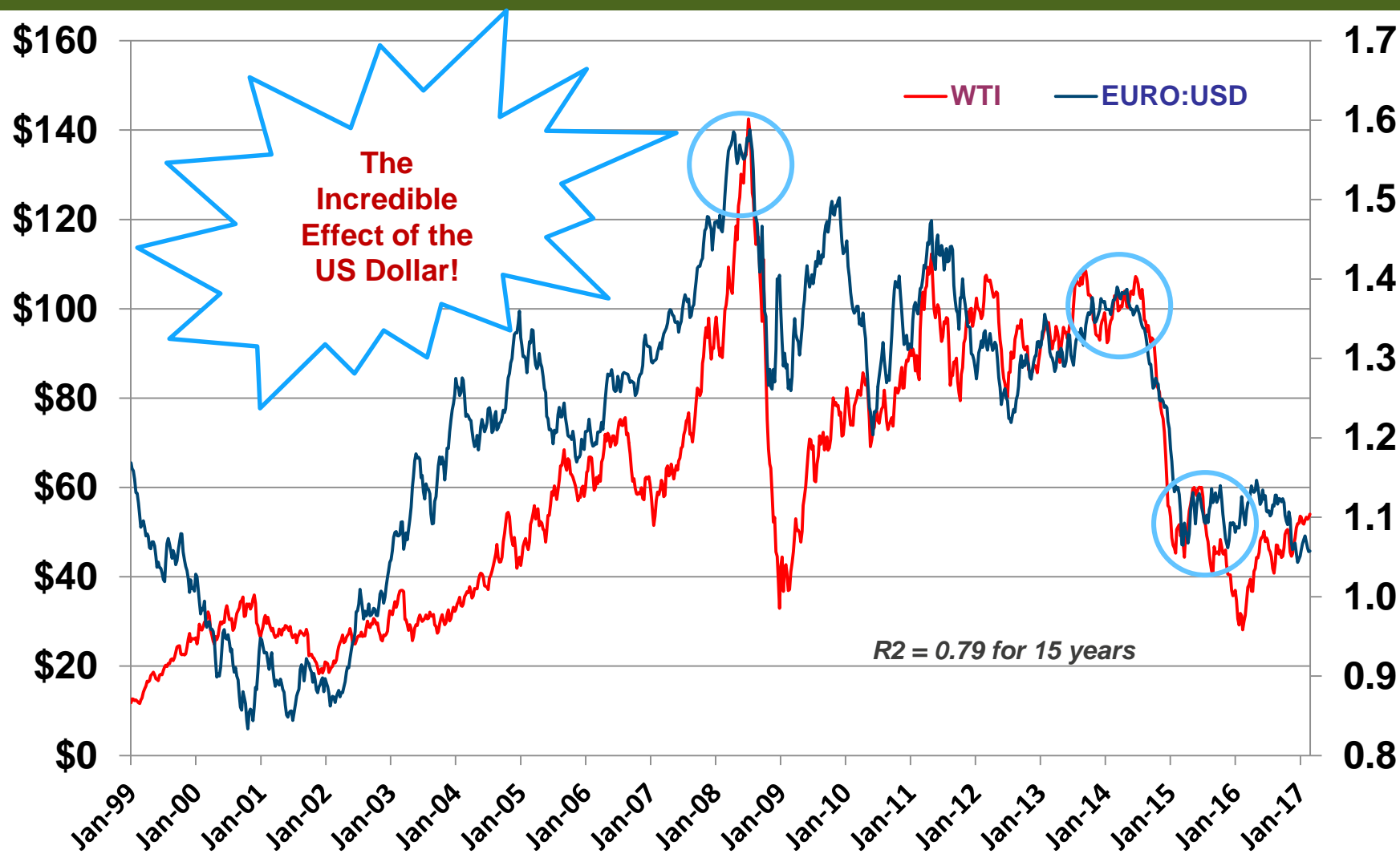
Which Bodes the Question...

How the heck did our oil get under their sand?

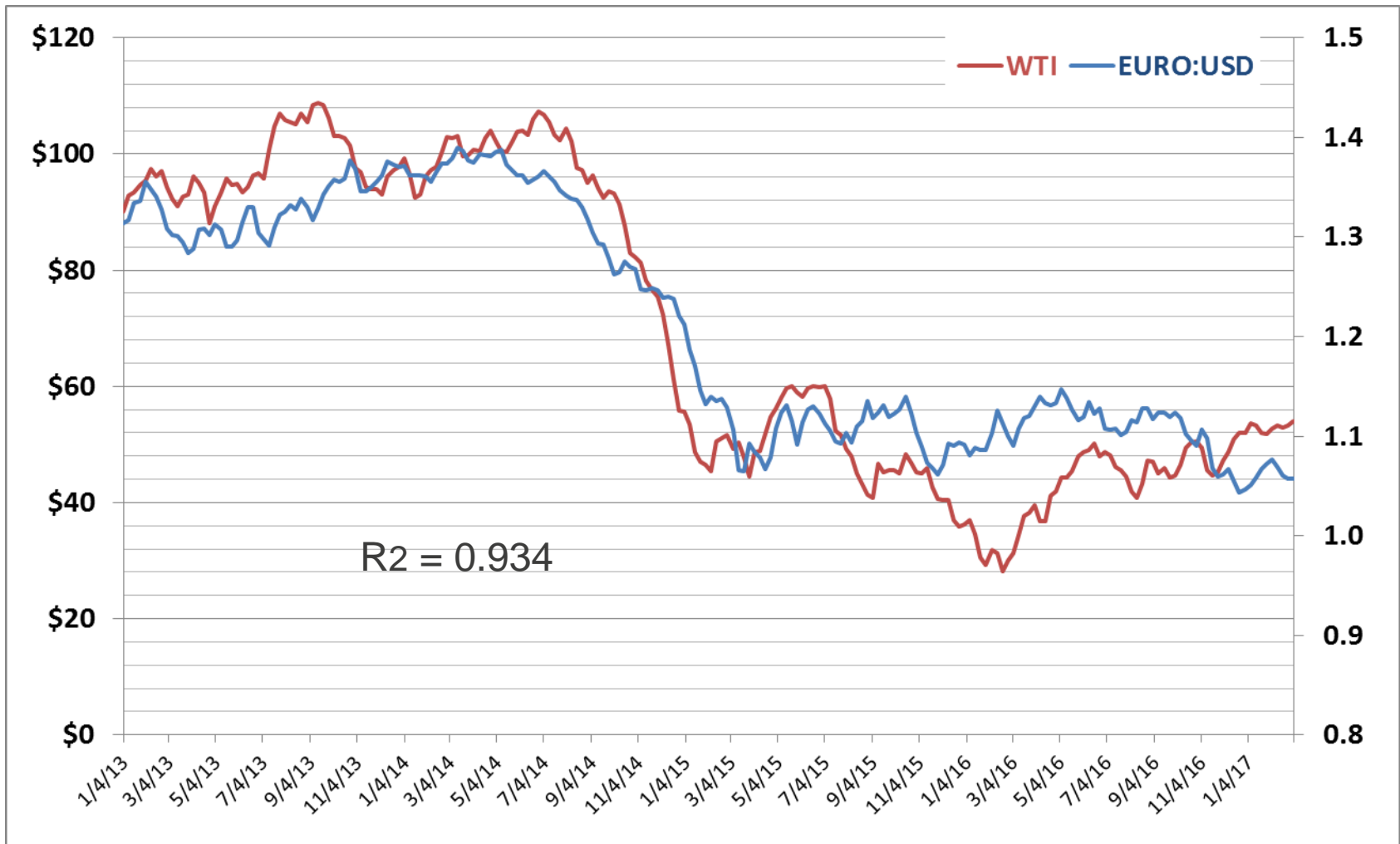
Bumper sticker seen in Houston in 2010



The Other Elephant in the Room...

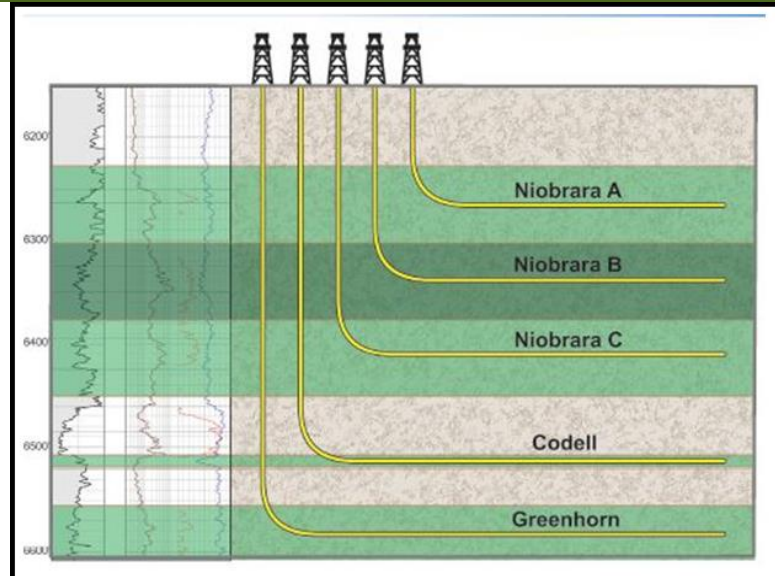
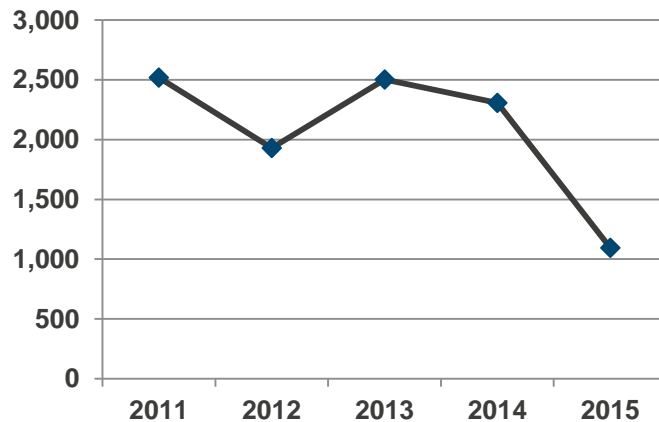


A Closer Look at the Relationship



Supply-Side Case Example: Wattenberg Field

- Discovered in 1970, more than 20,000 wells producing from J Sands, Codell, and Niobrara formation. Approximately 60 miles long. Produced over 4 TCF of gas. Horizontal wells and multi-stage fracs began in 2009.
- Since 2011, 9,260 total permits, with 5,160 completions



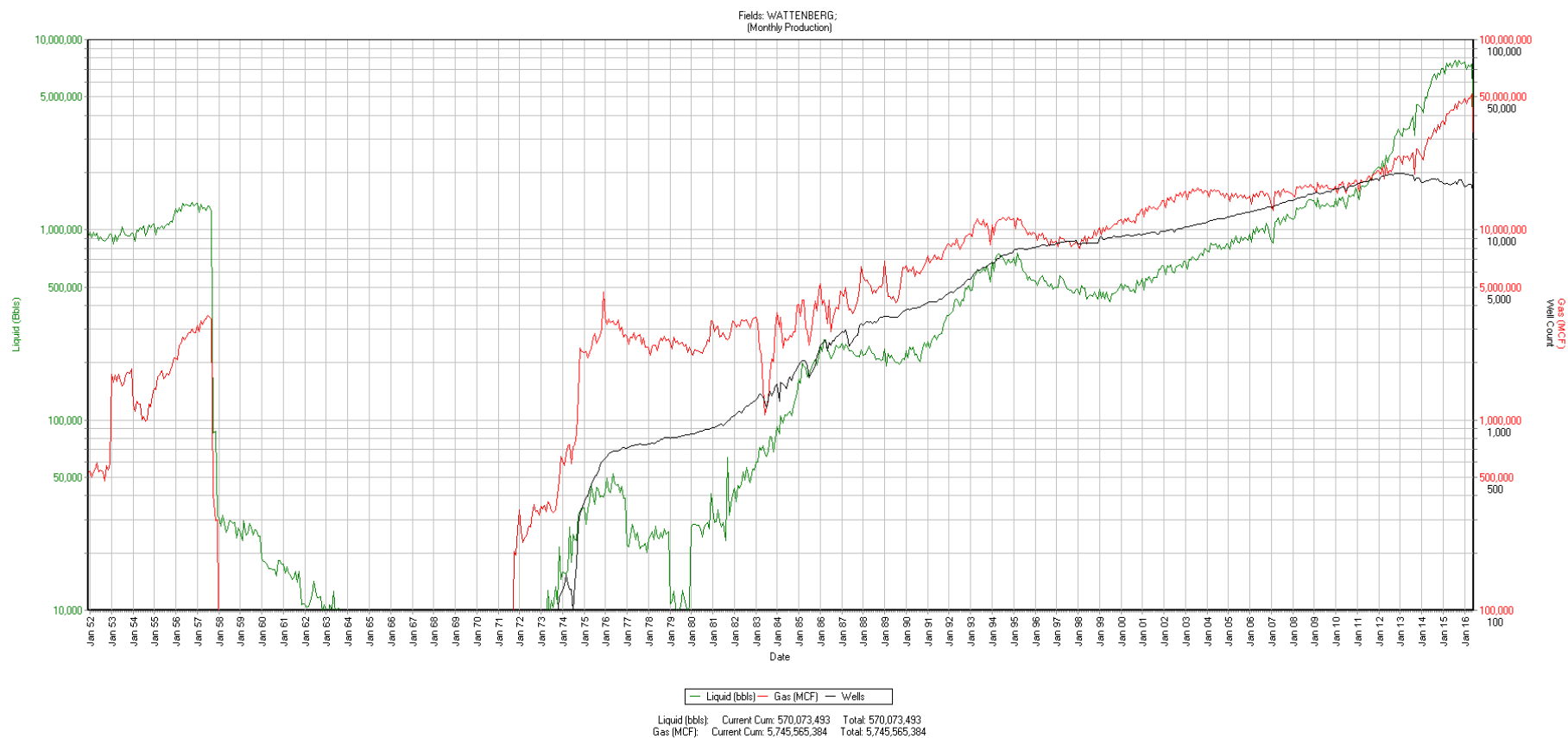
Top 20 2013 Weld County, CO Oil & Gas Producers

Rank	Operator	Oil Sales (barrels)	Gas Sales (MCF)	Total Sales (Bcfe)	% of Total
1	Noble Energy	17,637,154	109,910,859	215.7	35.3%
2	Anadarko Petroleum	16,696,492	111,293,213	211.5	34.6%
3	Encana	3,859,138	31,146,258	54.3	8.9%
4	PDC Energy	3,420,004	17,879,138	38.4	6.3%
5	Bonanza Creek	3,502,841	8,019,632	29.0	4.7%
6	Carrizo Oil & Gas	1,304,144	1,173,031	9.0	1.5%
7	Bill Barrett Corporation	886,154	2,919,012	8.2	1.3%
8	Whiting Petroleum	1,112,418	427,721	7.1	1.2%
9	Synergy Resources	629,093	2,836,795	6.6	1.1%
10	Great Western Operating Co.	554,468	1,976,978	5.3	0.9%
11	EOG Resources	647,596	337,481	4.2	0.7%
12	Bayswater Exploration & Production LLC	461,178	1,261,006	4.0	0.7%
13	K P Kauffman Company Inc	257,658	2,044,633	3.6	0.6%
14	Mineral Resources Inc	196,306	1,576,206	2.8	0.5%
15	Tekton Windsor LLC	217,568	593,461	1.9	0.3%
16	Sundance Energy Inc	153,747	446,513	1.4	0.2%
17	Foundation Energy Management LLC	107,423	459,239	1.1	0.2%
18	Apollo Operating LLC	106,464	265,172	0.9	0.1%
19	Continental Resources	115,181	187,443	0.9	0.1%
20	Marathon Oil	85,956	128,826	0.6	0.1%
	Others	522,583	1,827,312	5.0	0.8%
	TOTAL	52,473,566	296,709,929	611.6	100.0%

Note: We use oil & gas sales as a proxy for marketed production

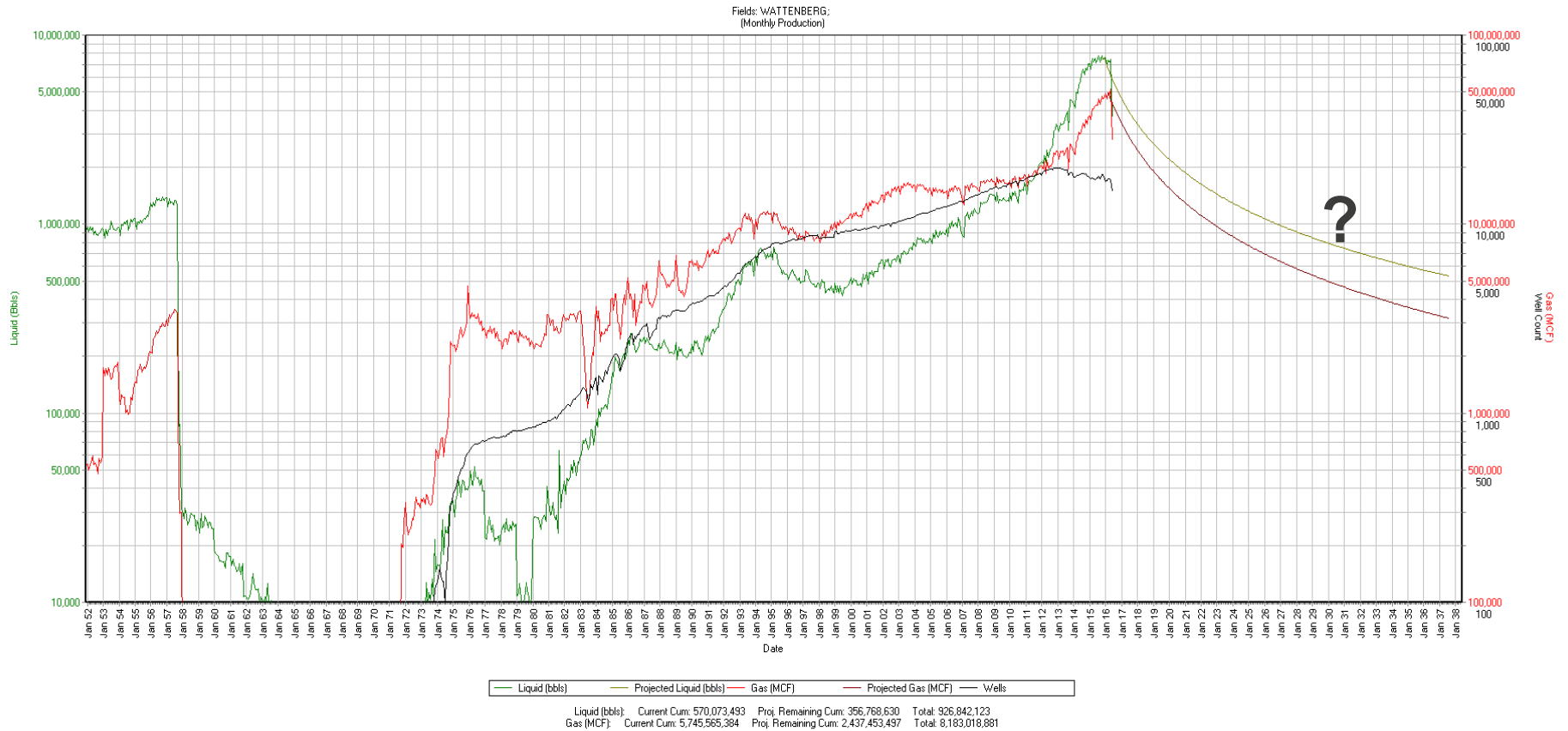
Source: Colorado Oil & Gas Conservation Commission data, NGI's Shale Daily calculations

Wattenberg Historical Production



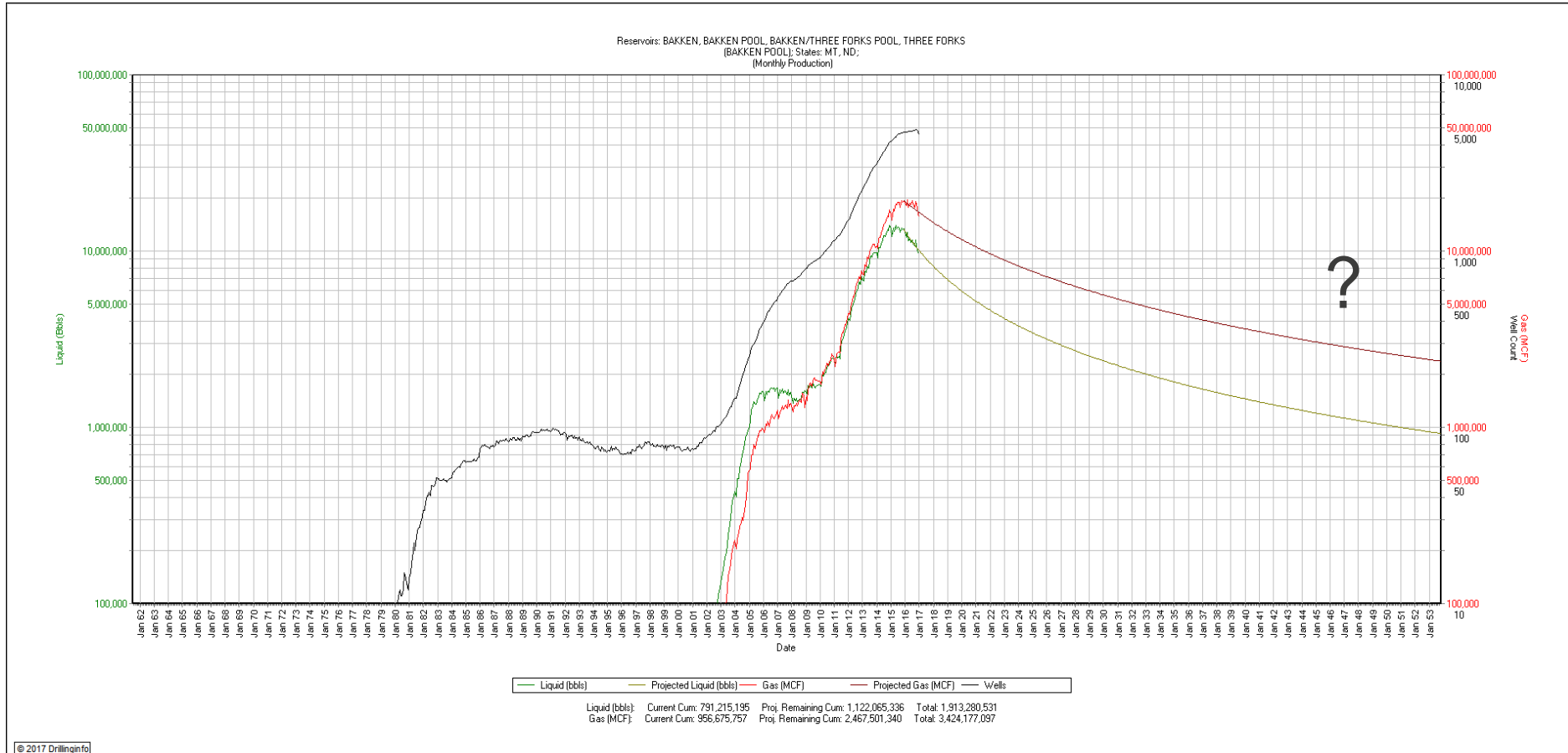
© 2016 Drillinginfo

Wattenberg Future?

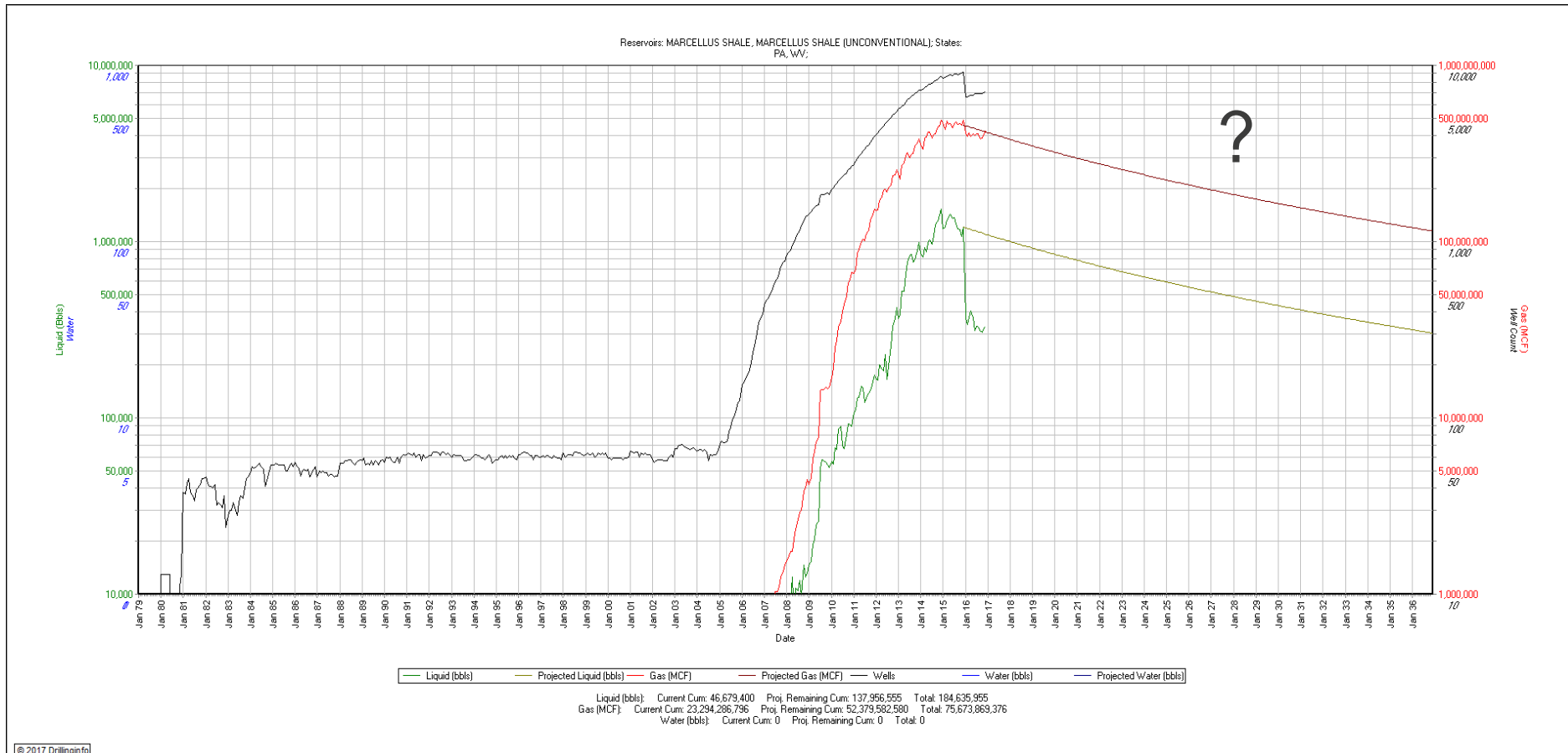


How about other upstart plays?

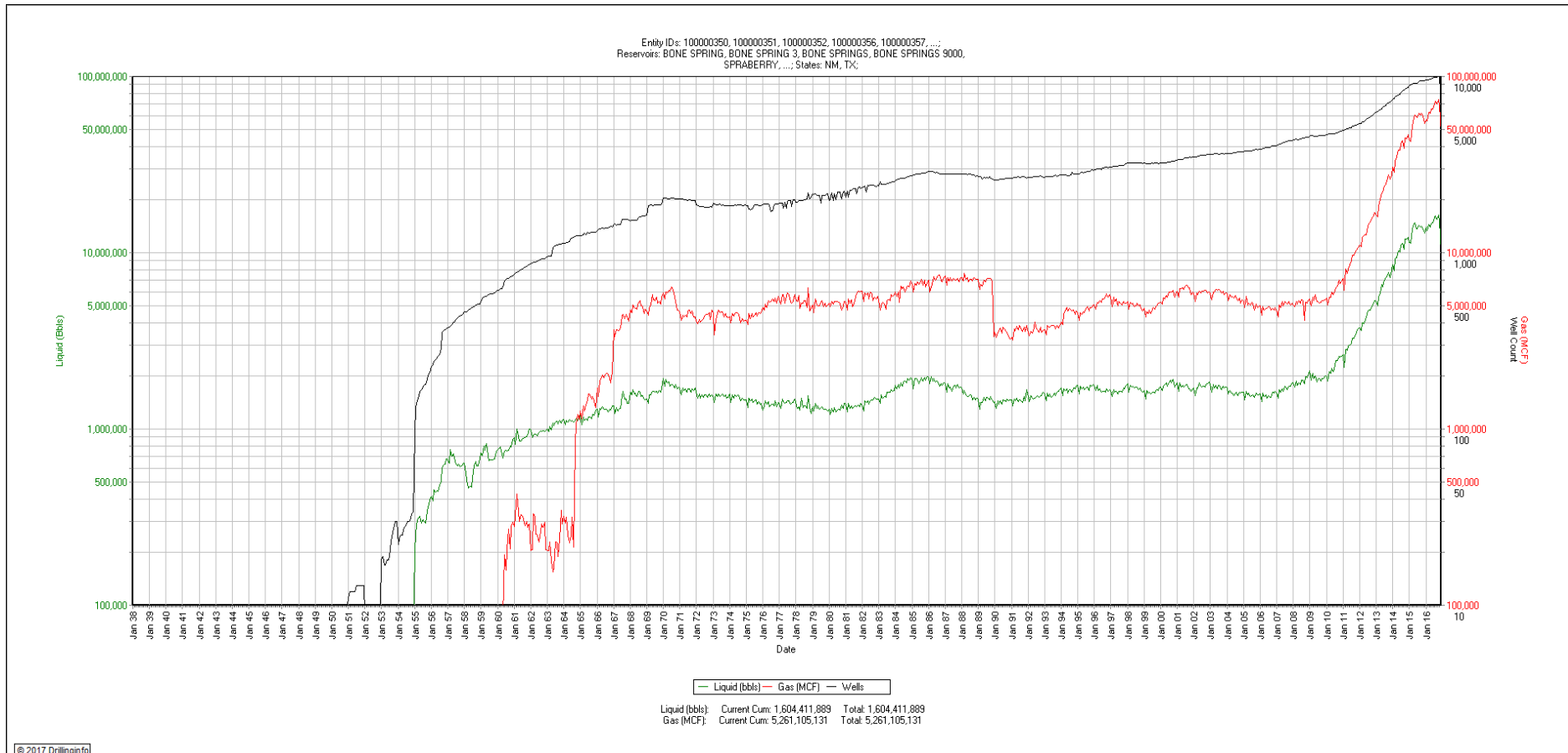
Bakken



Marcellus



Permian Basin – is the sky the limit?



A Look at Debt and Equities

“Please don’t tell my mother I work in the oilpatch.
She still thinks I’m a piano player in a bordello.”

Bumper sticker seen in Odessa in 1987

Quick Look at Reserve Based Lending (RBL)

- Revolving Lines of Credit necessary for capex, G&A, etc.
- **Redeterminations** – Banks rerun borrower's reserves calculated on bank's price deck and usually include discount to the futures price strip.
- Normally based on proved reserves, **primarily PDP**. PUDs as much as 25% of the total borrowing base.
- Strong scrutiny given to:
 - Exploration, timing, operational and mechanical risks
 - Single well or field concentration
 - Reserve mix (PDP v. PUD)
 - Proposed capex to promote PUDs to PDPs
- Projected cash flows must validate ability to cover G&A expenses, debt service, including payments on other 2nd lien debt, assuming a complete draw of borrowing base with adequate reserve tail cushion.
- Engineering runs are used to develop financial projections that test for compliance with energy lending policy parameters including base case and sensitivity case advance rates; reserve tail tests (based on economic half-life of the reserves or remaining cash flow after projected loan payout); and annual cash flow coverage tests.

Banks Under Pressure

- The Office of the Comptroller of the Currency (OCC), the Federal Reserve and the FDIC, have reportedly been warning banks to limit their exposure to E&P companies, pressuring banks to tighten and increase the frequency of oil and gas loan reviews, and advising banks that a significant number of outstanding loans to E&P companies should be classified as “substandard” (inferring there is uncertainty as to the underlying collateral value and/or the borrower’s ability to repay the loan).
- These regulatory pressures combined with a volatile price and global over-supply situation, hinder E&P companies’ access to capital at a time when they need it the most.
- OCC issued the “Oil and Gas Production Lending” bank examination booklet (as part of the Comptroller’s Handbook) in April 2014
 - Discusses risks in oil and gas production lending,
 - Outlines supervisory expectations and regulatory requirements related to RBL,
 - Loan terms ranging from three to seven years,
 - Loan advances governed by a borrowing base that is primarily derived from the value of the borrower’s proved reserves and at least semi-annual borrowing base redeterminations (in the spring and fall) that are largely based on an updated reserve report and the bank’s current oil and gas price deck.

Factors Impacting Borrowing Base

INCREASE IN BORROWING BASE

- Higher price deck
- Longer term at prices above price deck
- Reserve acquisition
- Reducing opex and capex, G&A expenses, production taxes
- Promoting PDNPs and PUDs to PDPs
- Upward reserve revisions

DECREASE IN BORROWING BASE

- Lower price deck
- Rolling off hedges with strike prices above price deck
- Reserve divestiture
- Declining and not replacing PDP
- Increased operating costs, G&A expenses, production taxes, drilling / completion CAPEX
- Downward reserve revisions

Insolvency – A Walk on the Dark Side

2 Types of Insolvency Tests

– Equitable

- Ignores BS and focuses only on ability to pay current debts
- Accounting perspective measuring default risk, write-off potential, vendor credit, potential asset sales, etc.

– Balance Sheet

- “A deficiency of assets below liabilities with no *reasonable* prospect that the business can be successfully continued in the face thereof.”
- Valuation of assets and liabilities, using 3 Approaches to value: Income (DCF), Market Transactions and Cost

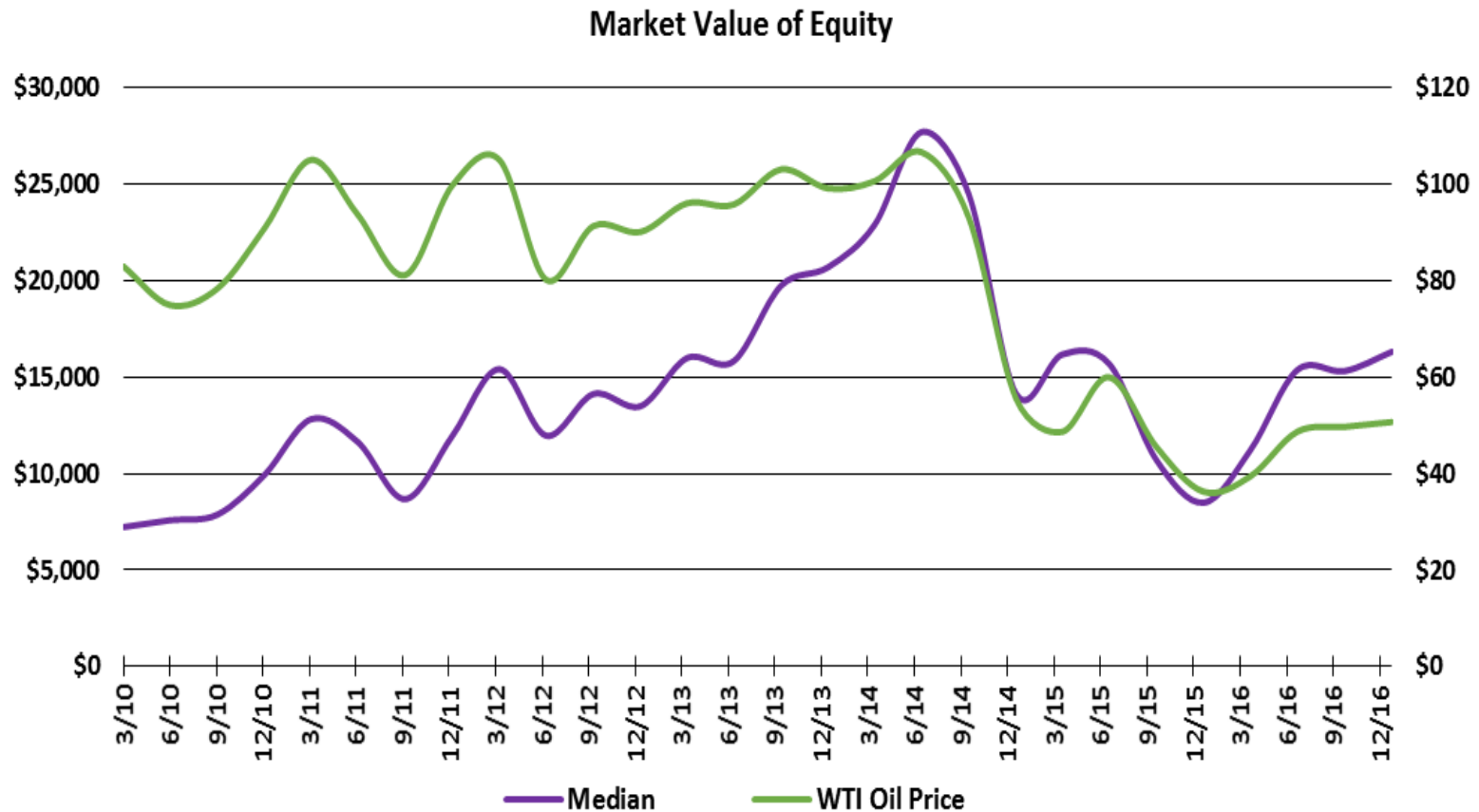
Big differences between the two, as beauty is in the eye of the beholder!

Bankruptcy – Final Stage of Life for Many

- Approximately 120 E&P's have filed for bankruptcy since January 2015
- Total secured and unsecured debt of ~\$80 billion
- Fortunately, that number is slowing down, with only 12 filings in 4th quarter of 2016 and only 5 through March 2017.

Data from Haynes Boone – Oil Patch Monitor

Current State of Industry- Equity

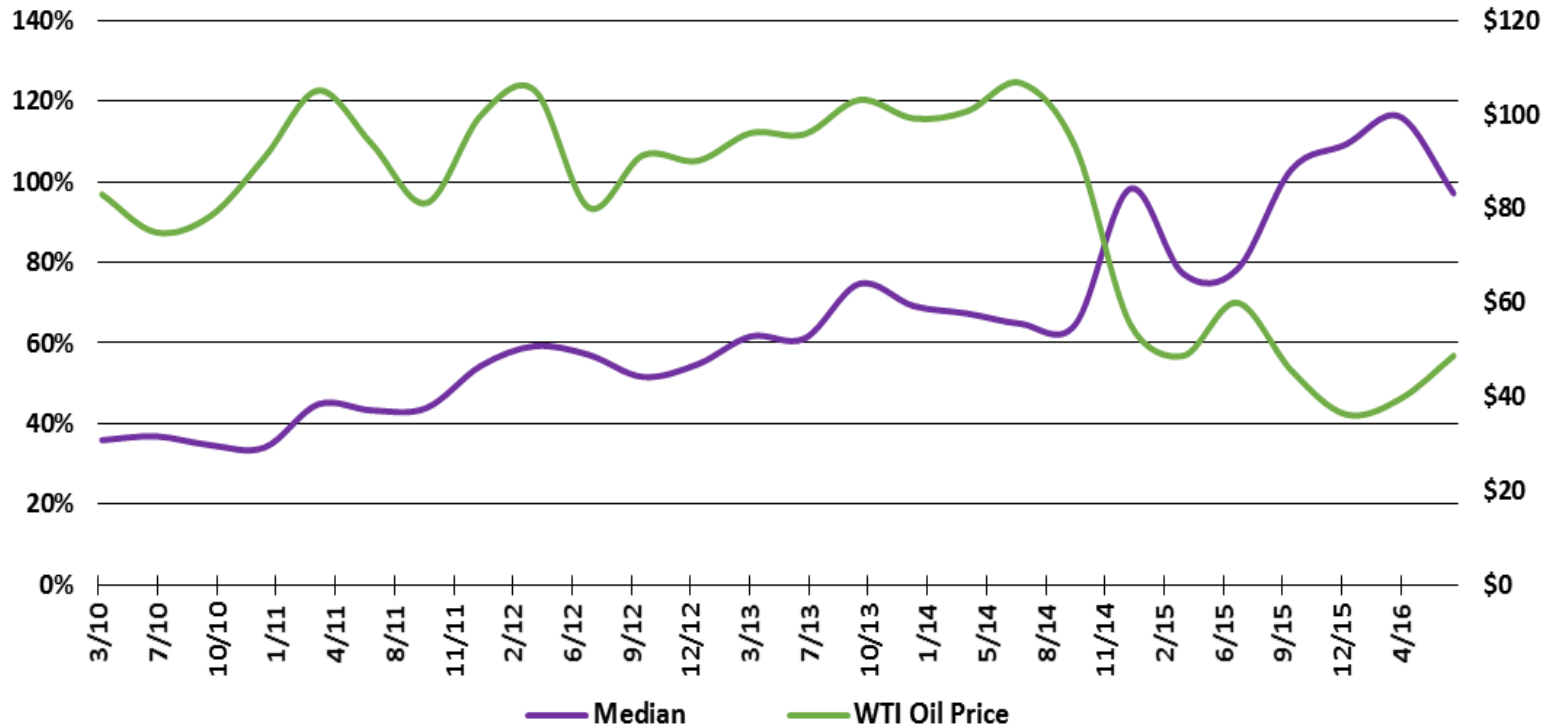


EOG, Devon, Noble, Continental Res., Whiting, Carrizo, Oasis

Current State of Industry- D/E Ratio

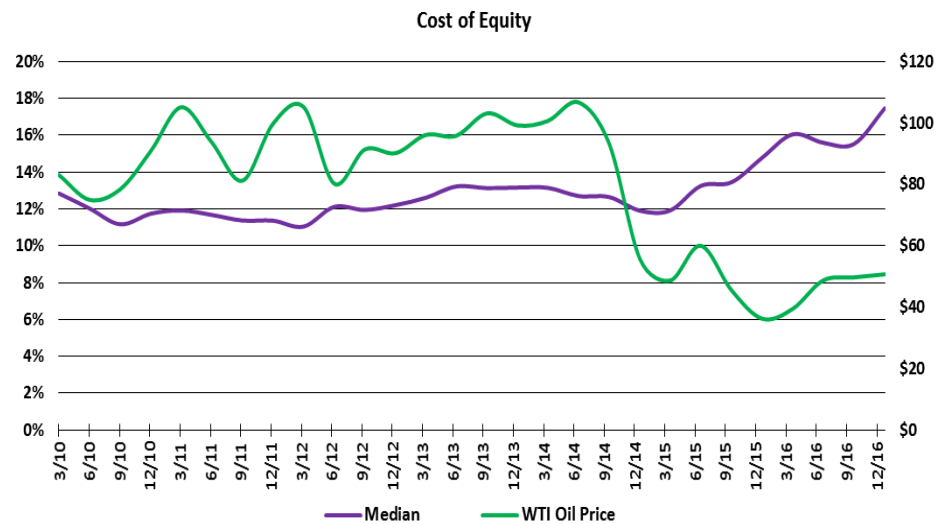
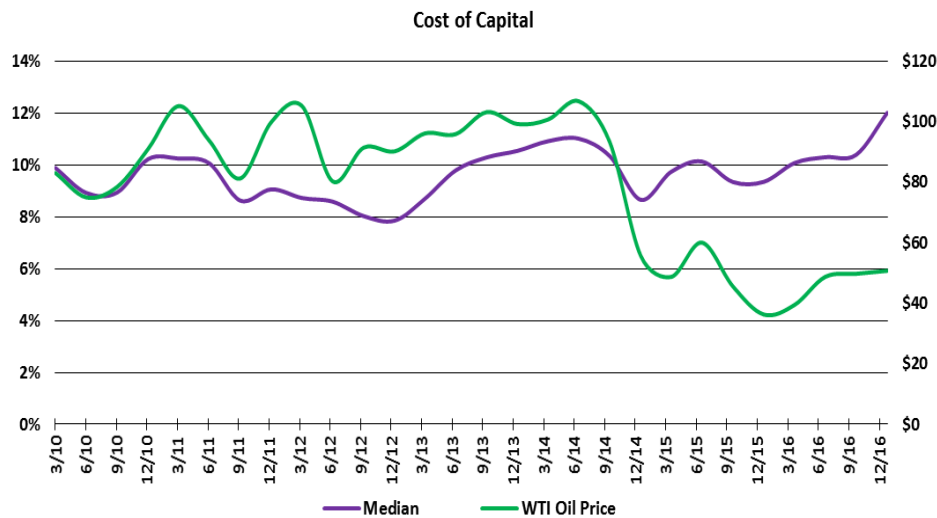
- Debt to Equity ratio has increased throughout 2010 to present

Debt to Equity



EOG, Devon, Noble, Continental Res., Whiting, Carrizo, Oasis

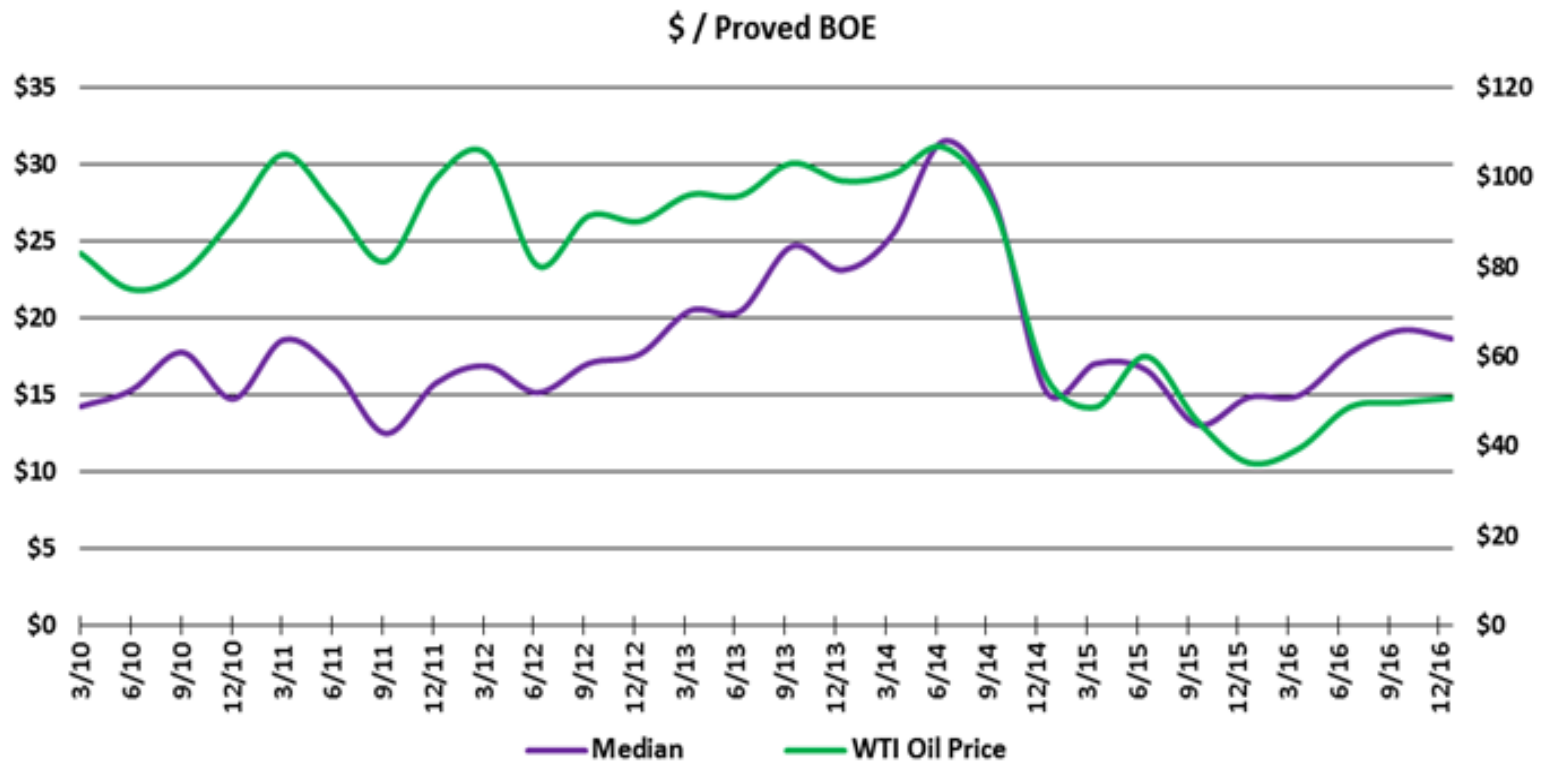
Current State of Industry- Cost of Equity & Capital



EOG, Devon, Noble, Continental Res., Whiting, Carrizo, Oasis

Current State of Industry- Reserve Carrying Value

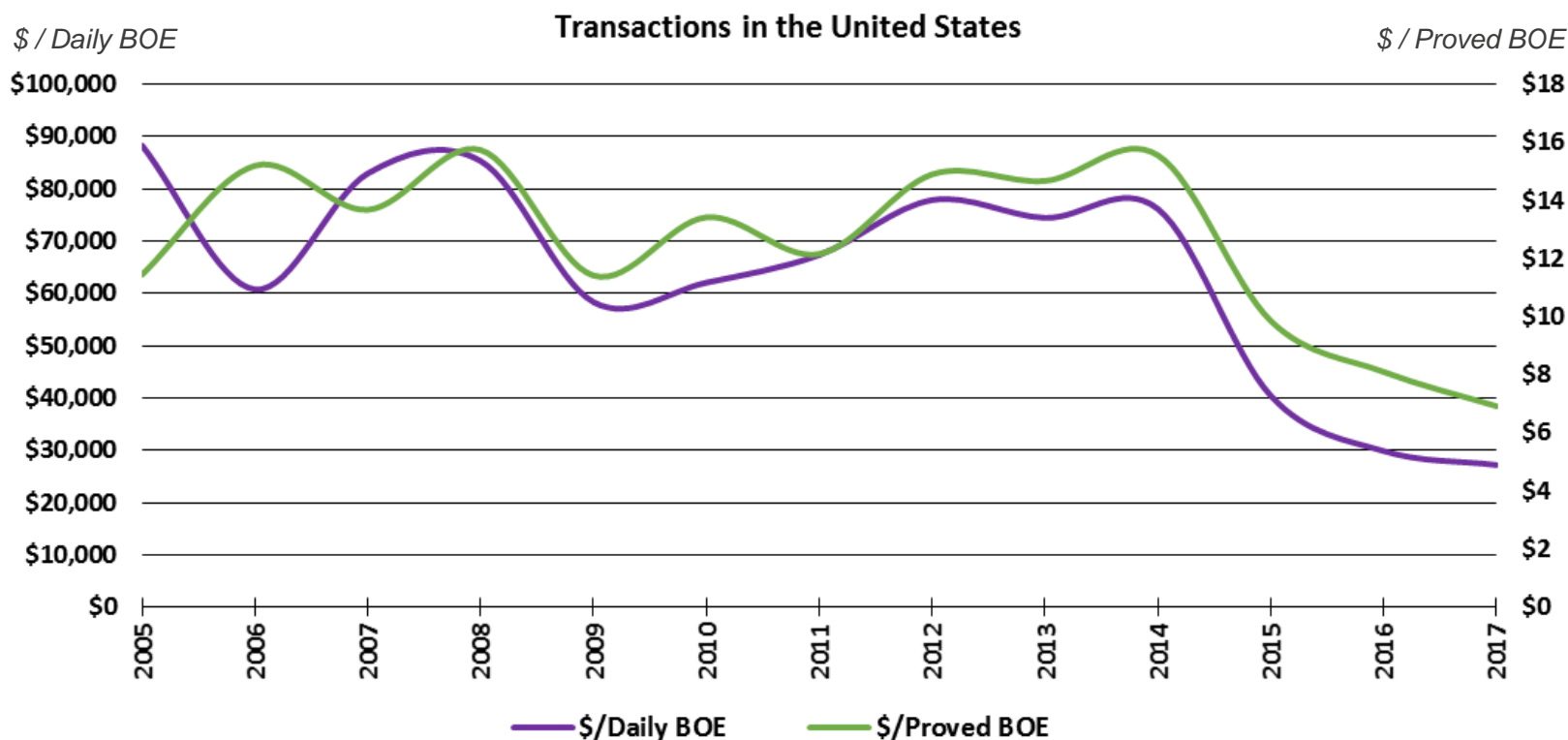
- (EV:BOE) Enterprise Value (\$) to \$/ Proved BOE multiples observed reflect the significant decline in oil prices and shift in market dynamics



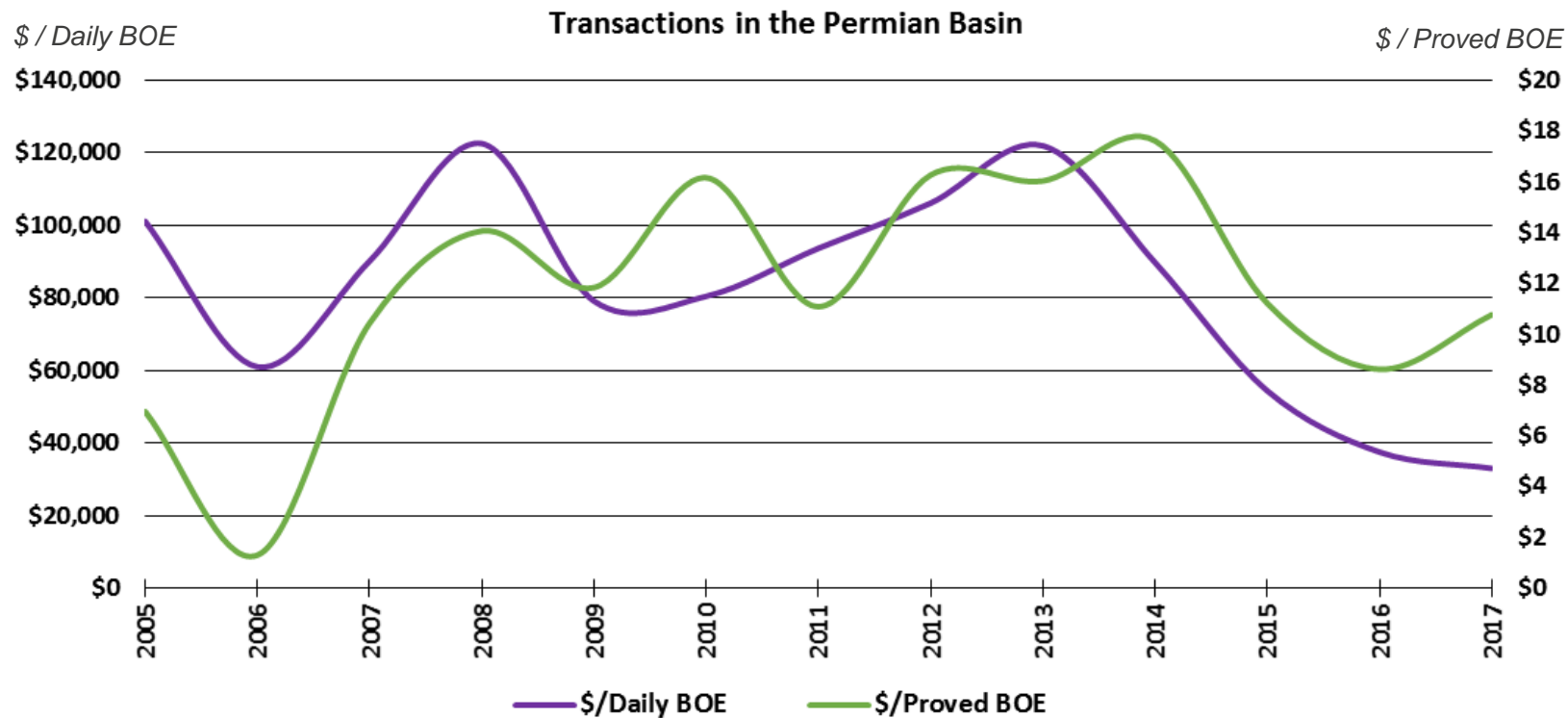
EOG, Devon, Noble, Continental Res., Whiting, Carrizo, Oasis

M&A Review- US

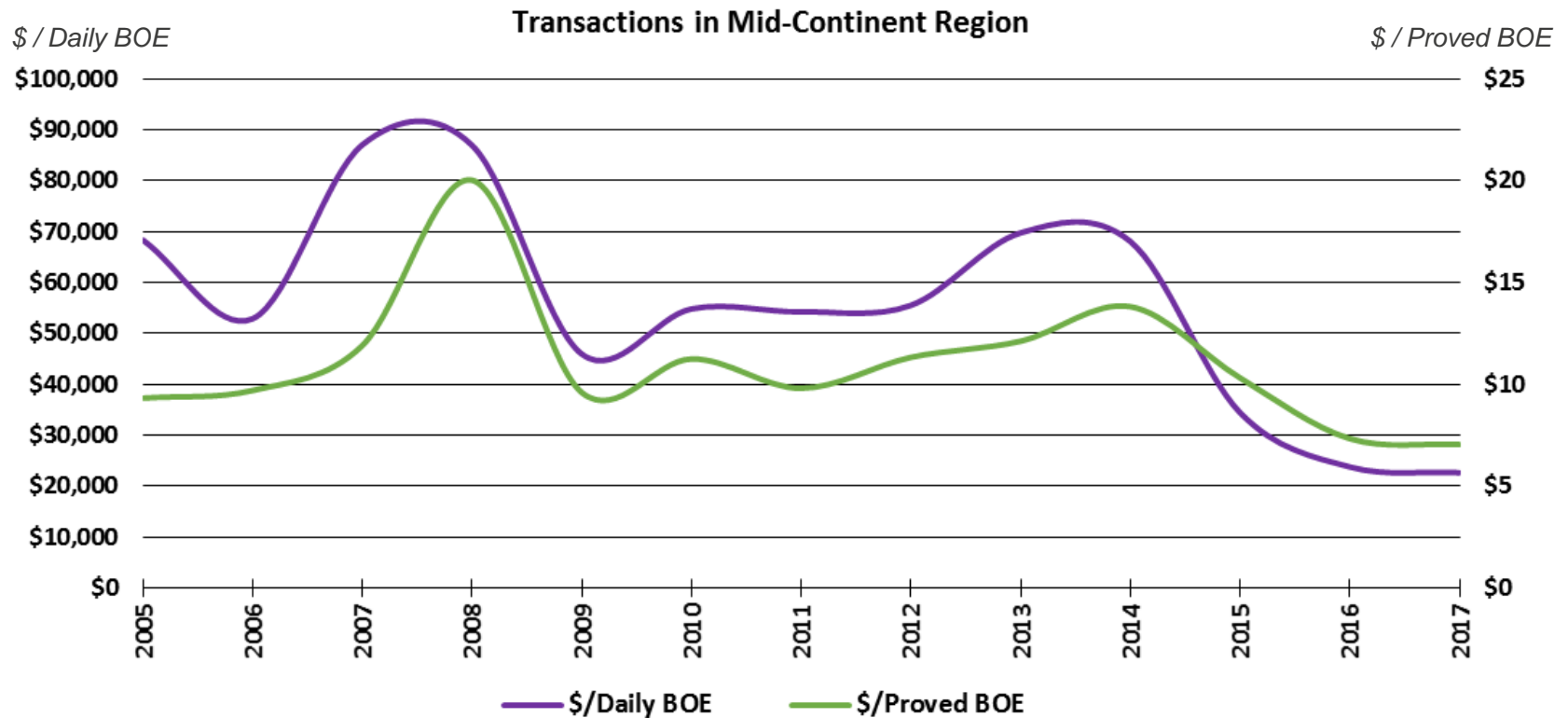
- M&A deal value hit a low of \$5 billion in the first quarter of 2015 but have since picked up. For the first quarter of 2017, upstream M&A deal value is at \$20.8 billion.
- Overall, US Metrics (\$/BOE & \$/DB) are down a bit in 2017.



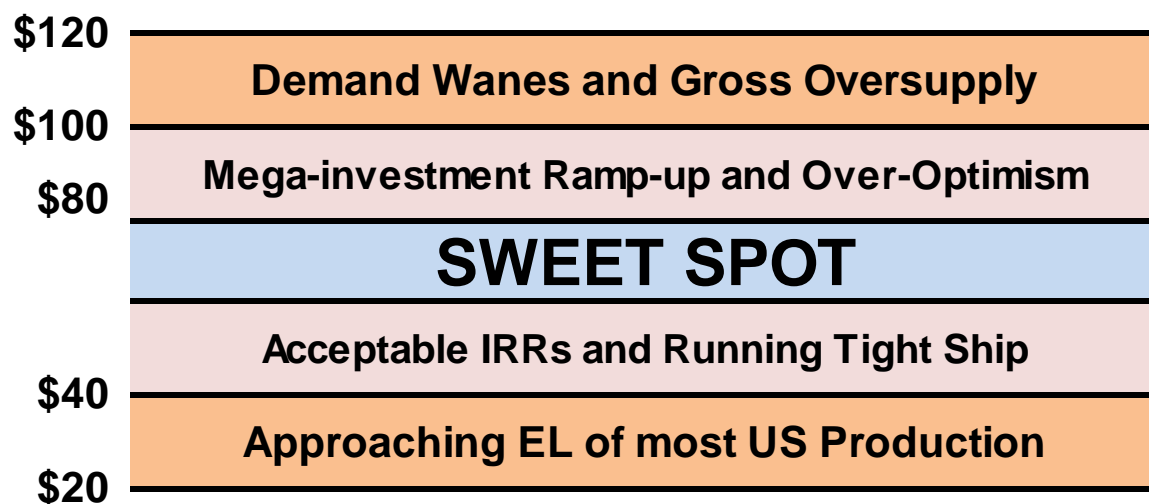
M&A Review- Permian



M&A Review- Mid-Con



Macro Outlook – Price Collars



Economic Limit

- \$5 to \$25 OPEC
- \$20 to \$50 in US & ROW

Playing Field is Not Even

- US\$ purchasing power
- NOC's and Subsidies
- Variances between economies of global producers and consumers
- Service costs and technology

Crude Price Outlook- Fundamental Cases

Low Price Cases

- Chinese demand drops as their economy cools (true).
- EU economy is worse than thought and US\$ strengthens (true).
- OPEC, particularly KSA, has shown that they can easily replace lost production (true).
- OPEC is prone to fragment and members ignore production quotas when they need money (probable).
- US\$ strengthens even more (possible).

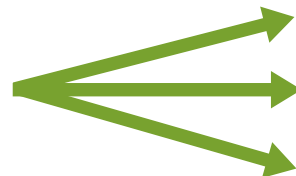
High Price Cases

- US debt continues to grow (probable).
- EU economy gets back on track (probable).
- Global crude steady decline (possible).
- OPEC sustains quotas (speculative).
- Geopolitical event trigger wilds speculation (likely, but price collared).
 - ✓ ISIS
 - ✓ Russian aggression in ME & Ukraine
 - ✓ China's new "islands"

3-15-2017

WTI = \$49.02 Euro:USD = 1.072

Currency Cases



1.20 US\$:€ crude price = ~\$75

1.10 US\$:€ crude price = ~\$55

1.00 US\$:€ crude price = ~\$40

So Where Do We Go From Here?

- Oil prices will languish until the global economy improves and/or the USD begins to weaken
- Our new “Prudhoe Bay” is declining quickly and without \$60 WTI, cheaper imports will again prevail over next 3 years
- Look for oil to hover in \$50’s by 2017 and ‘\$70’s by 2020 (of course, that’s in an efficient market)
- It is what it is, so try to hang on. I think it’ll be worth it.

	2017	2018	2019	2020	2021
EURO:USD	1.07	1.10	1.15	1.2	1.25
WTI	\$50	\$55	\$65	\$75	\$80

Potential scenario

Thank you

**“Lord, Please give me one more oil boom.
I promise I won’t piss it all away this time”**

Bumper sticker seen in Oklahoma City in 1986

Any questions?

