

The Journey from E&P to Finance Engineer



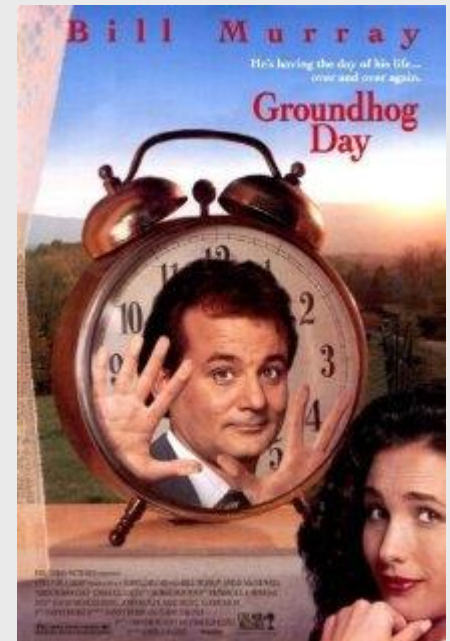
The Beginning

Optimization of Capital Managing Cash Flow, Debt & Liquidity

“Groundhog Day”

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PNC Independent Risk Management

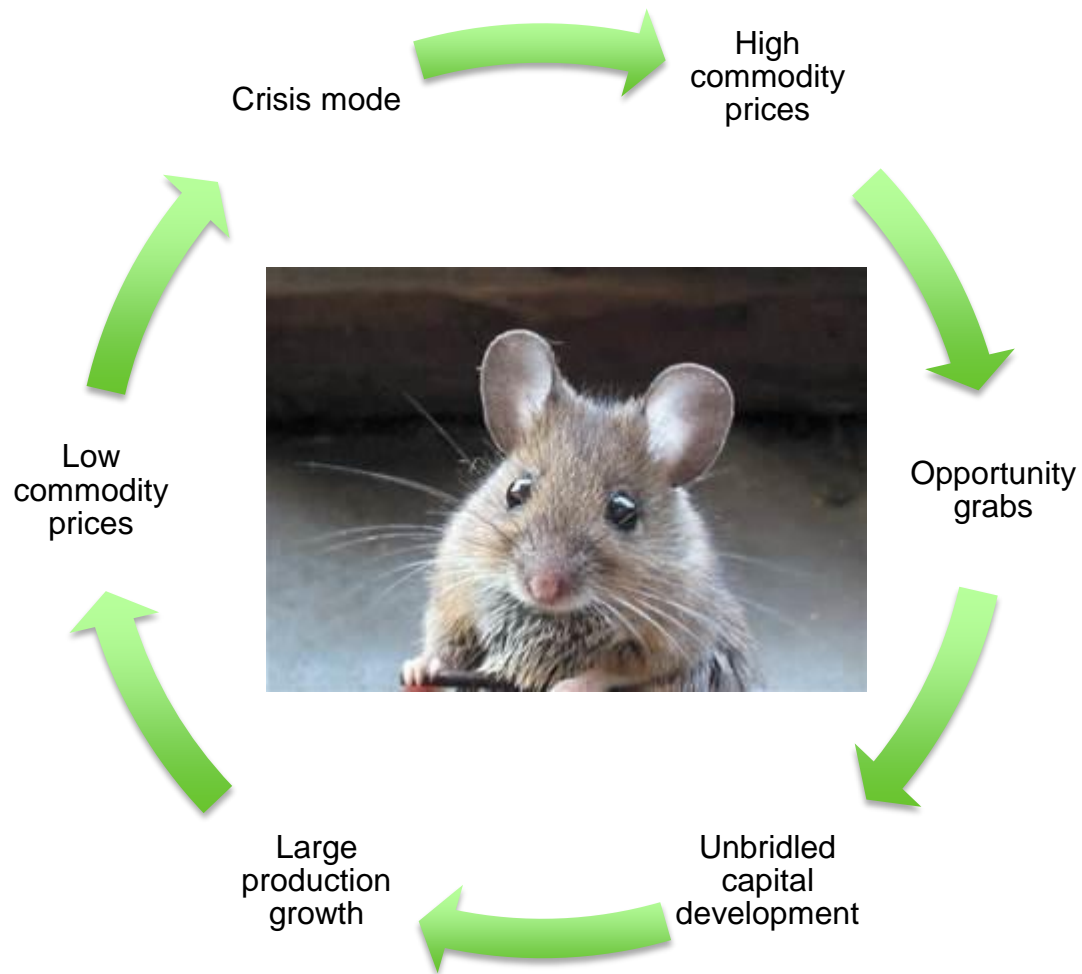
SPEE Presentation
September 9, 2015



Upstream Oil & Gas Treadmill

Key Questions:

- Will our industry continue to relive the past again and again?
- How do companies improve probability of survival?



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Fuel of Growth and Preservation

Section 1.

Introduction

*That which has been is that which will be,
And that which has been done is that which will be done.
So there is nothing new under the sun.*

King Solomon, Ecclesiastes ~1000 BC

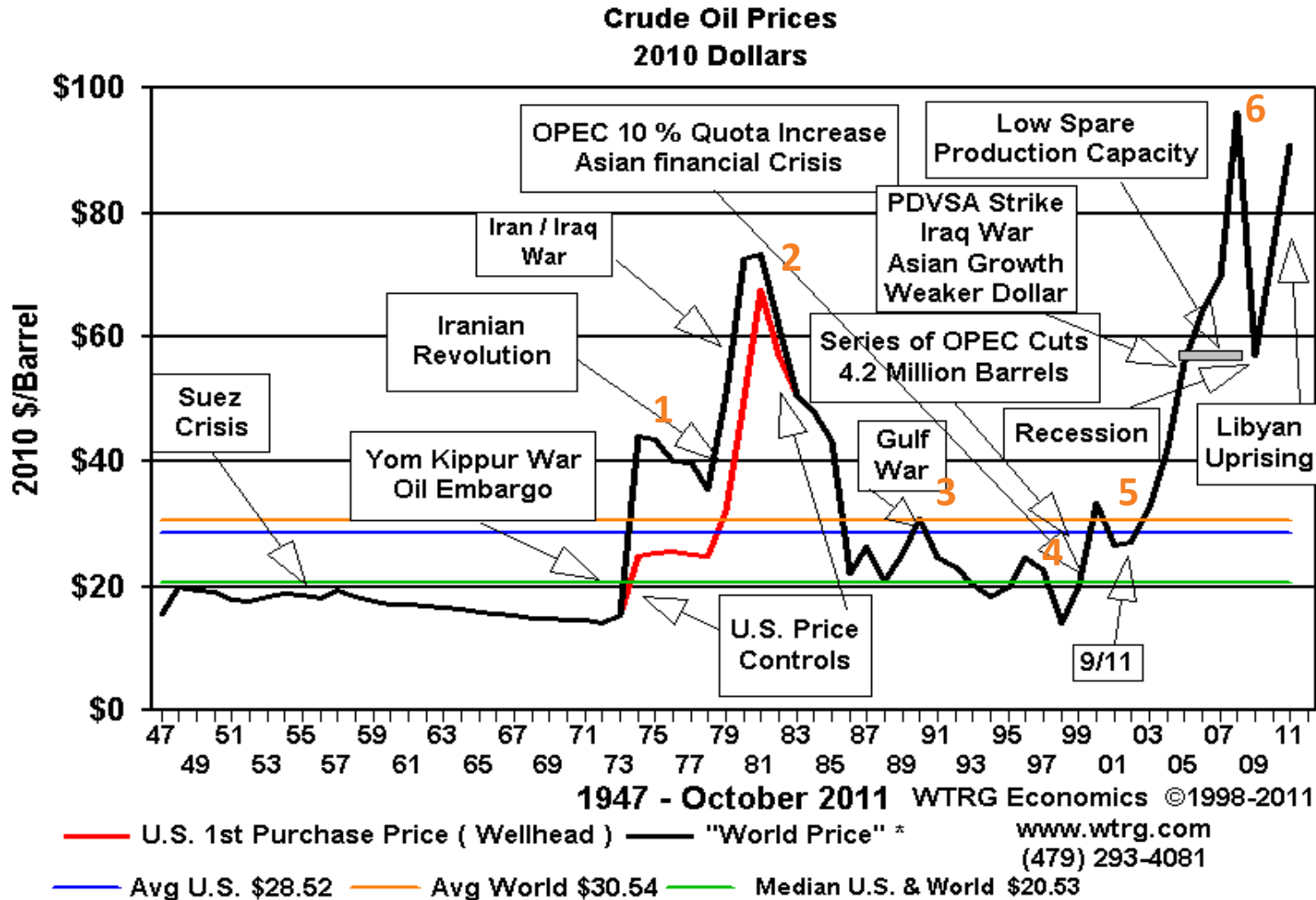
A year ago things looked a lot different

- WTI hovered at \$85/BO
 - then went south to below \$50
- Rig count was growing at warp speed over previous decades
 - then impulse speed back below 50%
- Petroleum engineering graduates were getting historical high salaries
 - then struggled to find entry jobs
- E&P companies had no problem getting capital for every questionable project
 - then significant budget cuts and layoffs
- Service companies were making extreme profits
 - then not profitable
- For many of us life was good in 1981, then the mid 80s!
 - Deja vu fall of 2015

Crude Price Cycles

Key Point:

- After four decades and six plus price cycles, our industry still struggles to manage the downsides.

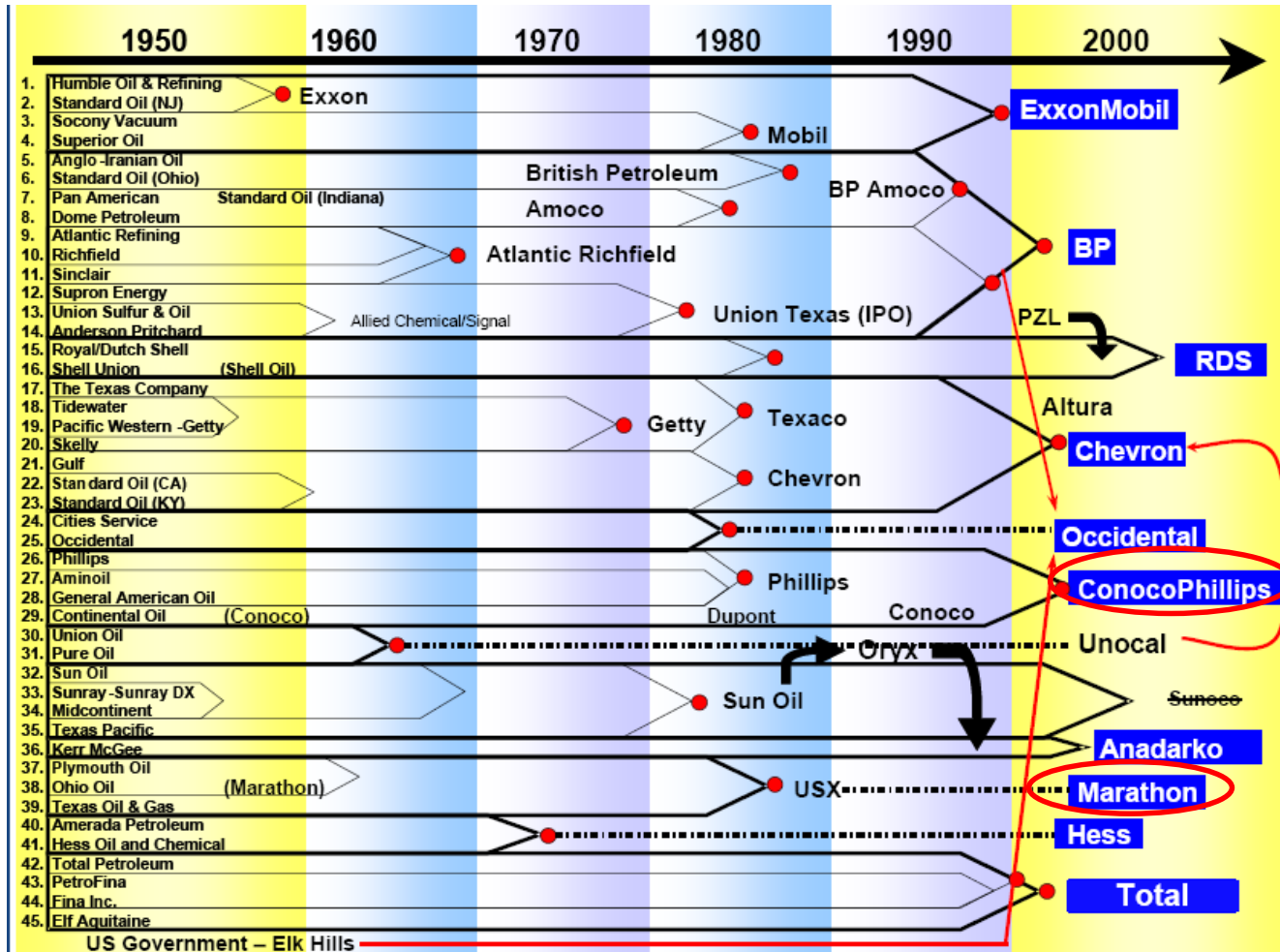
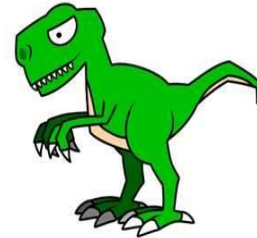


Source: WTRG Energy Economics

Industry Carnage

Key Points:

- Major company mergers were prevalent in the 1980s as companies were not prepared to manage a major drop in oil prices.
- Yesterday's performance does not guarantee a company's tomorrow without good capital management strategies.



Source: adapted from presentation J. Hackett – Anadarko circa 2008

Section 2.

Capital Structures

Resources and risks



Company Formation Structures

Key Points:

- Three common company structures in US oil & gas companies - MLP, LLC & C-Corp.
- Strategic benefits of the structures are dependent on a number of factors, but market conditions is certainly one of them.
- Structures determine ownership rights, distributions and tax treatments.
 - Example – MLPs and LLCs are not subject to corporate income taxes.
- Structures impact the ability to raise capital and its use in asset development.
 - Example – MLPs must return majority of free cash flow to unit holders.

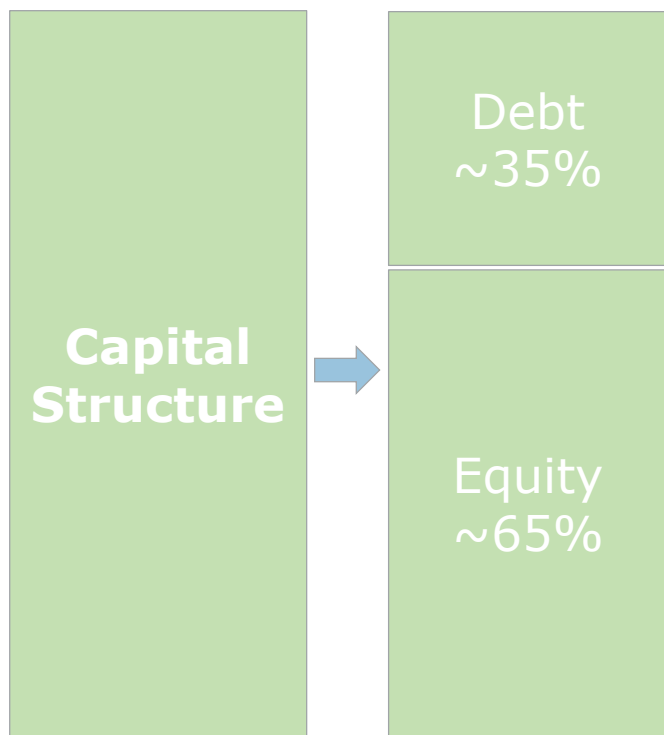
Structure Comparison	MLP	LLC	C-Corp
Non-taxable entity	Yes	Yes	No
Tax burden flow through to investors	Yes	Yes	No
Distribution Tax Shield (to investors)	Yes	Yes	No
Tax Reporting	K-1	K-1	1099
General Partner (GP)	Yes	No	No
Incentive Distribution Rights (IDRs)	Yes	No	No
Voting Rights	No	Yes	Yes

Source: Morgan Stanley Research, Wells Fargo Securities, LLC, Credit Suisse, National Association of Publicly Traded Partnerships (NAPTP)

Capital Structure

Key Points:

- Capital structure determines how companies finance growth – components are equity (ownership) and debt (borrowing)
- Debt is less expensive and provides financial leverage; however, it increases financial risk.



Debt

- Less expensive
- Unsecured or secured (mortgages/liens)
- Investment grade (unsecured)
 - driven by credit metrics
- Non-investment grade (secured)
 - driven by asset value

Equity

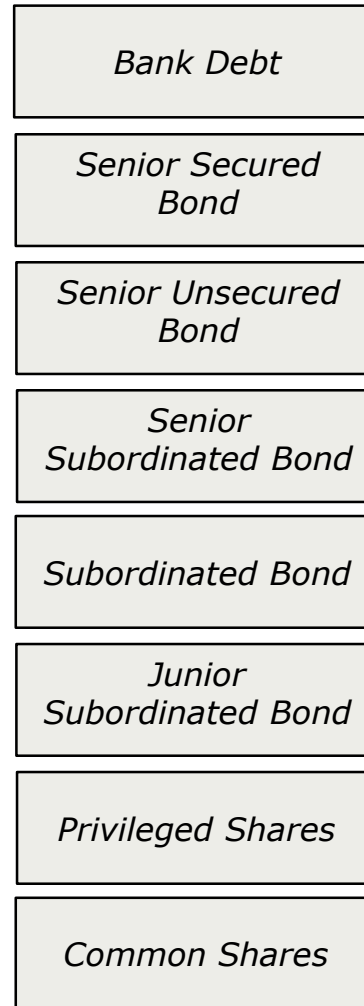
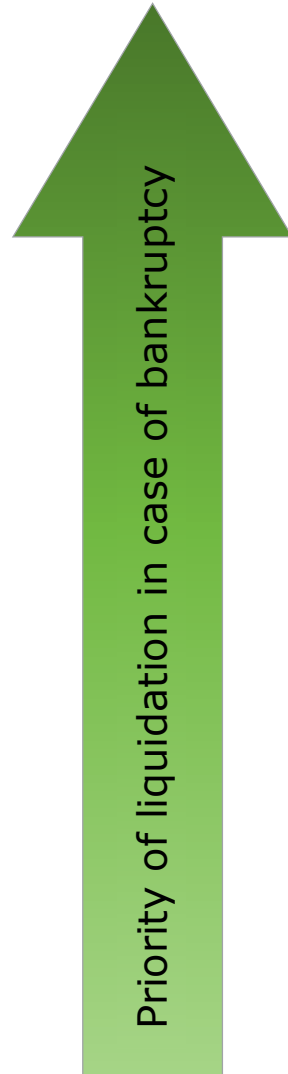
- More expensive part of capital structure
- Public or private equity

Priority of Capital Recovery in Bankruptcy

Key Points:

- Bank debt is at the top of the food chain from a low risk perspective.
- Equity owners are SOL¹ in situations leading to bankruptcy.

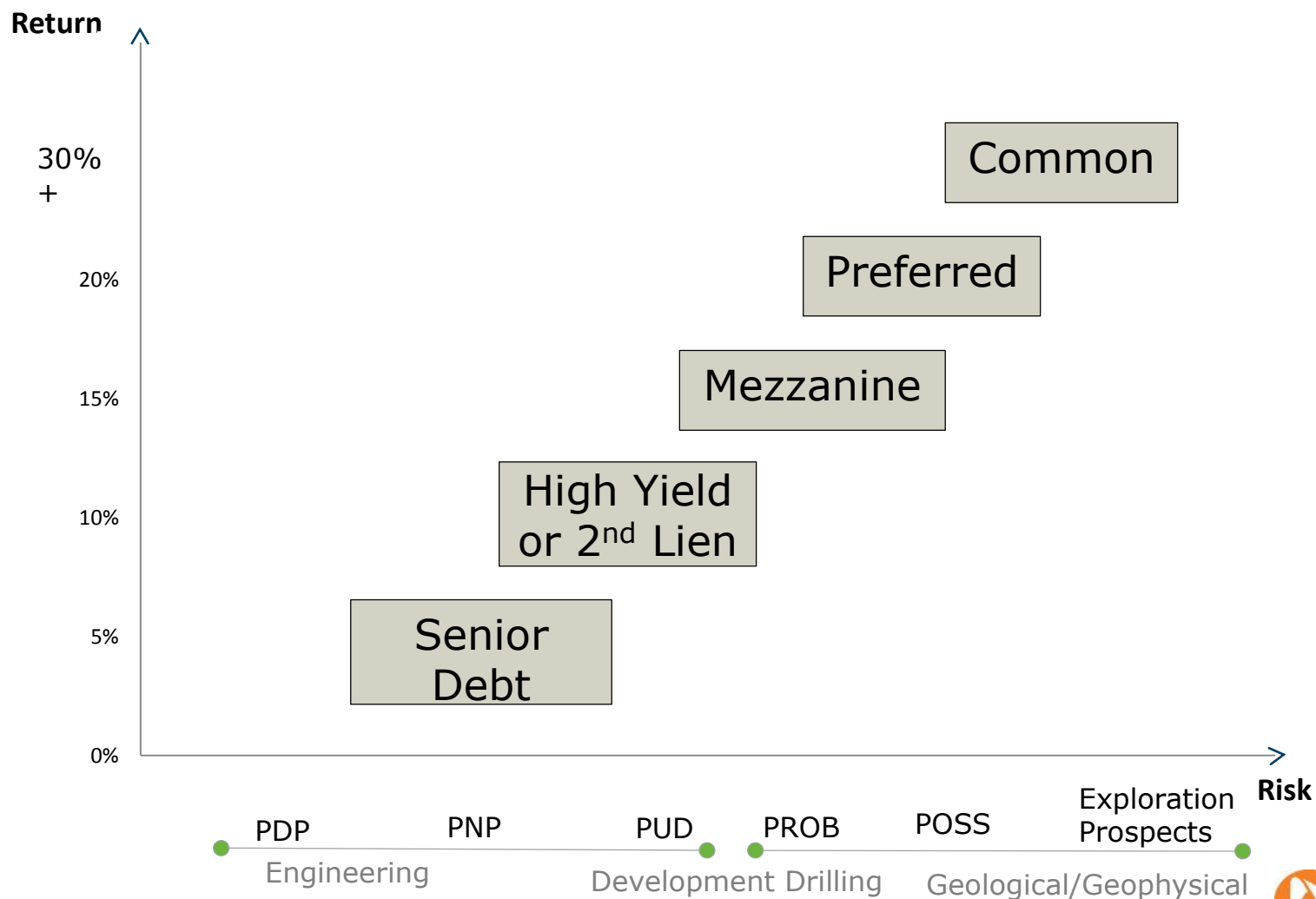
¹SOL – sadly out of luck



Risk and Return

Key Points:

- Equity owners generally have higher returns on investment, but not secured.
- The security of the senior debt resides in asset value of proved reserves and receiving fees and interest payments on debt.
- The second lien and high yield bonds receive higher interest payments consideration.



Bank versus Mezzanine Financing

Secured Bank Debt

- Conservative advanced rates on 1P values
- Borrowing base controls advances
- First lien on collateral, i.e., assets
- Covenants such as debt/EBITDA ratio
- Minimal fees
- Pricing grid base on usage
- Revolver and term loan
- Hedging optional

Mezzanine Debt

- High advanced rates against PDPs
- First or second lien on development, nonrecourse
- Few or no financial covenants
- Fees upfront and prepayment fees, plus equity
- Fixed interest spread higher
- Monthly cash flow sweep to amortize loan
- Hedging required

Investment vs Non-Investment Grade

Key Point:

- Investment grade senior debt or bonds have a relatively low risk of default.

Investment Grade

- Unsecured senior debt and bonds
- Loan value based on credit rating/metrics
- Lower cost of debt
- Business risk factors
 - Stability of cash flows
 - Industry market position
 - Management ability
 - Efficiency and productivity
 - Strategic direction



ExxonMobil

ConocoPhillips

noble energy



Marathon Oil

Non-investment Grade

- Secure senior debt, generally unsecured bonds
- Loan value based on proved reserves
- Higher cost of debt
- Financial risk factors
 - Debt and leverage
 - Debt protection measures
 - Capital structure
 - Liquidity and financial flexibility
 - Financial policies



CONSOL ENERGY
AMERICA'S ENERGY STARTS HERE.

CONCHO

BREITBURN

LINN Energy

5 C's of Credit

Key Point:

- Five general characteristics that gauge the chance of default are character, capacity, capital, collateral, and conditions

- **Character**
 - Reputation
- **Capacity**
 - Sufficient cash flow to repay loan
- **Capital**
 - Net worth of borrower lessens chance of default
- **Collateral**
 - Assets to secure the debt
- **Conditions**
 - Loan structure, borrower, and the overall economy

Credit Ratings for Public Debt

Key Point:

- Public debt, either investment grade or high yield, requires a credit rating.

- Major credit rating agencies (CRA): Moody's, S&P and Fitch
- Investors/ markets generally require issuer to be rated from an agency
- Ratings are updated/ revised based on the company's and industry outlook
- Agencies have their own methodology for rating

**STANDARD
& POOR'S**



FitchRatings

Moody's Credit Rating System

Key Point:

- Moody's credit mapping is based on four major factors: Reserves/ Production, Operating & Capital Efficiency, Leverage & Cash Flow Coverage and Production Mix Overlay

Investment Grade

Non-Investment Grade

Factor 1. Reserves and Production Characteristics (40%)

	Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Avg Daily Production (Mboe/d) (LTM)	15%	≥ 2,750	1,100 - 2,750	550 - 1,100	140 - 550	55 - 140	20 - 55	10 - 20	< 10
Proved Developed Reserves (Million boe)	15%	≥ 8,000	4,000 - 8,000	1,500 - 4,000	300 - 1,500	100 - 300	25 - 100	10 - 25	< 10
Total Proved Reserves (Million boe)	10%	≥ 10,000	5,000 - 10,000	2,000 - 5,000	500 - 2,000	100 - 500	30 - 100	10 - 30	< 10

Factor 2. Operating and Capital Efficiency (20%)

	Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Leveraged Full-Cycle Ratio	20%	≥ 5x	3.5x - 5x	2.75x - 3.5x	2.0x - 2.75x	1.5x - 2.0x	1x - 1.5x	0.5x - 1x	< 0.5x

Factor 3. Leverage and Cash Flow Coverage (40%)

	Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
E&P Debt / Average Daily Production	10%	< \$4.5k	\$4.5k - \$9k	\$9k - \$15k	\$15k - \$21k	\$21k - \$27k	\$27k - \$33k	\$33k - \$39k	≥\$39k
E&P Debt / PD boe Reserves	10%	< \$1	\$1 - \$3	\$3 - \$5	\$5 - \$7	\$7 - \$9	\$9 - \$12	\$12 - \$15	≥\$15
RCF / Total Debt	10%	≥125%	100% - 125%	75% - 100%	50% - 75%	35% - 50%	20% - 35%	10% - 20%	< 10%
EBITDA / Interest Expense	10%	≥ 35x	25x - 35x	15x - 25x	10x - 15x	6x - 10x	2x - 6x	0.5x - 2x	< 0.5x

Factor 4: Production Mix Overlay

	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Composite Score Adjustment	-1	-0.8	-0.6	-0.4	-0.2	0	0.2	0.4
E&P Unleveraged Cash Margin / BOE	≥ \$45	\$40 - \$45	\$35 - \$40	\$30 - \$35	\$25 - \$30	\$20 - \$25	\$10 - \$20	< \$10

Source: Moody's Investor Service, 2011. Rating Methodology, Global Independent Exploration and Production Industry

Other Rating Considerations

- **Management risk**
- **Corporate governance**
- **Financial controls**
- **Liquidity management**
- **Political risk**
- **Marketing risk**
- **Regulatory risk**
- **Environmental risk**



Source: Moody's Investor Service, 2011. Rating Methodology, Global Independent Exploration and Production Industry

Reserve Base Lending

- **Senior debt and risk where the loan amount is based on the value of the oil and gas assets**
- **Three common structures**
 - *Reserve Based Loan Revolver using a borrowing base methodology*
 - Large bank market
 - Cheapest form of capital
 - 1st and 2nd lien
 - *Project Finance*
 - Typically for large projects to provide non-recourse financing
 - Examples: large international projects, FPSOs, LNG plants
 - *Volumetric Production Payments*
 - Seller retains full ownership while monetizing some asset value
 - Buyer does not contribute any time or capital to production
 - Not often used today

Loan Term Sheet

Key Point:

- Banks calculate a borrowing base using 1P risked reserve values and asset base coverage ratios

Borrower	<ul style="list-style-type: none"> ▪ Camp David Resources 			
Guarantors	<ul style="list-style-type: none"> ▪ All existing and future domestic material subsidiaries of the Borrower 			
Facility	<ul style="list-style-type: none"> ▪ \$750 million Senior Secured Revolving Credit Facility <ul style="list-style-type: none"> ▪ \$500 million Borrowing Base ▪ \$15 million L/C sublimit 			
Security	<ul style="list-style-type: none"> ▪ First priority mortgage interest on (i) at least 80% of the present value of proved reserves as the most recent reserve report, (ii) 100% stock of subsidiaries and (iii) all other material property 			
Maturity	<ul style="list-style-type: none"> ▪ December 1, 2020 			
Pricing Grid	Utilization	LIBOR Margin	Base Rate Margin	Commitment Fee
	≥ 90%	300 bps	200 bps	50 bps
	≥ 75%; < 90%	275 bps	175 bps	50 bps
	≥ 50%; < 75%	250 bps	150 bps	50 bps
	≥ 25%; < 50%	225 bps	125 bps	50 bps
< 25%	200 bps	100 bps	50 bps	
Financial Covenants	<ul style="list-style-type: none"> ▪ Maximum Senior Leverage Ratio: 2.50x ▪ Maximum Leverage Ratio: 4.00x ▪ Minimum Current Ratio: 1.00x ▪ Minimum Interest Coverage Ratio: 2.50x 			

Bank Loan Considerations

■ Financial Structure & Cashflow Analysis

- ▶ Liquidity
- ▶ Sufficient capital to execute strategy
- ▶ Reliance on events or strong pricing

■ Asset Profile

- ▶ Diverse asset base
- ▶ Well/ field concentration
- ▶ PUD limitations
- ▶ Production history
- ▶ Reserve mix

Quality of Management & Sponsors

- ▶ Track record
- ▶ Reputation
- ▶ Access to capital
- ▶ Company strategy

■ Economic Risks

- ▶ Oil and gas price and differentials
- ▶ Hedging
- ▶ Capital program
- ▶ Drilling success

■ Borrowing Base Analysis

- ▶ Loan amount based on PV9 or PV10
- ▶ Coverage ratios, advance rates, risked cash flows, price decks and % non-PDP contribution
- ▶ Re-determined 2 times a year

Risk and Mitigation

- Oil and Gas Reserves
 - Lend against proved reserves
 - Reserves are evaluated by reputable independent consultants
 - Independent consultants work is reviewed and adjusted by lender's in-house engineers
 - Review of historical operating and capital costs
 - Appropriate advance rates/ risk adjustments applied by lender's engineering to quality of reserves
- Commodity Price
 - Evaluated using expected future values and basis differential history
 - Price sensitivity analysis performed
 - Hedging required as appropriate
 - Counterparties acceptable to lender
 - Hedging programs reported to lender
 - Hedging limits, generally 80% to 100% of projected PDP volumes
- Management
 - Known to lender management or appropriate third party references
 - Third party background checks
- Financial Controls
 - Financial reporting systems and procedures are reviewed by independent consultants
- Environmental
 - Properties reviewed by third party environment consultant or internally by agent
- Title
 - Ownership reviewed by legal counsel (typically 80% of NPV 9% mortgaged)

Section 3.

Cash Flow, Liquidity and Debt

Capital providers as risk takers focus on return on investment



Capital Providers Follow Capital Management Closely

Key Point:

- Long-term low prices or growth lead can accelerate companies down the slippery slope to insolvency.



Top U.S. Operators and Debt

Key Points:

- If you can avoid excessive debt maybe you can avoid or significantly delay the slippery slope.
- Example, ratios such as debt to EBITA and to market cap, as well company size are part of the equation.

Operator	Debt to EBITDA	Debt to Market Cap	MBOEPD	% Gas Production
Exxon	0.66	0.09	3,969	46%
Occidental	0.80	0.12	645	24%
EOG	0.85	0.16	595	38%
Pioneer	0.95	0.14	198	31%
Chevron	1.09	0.19	2,681	33%
BHP	1.12	0.31	718	36%
Shell	1.15	0.24	3,080	65%
Concho	1.28	0.26	132	32%
Amerada Hess	1.32	0.35	361	10%
WPX	1.32	0.95	169	70%
Devon	1.40	0.56	685	40%
ConocoPhillips	1.43	0.35	1,610	42%
Apache	1.44	0.70	640	38%
Noble	1.71	0.40	310	57%
Continental	1.93	0.52	206	31%
Encana	1.96	0.94	536	87%
Chesapeake	2.01	1.92	686	71%
Range	2.05	0.49	229	70%
Denbury	2.05	2.47	74	5%
Southwestern	2.17	0.70	453	92%
BP	2.34	0.50	2,112	20%
Anadarko	2.36	0.47	843	51%
CRC	3.30	3.76	165	36%
Exco	3.33	8.07	57	90%
Cabot	4.73	0.19	250	96%

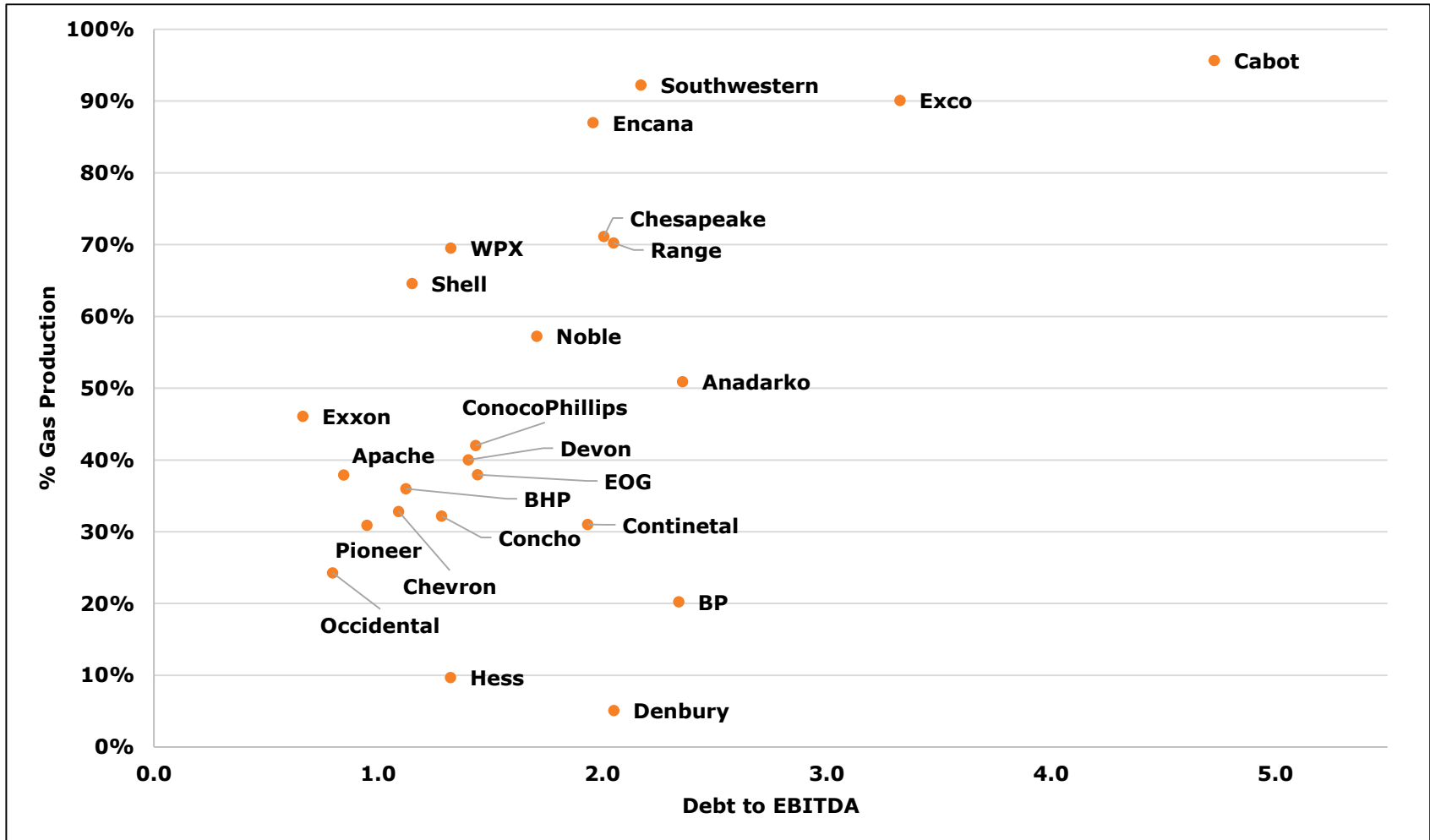
(1) EV, MC, debt, EBITDA statistics taken from Yahoo Finance on 7/30/2015.

(2) MBOEPD and % gas production were calculated with numbers from the company's most recent financial statements.

Correlation of Gas Production to Debt/EBITDA Ratio

Key Points:

- Currently debt to EBITDA does not appear to have a strong correlation to gas or oil production.
- As these are trailing statistics, it may much different at the end of the year as oil prices stay depressed.

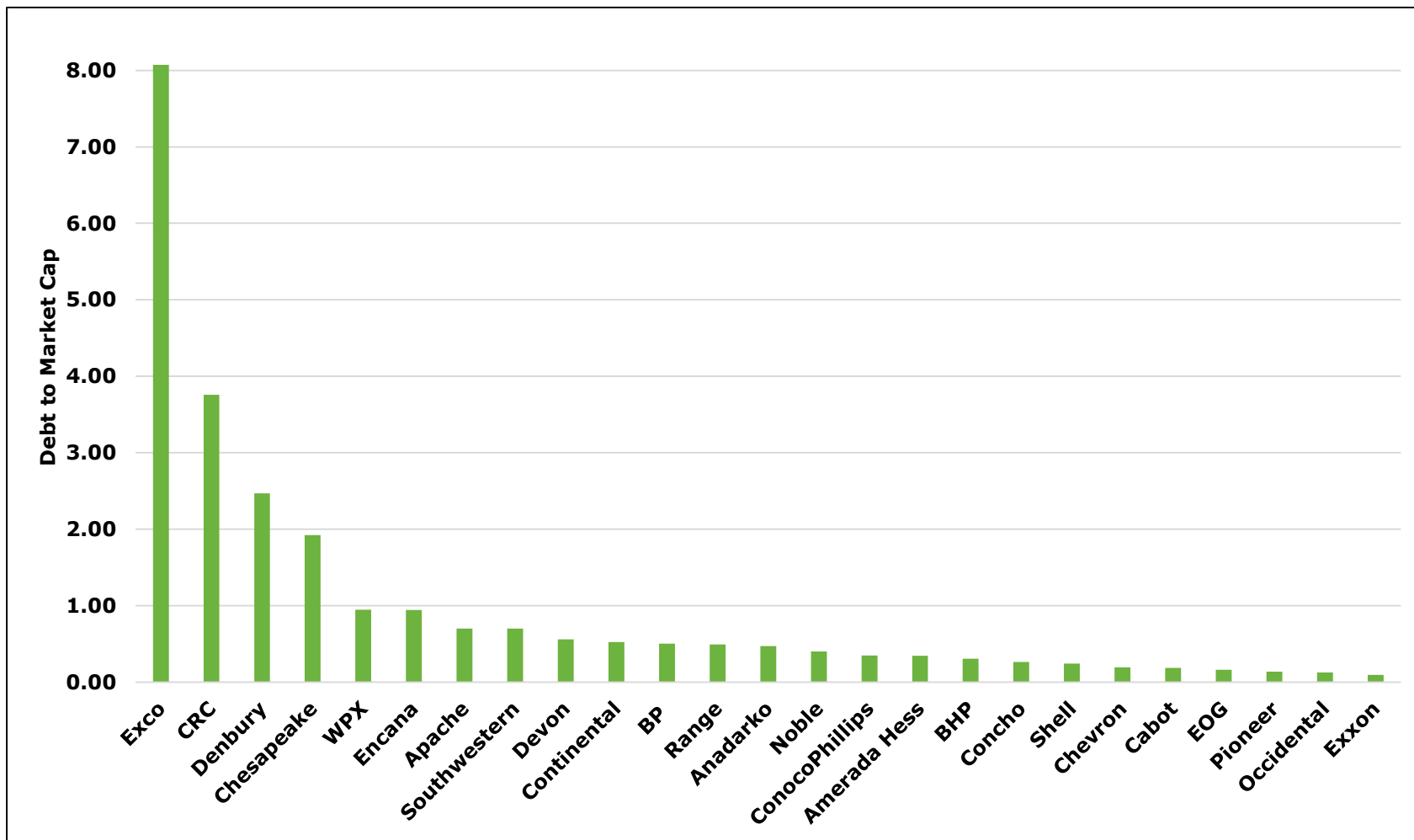


Source: Yahoo Finance

Debt to Market Cap Ratio

Key Points:

- Debt to market cap is almost a magnitude difference across the top 25 companies.
- Each company has a unique story, high ratios are a red flag and should be priority in risk analysis.

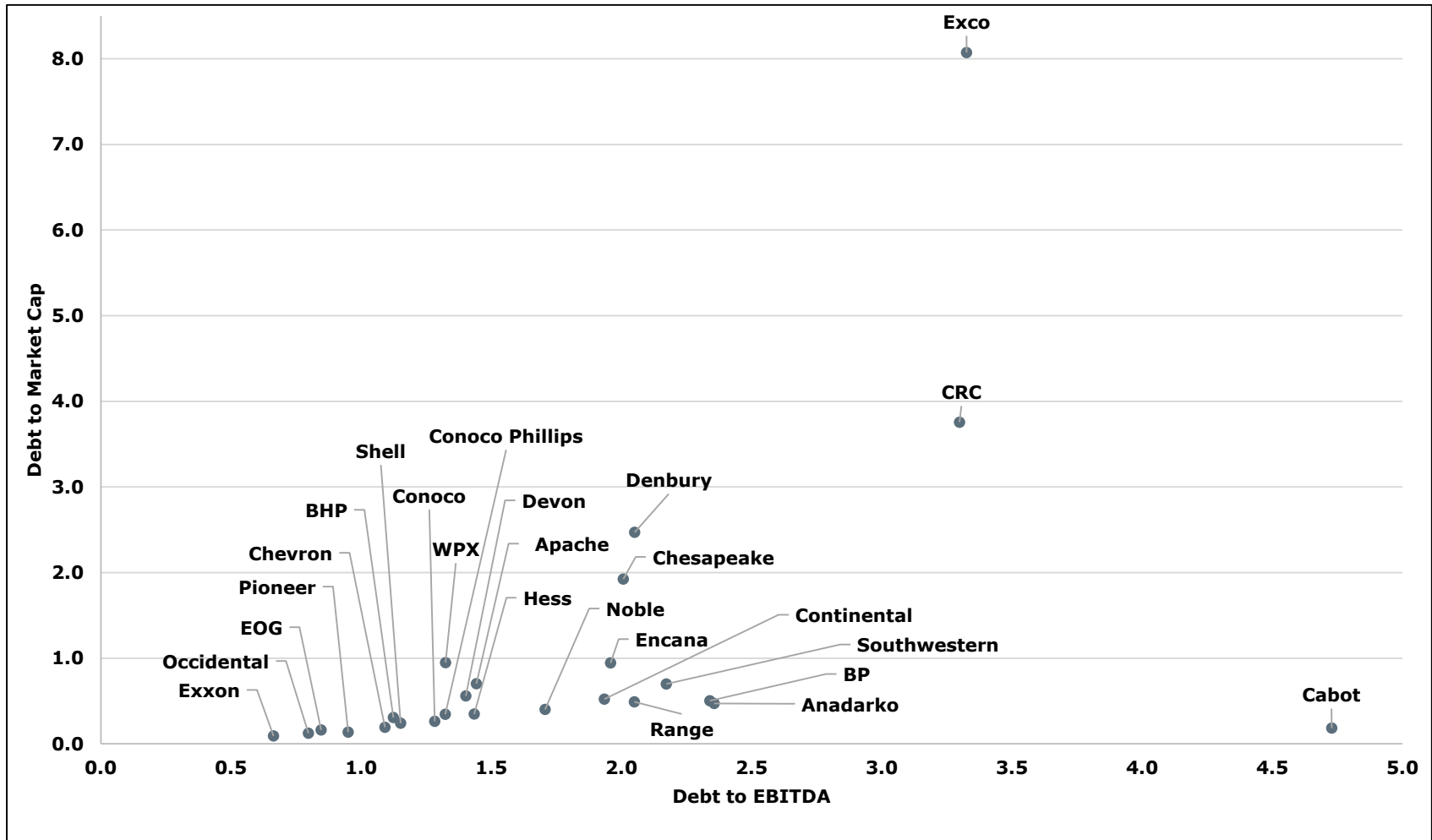


Source: Yahoo Finance

Cross Plot of Debt to EBITDA and Debt to Market Cap

Key Point:

- Cross plots of different variants provide a look for outliers that further define higher risk potential.



Source: Yahoo Finance

Section 4.

US Market Trends

Survival mode to preserve liquidity

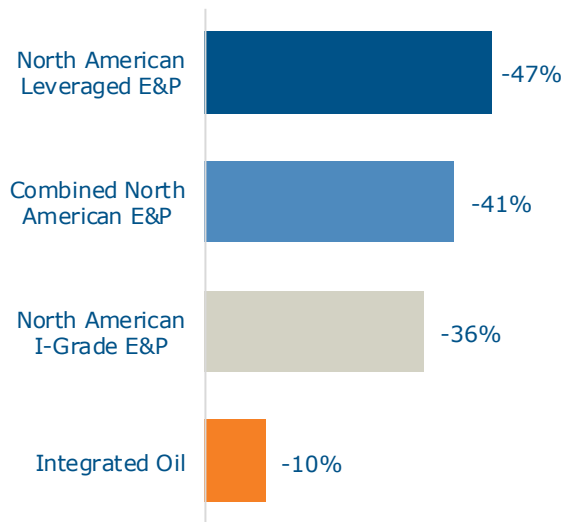


2015 Capital Budgets Cut Significantly to Preserve Liquidity...

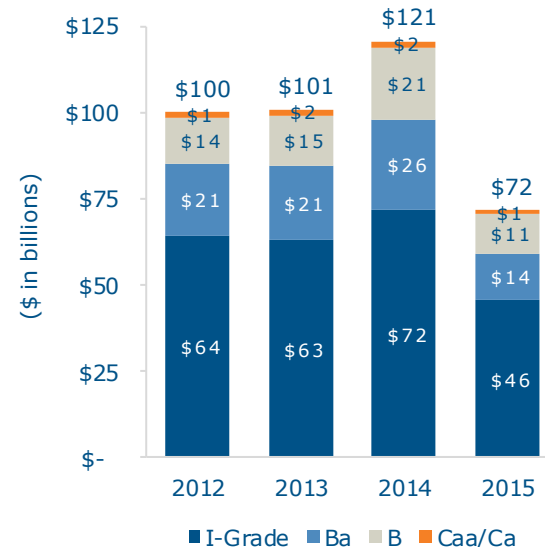
Key Points

- Per Moody's, North American E&P companies are expected to reduce capital spending dramatically in 2015 by an aggregate 41%
 - Non investment grade North American E&P companies will reduce capital spending by 47%, while investment grade companies will reduce capex by 36%
- As low commodity prices persist, E&P companies will look to preserve liquidity by reducing development activities and restricting capital spending to the highest returning assets; however, some companies will have to outspend cash flow to hold their leased acreage
- Only about 6% of the rated North American E&P companies plan to increase capital spending in 2015, while 21% of them will reduce capital budgets by over 60%
 - Over half of the E&P companies plan to reduce capital spending by at least 40%, and 77% will cut spending by at least 20%

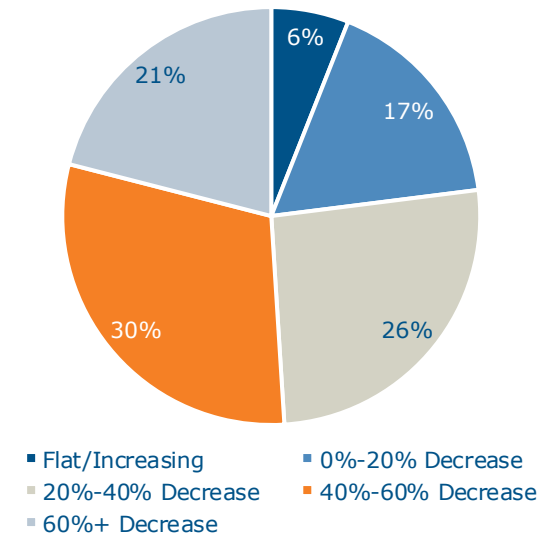
E&P Companies Cut Capex by 41% in 2015



Capex Cuts Dispersed Among Ratings Spectrum



Majority of E&P Companies Cut Capex > 40%



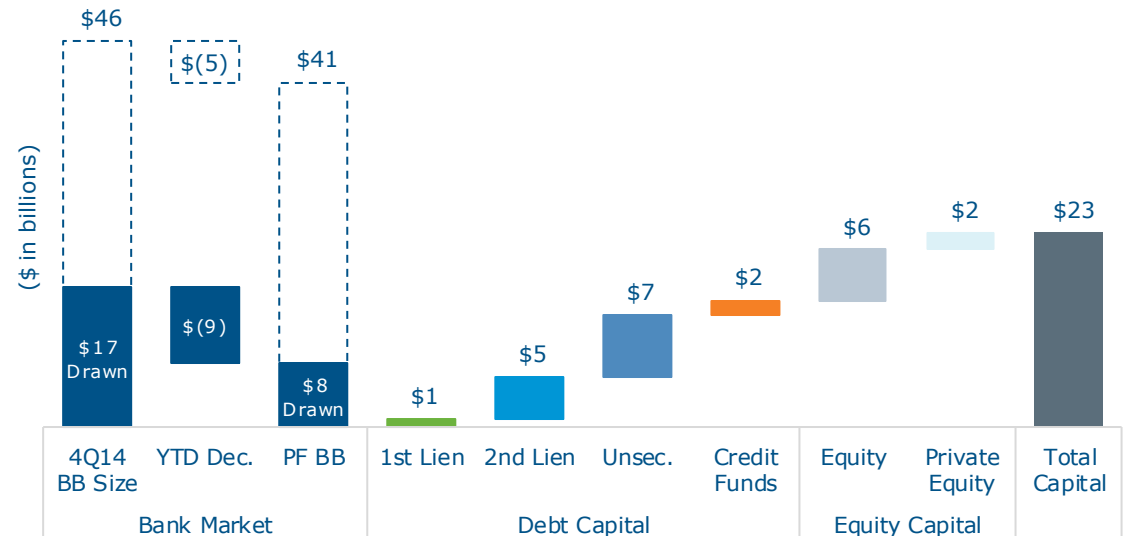
Source: Moody's, SEC filings

...Leveraged Upstream Credits Further Bolster Liquidity

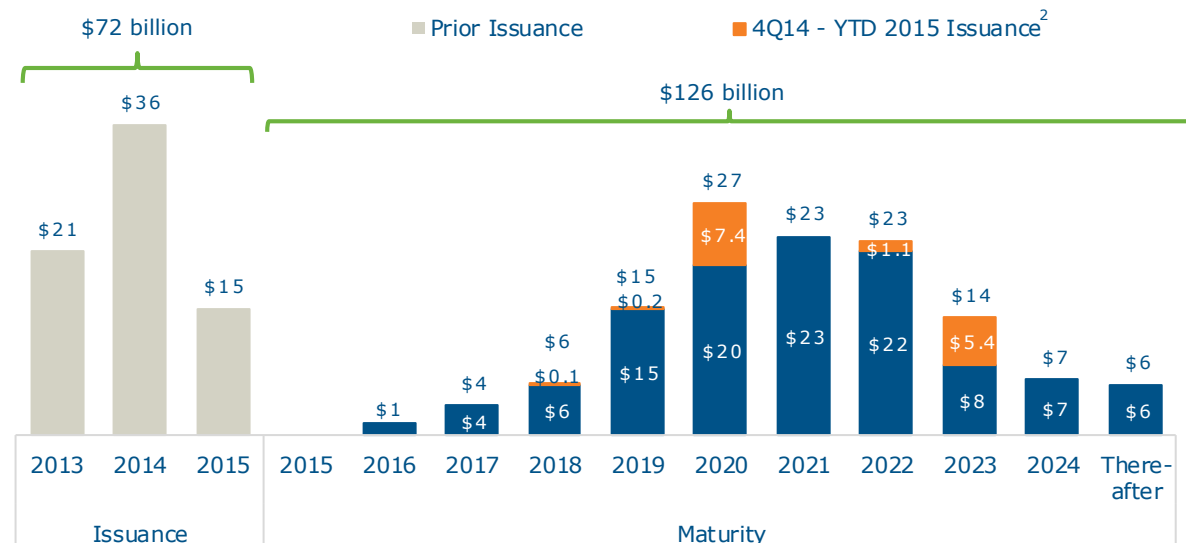
Key Points

- Lower commodity prices have created downward pressure on the value of reserves and operating cash flow, ultimately decreasing the liquidity / borrowing base availability to leveraged borrowers
 - Banks have lowered price decks substantially since the 3Q14 borrowing base season
 - High cost producers with limited hedge books have felt the greatest impact
- Alternative sources of capital and capital markets issuances have offset borrowing base reductions and prefunded 2015 / 2016 capital plans
 - E&P companies have raised over \$23 billion in financing since the beginning of 4Q14
 - Multiple Private Equity groups, including GSO, EIG, Riverstone and KKR, have announced plans to raise over \$10 billion in new funds to target investments in distressed and undervalued energy companies
- Upstream bonds currently comprise approximately 8% of the entire High Yield universe (Total Oil & Gas encompasses over 14%)
 - Over 60% of outstanding High Yield Upstream bonds have been issued since the beginning of 2013, extending the refi-cliff to 2017 and beyond

4Q14 – YTD 2015 Leveraged Upstream Liquidity Actions ¹



Leveraged Upstream Bond Maturity Wall



¹ Data includes subset of High Yield Upstream issuers who have issued Debt / Equity for liquidity purposes in 4Q14 - 2Q15 or Amended their RBL facility

² Excludes CRC's \$5 billion issuance on 10/1/14; YTD as of 7/29/15

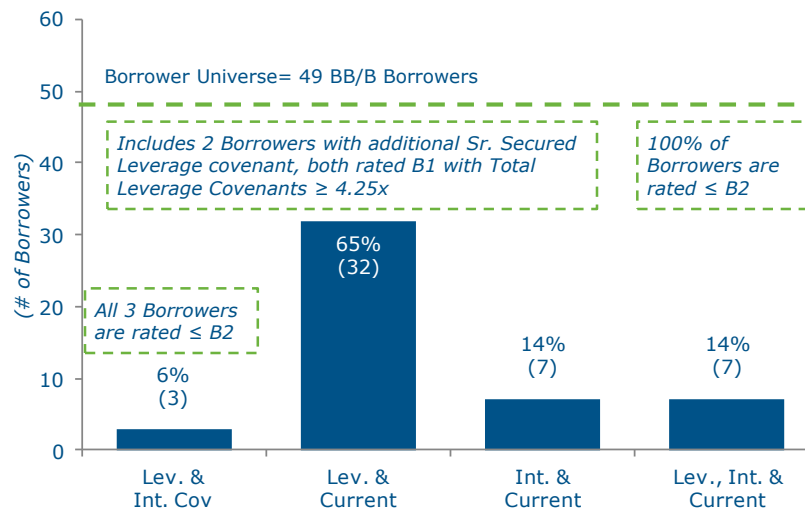
Source: Bloomberg, S&P Capital IQ (LCD), Reuters, SEC Filings

Pre 4Q14 BB/B RBL Revolver Covenant Packages

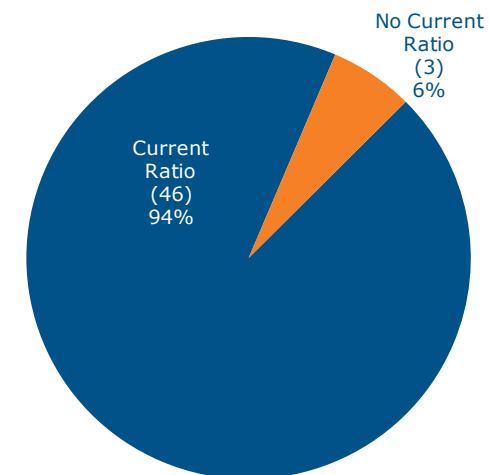
Key Points

- Prior to the current cycle, the majority of RBL Revolvers have a covenant package comprised of a Leverage Ratio and a Current Ratio
 - Interest Coverage is added or replaces the Current Ratio in covenant packages at lower credit profiles
 - Leverage Ratios are typically 4.00-4.25x at close; if higher, step down to these levels over time
- The Current Ratio and Interest Coverage covenant package has become more prevalent – initially used for higher leveraged credits and/or companies with steep growth plans

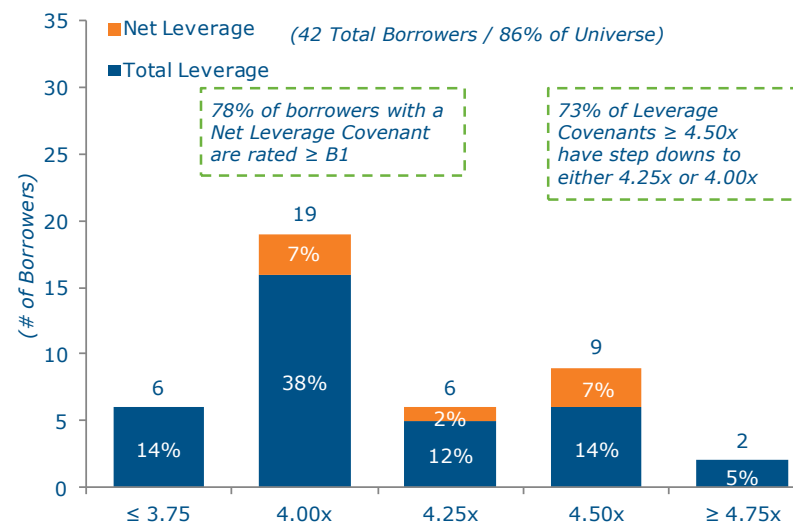
Total BB/B Borrower Universe Covenant Packages¹



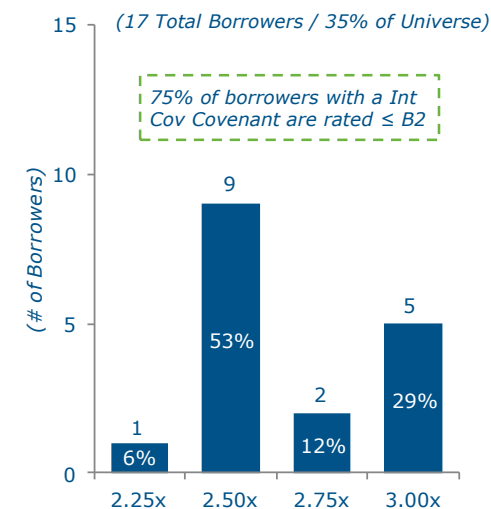
Covenant Packages With Current Ratio



Leverage Ratio Covenant Levels



Interest Coverage Covenant Levels



¹ Chesapeake Energy Corp has a Leverage Covenant and a Debt to Cap covenant, and is not shown
Source: Moody's, SEC filings

Borrowing Base Reductions Offset by Covenant Relief

Key Points

- Companies that are currently challenged, or expect to be challenged later this year have started to approach the banks to amend their covenant packages, particularly if they have capital markets activity
 - 71% of amendments since the start of 4Q14 have included a Borrowing Base reduction
 - 58% have raised new capital alongside the request for covenant relief
 - Only 33% have included an increase to the pricing grid
- Banks have generally been supportive, providing covenant relief for companies that have strong liquidity and a disciplined capital strategy
 - Senior Secured / 1st Lien Leverage covenants and Asset Coverage Tests have replaced Total Leverage Packages
 - Prior to 4Q14, only 5 (21%) companies had a covenant package that contained three or more covenants -- post amendment activity, 13 (54%) companies have a 3+ covenant package

Upstream Covenant Actions

(\$ in millions)

	Pre-4Q14							4Q14-2Q15							BB Dec. (\$)	Cap. Raise (\$)	Pricing Inc. (bps)			
	Ratings		Leverage Tests			Coverage Tests		Ratings		Leverage Tests			Coverage Tests							
	Moody's	S&P	1st Lien	Sr. Sec.	Total	Interest	Current	Asset	Moody's	S&P	1st Lien	Sr. Sec.	Total	Interest				Current	Asset	
Atlas Resource Partners LP	B2	B			4.50x		1.00x		B2	B			3.00x	5.25x		1.00x		(150)	325	25
Breitbart Energy Partners	B1	B+				2.50x	1.00x		B1	B+					2.50x	1.00x		(700)	1,000	25
California Resources	Ba1	BB+			4.50x	2.50x			Ba2	↓ BB+			Up to 8.25x ¹		2.25x			(\$750MM minimum liquidity)		
Clayton Williams Energy	B2	B			4.00x		1.00x		B2	B			2.50x		1.50x	1.00x		(100)		25
Comstock Resources	B2	B			4.00x	2.50x			B3	↓ B						1.00x	2.50x	(625)	700	
Concho Resources	Ba2	BB+			4.25x		1.00x		Ba2	BB+			4.25x		(reduced net cash)				748	
Energy XXI	B2	B		1.75x	3.50x	3.00x	1.00x		Caa2	↓ B-	↓	1.25x	3.75x			1.00x		(1,000)	1,450	75
EV Energy Partners	B1	B		3.50x			1.00x		B1	B			3.50x			1.00x		(80)		25
EXCO Resources	B1	B			4.50x		1.00x		B1	B			2.50x		2.00x	1.00x		(175)		
Goodrich Petroleum	B3	B-			4.00x	2.50x	1.00x		Caa1	↓ B-			2.50x		2.00x	1.00x		(80)	150	
Halcon Resources	Caa1	CCC+				2.00x	1.00x		Caa2	↓ SD	↓		2.75x			1.00x		(105)	850	
Linn Energy	Ba3	BB-				2.50x	1.00x		Ba3	BB-					2.50x	1.00x		(500)	1,500	
Magnum Hunter	B3	B-		2.50x			1.00x	1.00x	B3	CCC+	↓		(waived)			1.00x				25
Midstates Petroleum	B3	B			4.00x		1.00x		Caa1	↓ B-	↓			4.50x		1.00x				
Northern Oil & Gas	B3	B			4.00x		1.00x		B3	B			2.50x		2.50x	1.00x				
PetroQuest	B3	B			3.00x		1.00x		B3	B			2.25x		2.00x	1.00x				30
Resolute Energy	B2	B-		2.75x	4.75x		1.00x		B3	↓ B-		2.25x	3.50x			1.00x	1.00x	(95)	200	
Rex Energy	B2	B		1.75x	4.25x	3.00x	1.00x		B3	↓ B-	↓		3.00x		3.00x	1.00x		(50)		
Rice Energy	B2	B-				2.50x	1.00x		B2	B	↑				2.50x	1.00x		(100)	400	
Rosetta Resources	Ba3	BB-			4.00x		1.00x		Ba3	BB-			2.50x		2.50x	1.00x				237
Samson Resources	B1	B-		1.50x	5.75x				Caa3	↓ CCC+	↓	2.75x						(50)		50
Sanchez Energy	B2	B			4.00x		1.00x		B2	B			2.25x		2.25x	1.00x		(100)		
Sandridge Energy	B1	B			4.50x		1.00x		B1	CCC+	↓	2.00x				1.00x		(700)	1,250	
W&T Offshore	B2	B			3.50x		1.00x		B3	↓ B		2.50x	3.50x		2.20x	0.75x		(250)	300	50
% with Covenant			4%	21%	75%	38%	88%	4%			21%	63%	17%	54%	88%	8%	71%	58%	33%	

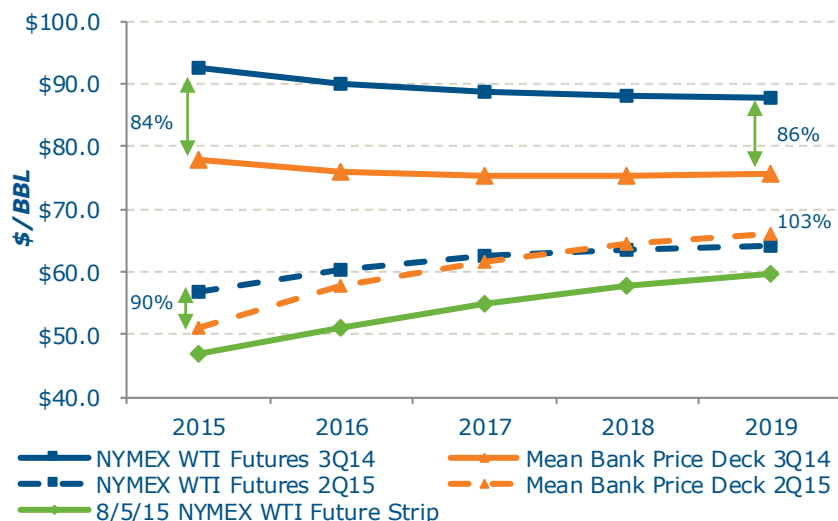
¹ Leverage covenant steps up quarterly to 8.25x by 12/31/15, then steps down quarterly to 4.50x by 3/31/17

Lending Guidelines

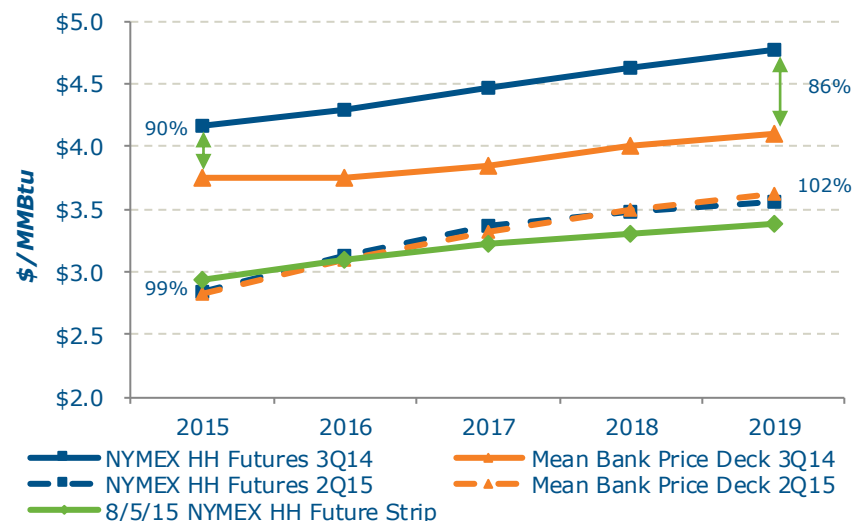
Key Points

- Banks will review the Company's reserve report regarding estimates of operating costs, expected ultimate recovery of reserves, production rates, hedged positions, capital expenditures needed to convert reserves into the PDP category and make technical adjustments based on their professional judgment
 - Engineers will provide engineering runs based on the Price Deck and the Company's hedge position that conform with each respective bank's energy lending policy with respect to risking, concentration and reserve splits
 - Hedged positions will be evaluated separately from the reserve base; however, the same advanced rates used on the reserve base will be applied to the hedges
- The steep decline, and continued volatility of commodity prices have caused banks to reassess their internal price decks several times since the start of 4Q14, and most recently April 2015
 - Banks have increased WTI and Henry Hub advance rates to help lessen the impact of falling commodity prices on companies
 - Pressure from bank regulators may encourage banks to tighten lending standards (i.e. advance rates) to RBL loans entering the fall redetermination period
 - Banks are expected to reevaluate their pricing decks in September 2015 amidst recent significant drops in WTI

2Q 2015 WTI Mean Base Case to NYMEX Trends (\$/BBL)



2Q 2015 HH Mean Base Case to NYMEX Trends (\$/MMBtu)



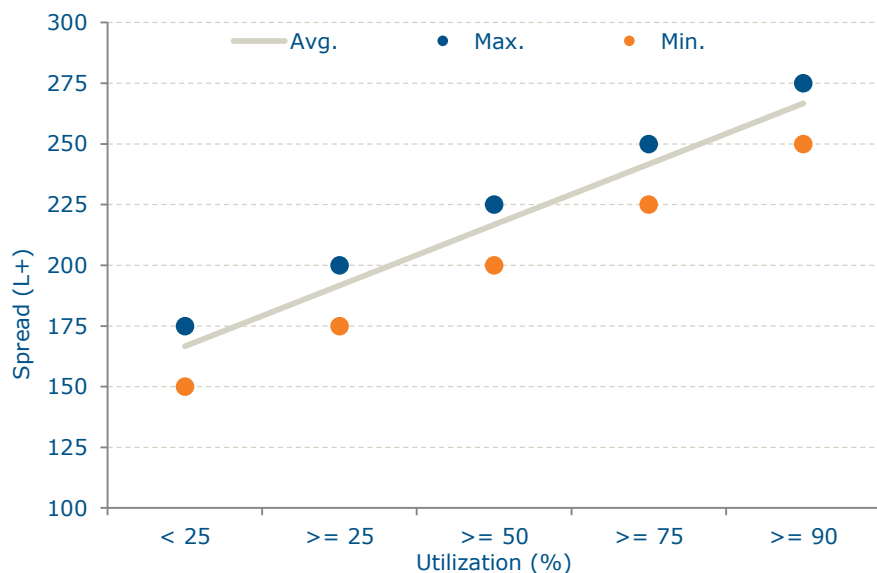
Source: Mean Base Cases per 2Q15 Macquarie Tristone Lender Survey; 2Q15 NYMEX Future Prices per Bloomberg as of April 7, 2015; 3Q14 NYMEX Future Prices per Bloomberg as of August 11, 2014.

Upstream Borrowing Base Spreads Widen

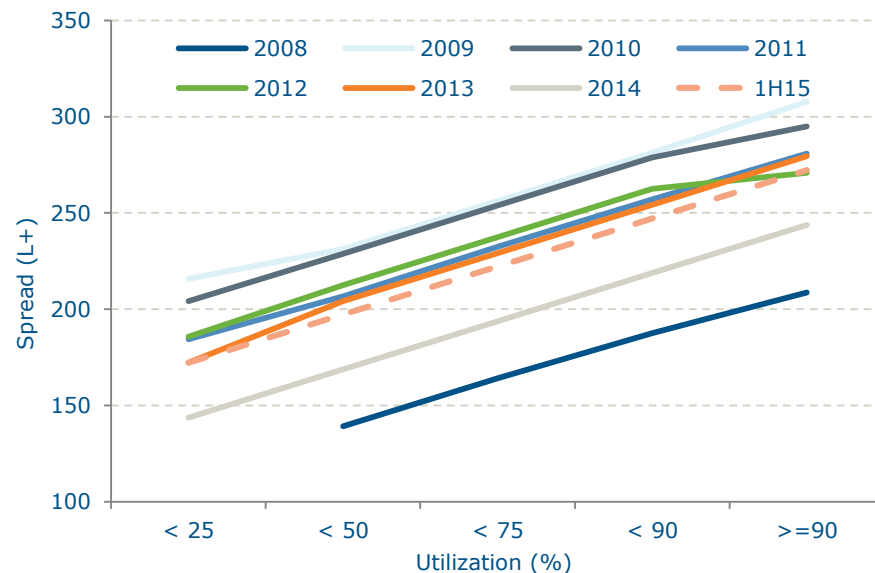
Key Points

- Average borrowing base spreads have tightened modestly since the beginning of 2009 due to increased competition and a large appetite for funded assets
- However, spreads through 1H15 are wider by 28.5 bps on average from 2014 levels
 - 2Q15 Avg. facility size of \$900 million
 - 2Q15 Avg. tenor of 4.38 years
- Depressed industry dynamics and increased regulatory pressure may lead to ongoing price discovery across the industry throughout the fall 2015 redetermination season

2Q15 Avg. E&P Borrowing Base Spreads



2008 - 1H15 Avg. E&P Borrowing Base Spreads



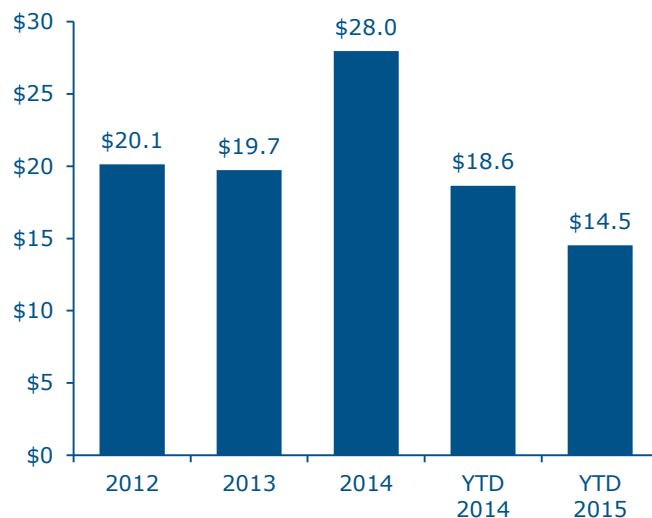
Source: Loan Pricing Corporation

High Yield Upstream Market Overview

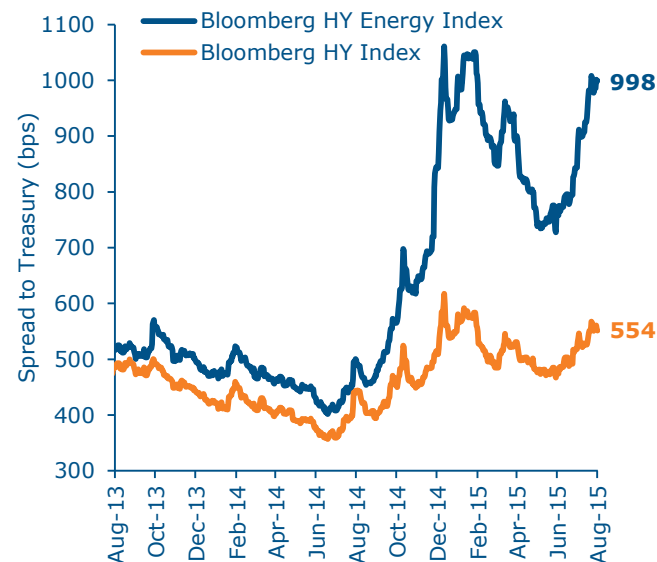
Key Points

- Low interest rates and demand for high yield assets also “fueled” demand for upstream high yield bonds
 - 2014 saw \$28.0 billion issued across 46 tranches, twice the issuance in 2011
 - While full-year issuance eclipsed 2013’s tally, issuance in 4Q14 was just \$975 million due to the slide in oil prices
- Upstream issuance had been strong through May 2015, but with the overall high yield market experiencing softness in June and oil falling again in July and early August, issuance has stalled
- RSP Permian issued 7 million shares of stock in addition to the add-on of senior notes to finance an acquisition, demonstrating that strong operators in certain basins have access to the capital markets

HY Upstream New Issue Volume



High Yield Spreads to Treasuries



Recent High Yield Issuance

Issuer	Amount Issued (\$MM)	Bond Rating	Issue Date	Maturity Date	Coupon	Spread at Issuance	As of 8/6/2015		
							Price	G-Spread	Yield to Worst
RSP Permian Inc (Add-on)	\$200	B3/B-	8/5/15	10/1/22	6.625%	475 bps	100.25	493 bps	6.56%
WPX Energy Inc	\$500	Ba1/BB	7/17/15	8/1/20	7.500%	553 bps	101.06	565 bps	7.24%
WPX Energy Inc	\$500	Ba1/BB	7/17/15	8/1/23	8.250%	603 bps	100.75	606 bps	8.12%
Eclipse Resources Corp	\$550	Caa1/CCC+	6/19/15	7/15/23	8.875%	712 bps	94.13	789 bps	9.96%
Amer. Energy-Permian Basin ¹	\$295	B1/CCC+	5/28/15	6/15/20	8.000%	649 bps	95.50	762 bps	9.16%
SandRidge Energy Inc ¹	\$1,250	B1/B	5/28/15	6/1/20	8.750%	723 bps	76.75	1427 bps	15.83%
Midstates Petroleum Co ¹	\$625	B2/B	5/21/15	6/1/20	10.000%	N/A	86.75	1229 bps	13.85%
Hilcorp Energy I LP	\$500	Ba3/BB+	5/20/15	10/1/25	5.750%	350 bps	96.70	395 bps	6.19%
EP Energy LLC	\$800	B1/B	5/19/15	6/15/23	6.375%	424 bps	100.13	457 bps	6.35%
Northern Oil and Gas Inc	\$200	Caa1/B-	5/13/15	6/1/20	8.000%	768 bps	87.06	1022 bps	11.58%

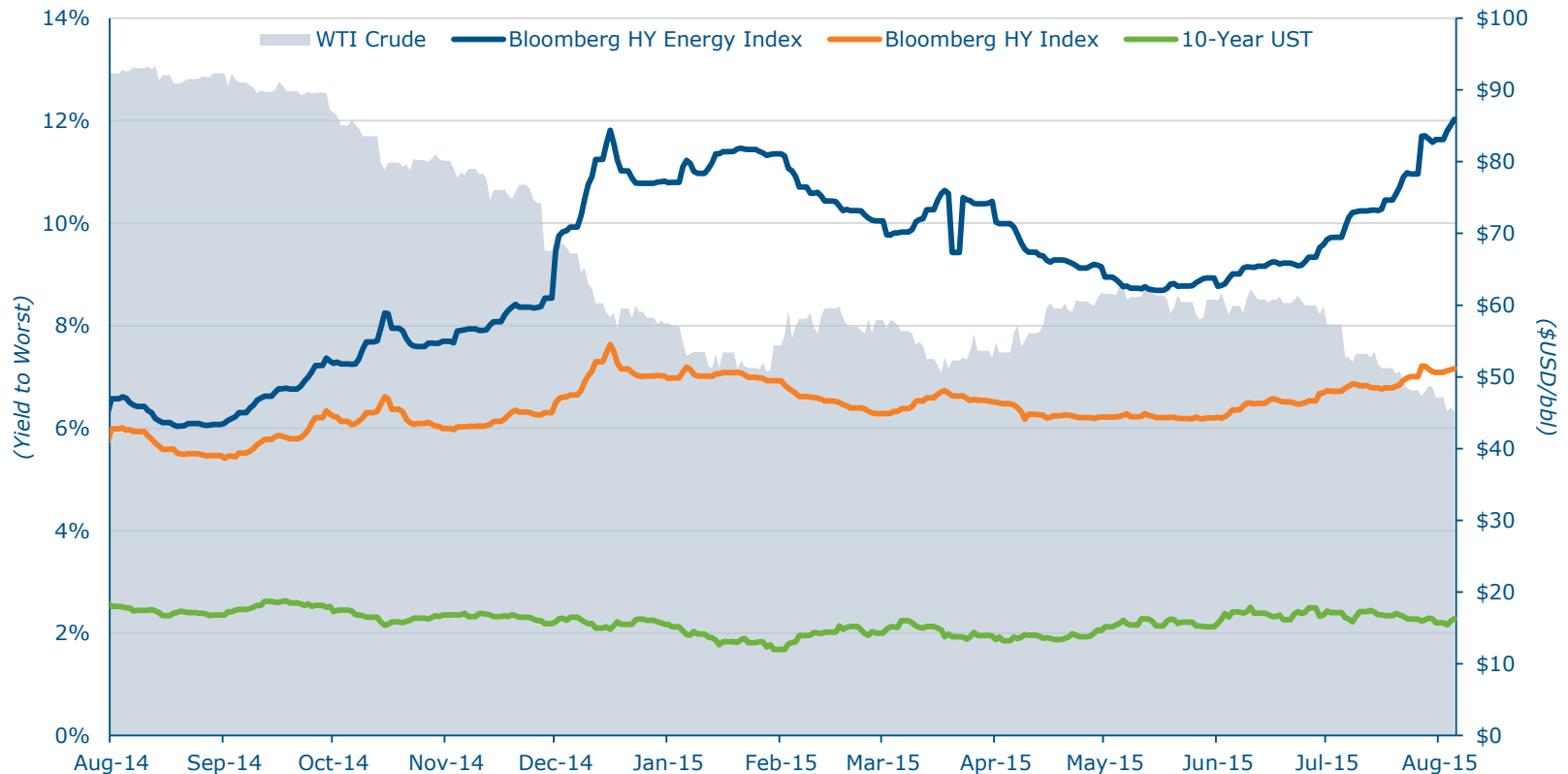
Source: Bloomberg

¹ Secured Issuance

High Yield Energy Bond Spreads Widen as Oil Prices Fall

Key Points

- Treasury yields have remained at historically low levels
- Bond investors continue to look for enhanced yields in the high yield market
- Yields widened significantly in the high yield energy space from June 2014 through January 2015 as a result of lower commodity prices
- Yields narrowed from February 2015 through May 2015 as commodity prices stabilized and companies took measures to cope with a lower price environment
- Recently yields have widened again as a result of declining oil prices

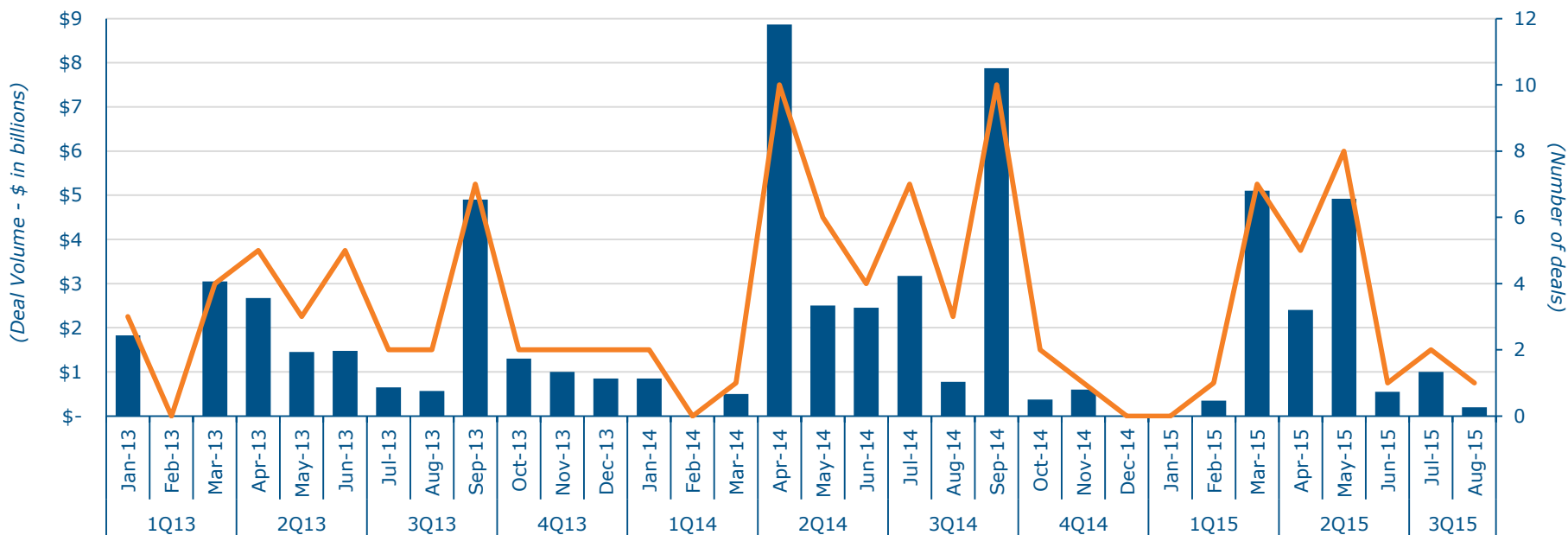


Source: Bloomberg

High Yield Monthly Energy Issuance

Key Points

- Over the last several years, companies took advantage of an active HY bond market to fund capex and bolster liquidity
- Issuance volume was heavy through Sept. 2014; however, yields widened as commodity prices began moving lower
- Many companies also took advantage of robust public/private equity markets
- As a result, revolver utilization was low relative to historical levels and debt maturities have been pushed out
- This along with hedge positions 12-24 months helped reduce the initial impact of the market downturn
- Conversely, other companies used strong credit markets and low rates to boost returns and are now over-levered
- While 2014 upstream fixed income volume surpassed 2013's tally, declining oil prices halted the fixed income new issue market, with 4Q14 accounting for just 3% of annual volume
- The market re-opened in March with tighter structures (e.g. secured, shorter durations)
 - Issuance has stalled since June 2015, and recent outflows from high yield funds totaled nearly \$6.3 billion

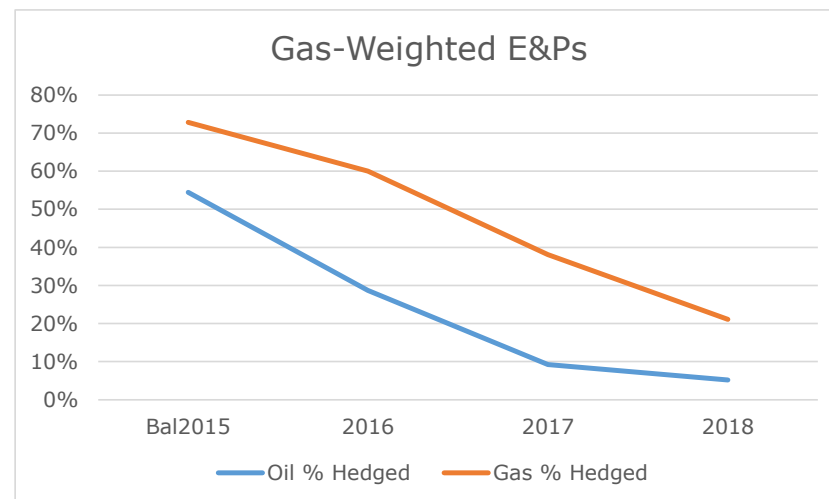
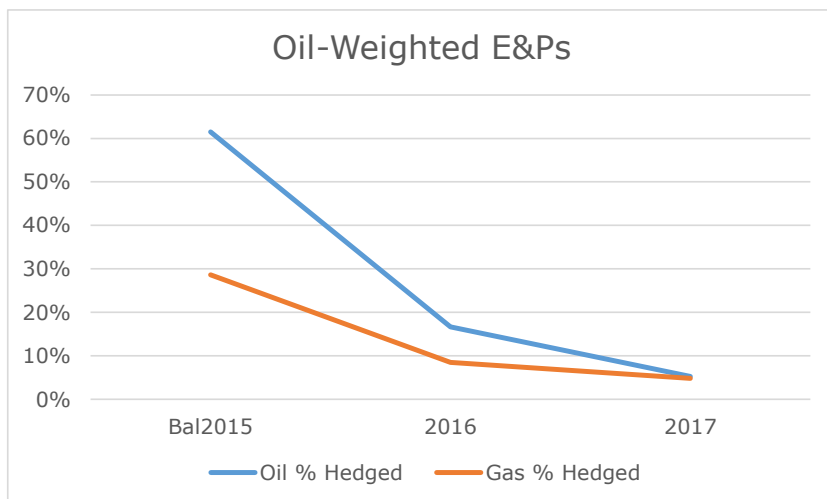


Source: Bloomberg

Oil Producers Under-Hedged After 2015

Key Points

- An analysis of 24 of PNC's E&P clients shows that after 2015, oil-weighted E&Ps are unprotected on over 80% of oil production (assuming current daily production is held constant if no guidance was provided).
- The gas-weighted E&Ps appear to be more disciplined hedgers, but there are 4 gassy MLPs in this sample versus just 1 oily MLP. The MLPs generally hedged a higher percentage of volume for longer tenors. Removing the MLPs from the gas-weighted data, the average percentage hedged for 2016 drops to 48% from 60%.
- Interestingly, the percentage of oil production hedged by gas-weighted E&Ps exceeds the percentage hedged by oily E&Ps from 2016 onward.
- Natural gas hedgers have not been able to lock in 2016 production at a price above \$5/mmbtu for Henry Hub since late 2011. Since then, the low natural gas price environment has persisted. If the price of oil continues to be pressured, oil-weighted E&Ps could become more disciplined hedgers.

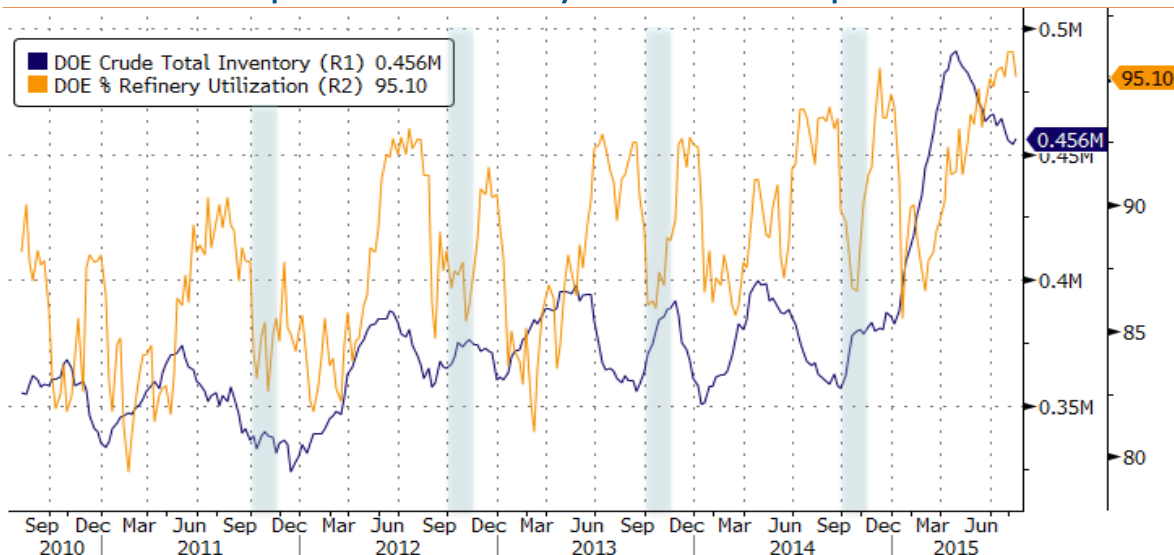


Crude Oil Market Update

Key Points

- Investors are nervous as US approaches end of summer driving season.
 - Oil hit its lowest level in over six years as stockpiles unexpectedly increased by 2.62mm barrels in the week ended Aug. 14. Compounding the supply build was a gain in imports and a fall in refinery utilization.
 - Crude inventories will be elevated in the coming weeks because of scheduled maintenance and continuing problems with BP's Whiting refinery outage.
- OPEC/Saudi Arabia's strategy to produce at full throttle is becoming very costly.
 - Venezuela is suffering from extreme inflation and a scarcity of basic goods. The CDS on the nation's five-year bonds is returning close to 12-year highs.
 - Risks of further political chaos are high in Libya and Algeria. Algeria suggested an emergency OPEC meeting last week (oil and gas sales account for about 60% of its budget revenue) but there was no public response from Saudi Arabia.
 - At the current forward curve it's estimated that Saudi Arabia can survive for another two years before FX reserves run out.
- Mexico hedged 2016 oil exports at \$49/bbl, cost government \$1.1B.

Crude inventories expected to rise as refinery utilization falls from peak



Increased short positioning typically leads to a subsequent price rebound



Source: Bloomberg

Natural Gas Market Update

Key Points

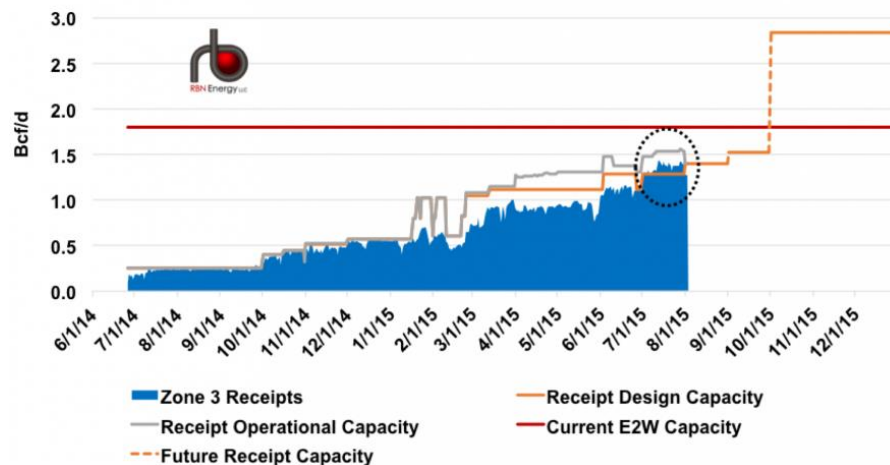
- Recent storage numbers are bullish for natural gas.
 - The U.S. inventory gain fell short of analysts for the fourth time in five weeks. Inventories are still greater than the five-year average by 2.7%.
- The Rockies Express Pipeline brought online an incremental 1.2 Bcf/d of westbound capacity from Clarington, OH to Moultrie County, IL. Total capacity is now 1.8 Bcf/d.
 - This is not expected to result in an immediate change to pipeline flows in Zone 3.
 - The bottom chart shows that although flow capacity is 1.8 Bcf/d now, zone 3 receipts (blue area) that feed into REX are still only at 1.4 Bcf/d because new receipt point capacity has to be added. Receipt capacity is expected to increase to 1.52 Bcf/d by September and 2.8 Bcf/d in October.
 - Local Marcellus/Utica gas prices should respond later as REX begins to take more gas west. As of 8/20, the Dominion South gas price was \$1.22.
- In the coming months Cheniere Energy will start operating the first train at its Sabine Pass liquefaction/LNG export facility and about 10 more are expected to be added in the next three years for total demand of 7 Bcf/d of gas (~10% of current US production).

Natural gas storage injections subsiding



REX E2W Pipeline Reversal

REX Zone 3 Receipts vs. Capacity



Strategies for Leverage Reduction

- While liquidity is addressed, leverage remains a longer-term concern.
- Absent a material improvement in commodity prices, leverage reduction will occur through:
 - Cost reductions
 - Asset sales or consolidation through A&D and M&A
 - Equity fundraising, both public and private
 - Joint ventures



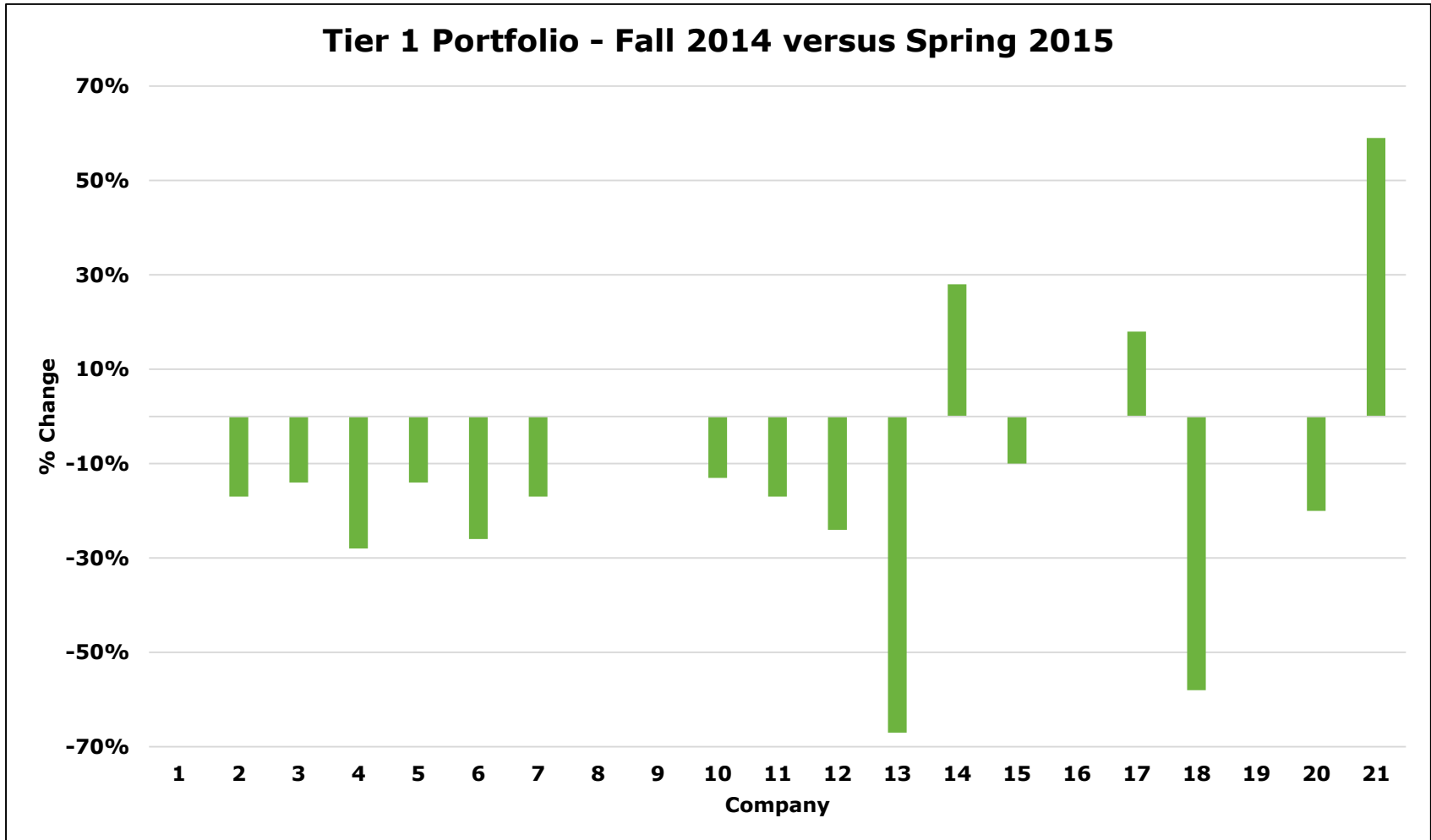
Section 5.

Spring 2015 RBL Sampling – Case History

Comparison of Spring 2015 Borrowing Bases

Key Points:

- The majority of companies had greater than 10% decrease in borrowing bases.
- Positive increases are attributed to active YE 2014 high growth programs relative to reserve base.

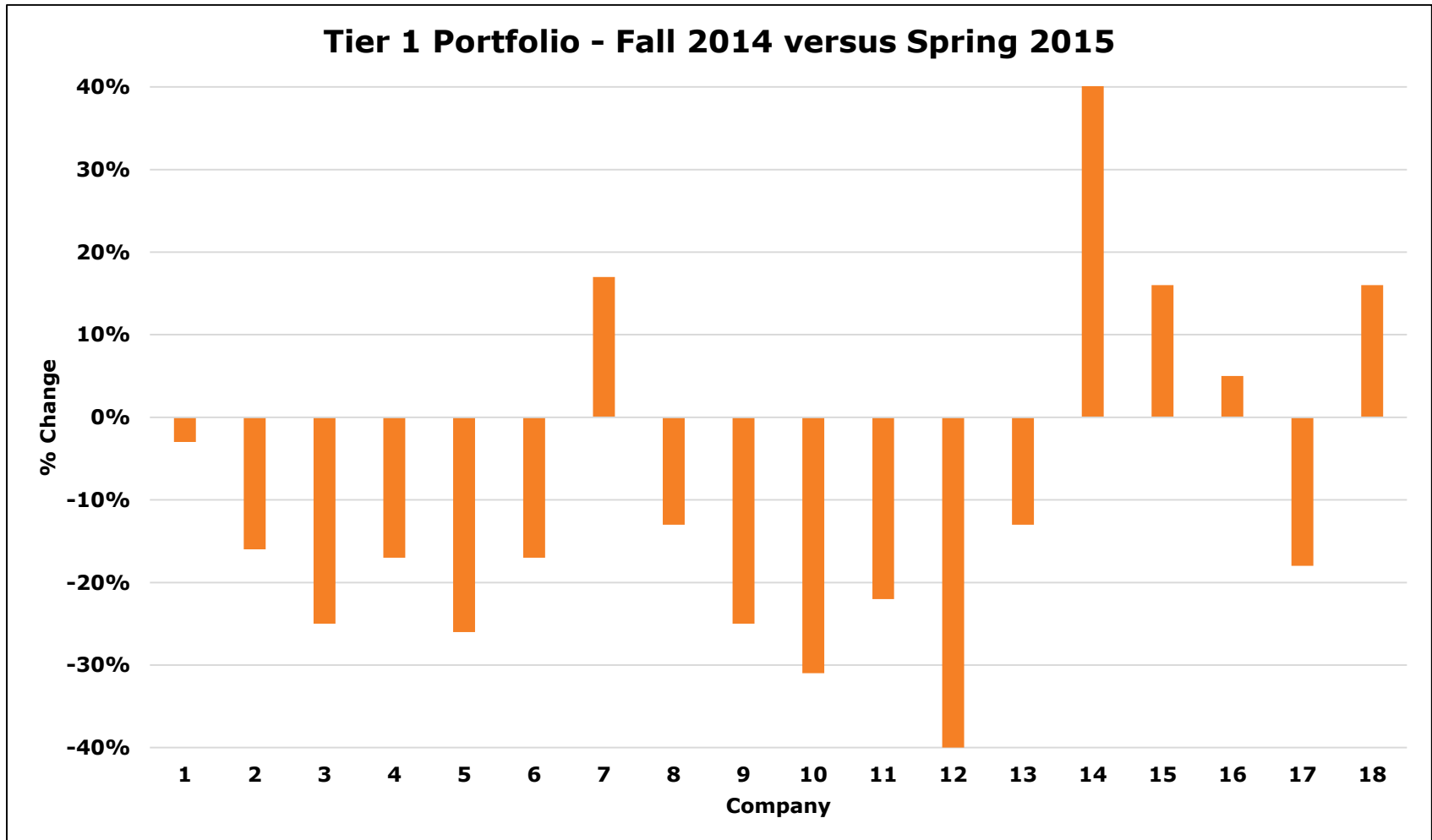


Source: PNC Upstream Spring Technical Review – 21 Tier 1 Companies

Comparison of 1P + Hedge Values

Key Points:

- The majority of 1P values decreased by over 10%.
- The major contributor was precipitous decline in oil prices.

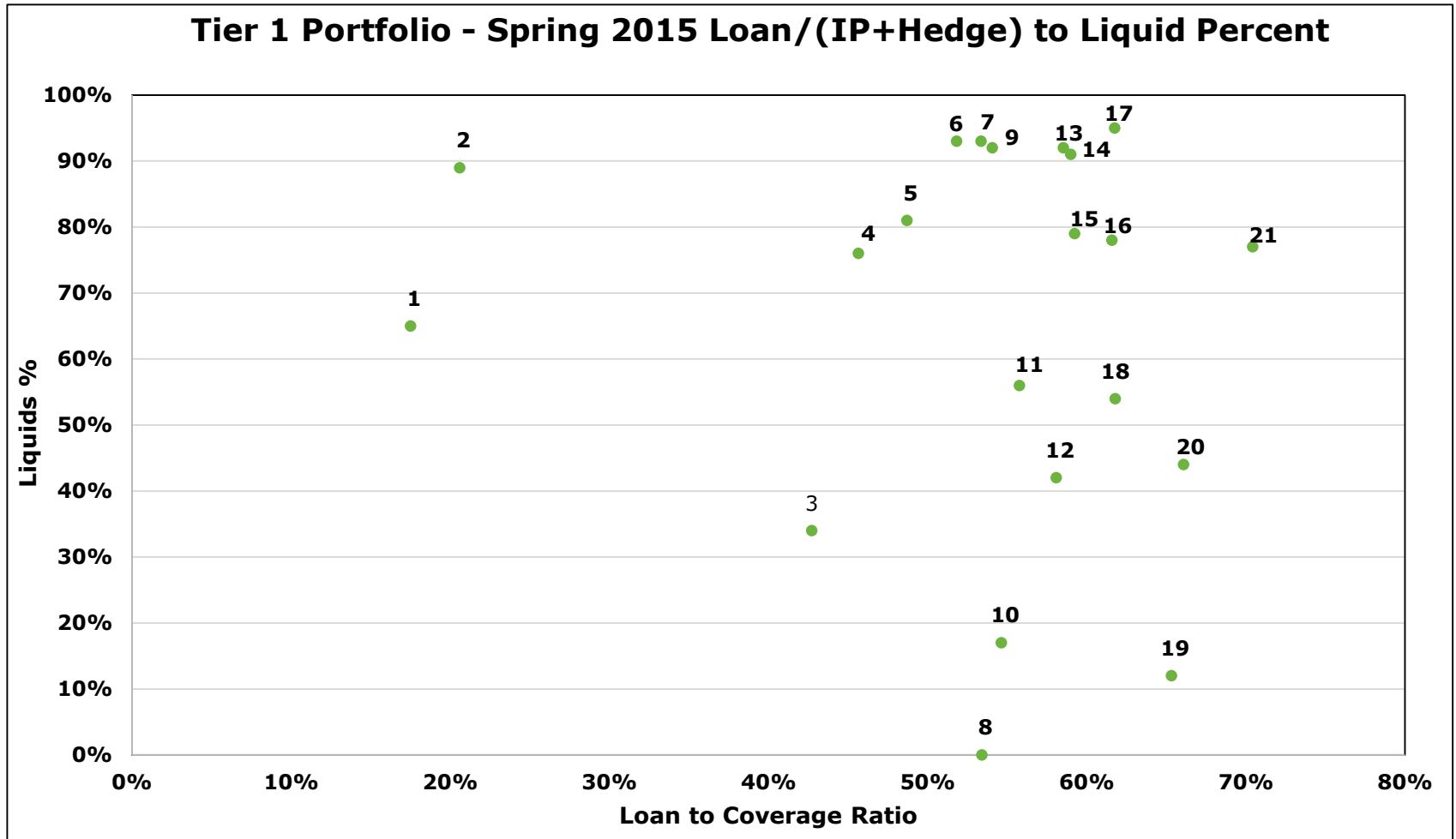


Source: PNC Upstream Spring Technical Review

Comparison of Asset Value Coverage Ratios

Key Points:

- Many companies adjusted borrowing bases and requested covenant relief to bring loans in compliance with policy.
- The adjusted borrowing base coverage ratios showed no strong correlation to oil or gas.



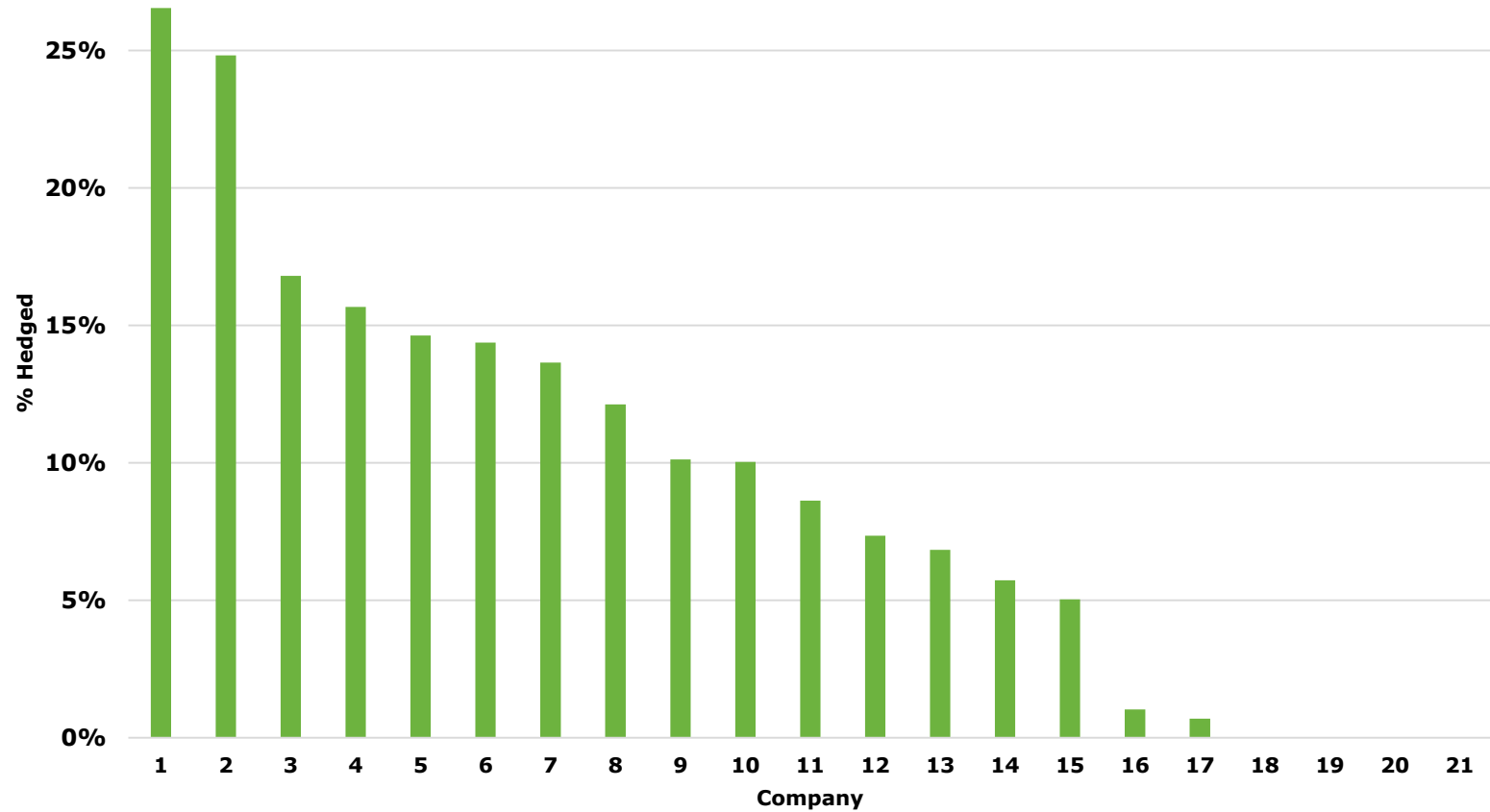
Source: PNC Upstream Spring Technical Review

Comparison Hedge Value to Asset Value

Key Points:

- Hedges provided significant cash flow protection for 75% of companies in 2015.
- Only about 25% of companies had significant hedges past 2015.
- Without significant hedge positions into 2016 we might expect further erosion in borrowing bases.

Tier 1 Portfolio - Spring 2015 Hedge/ (1P+Hedge) Value



Source: PNC Upstream Spring Technical Review

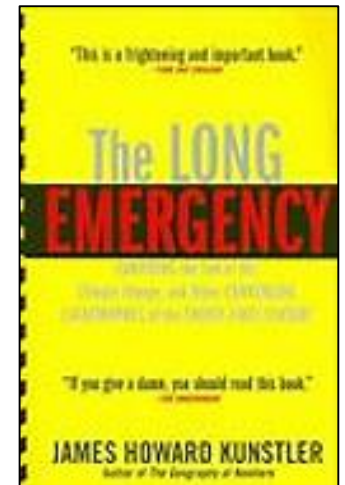
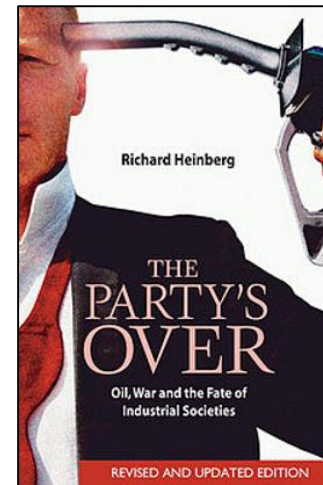
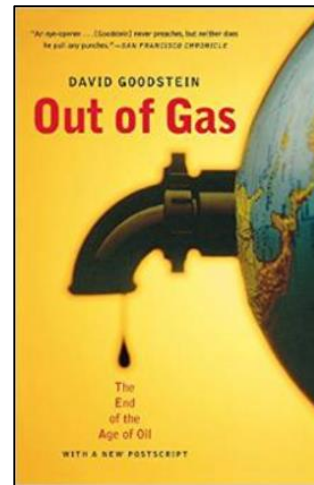
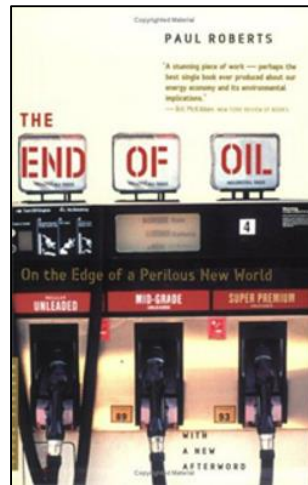
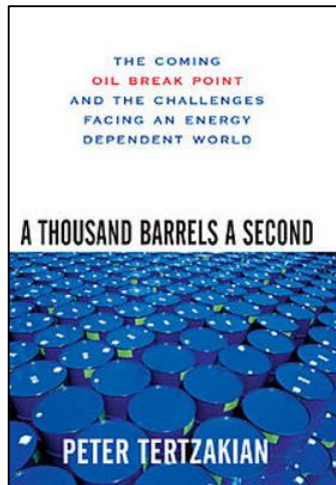
Two Closing Thoughts

. . . one person's opinion

Will groundhog day eventually end?



- Yes, but no one can predict that day until it happens
- Energy demand is on a critical path in the future
- Hydrocarbons will continue as a big piece of the total energy equation
- Supply will continue to require large capital investments



How Do Companies Survive Cycles?

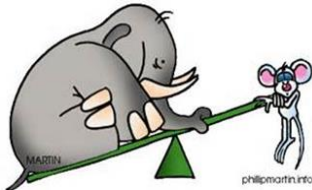
Acquire good assets



Sell “dog” assets on upside cycles



Keep healthy balance of debt to equity



Hedge downside commodity risk



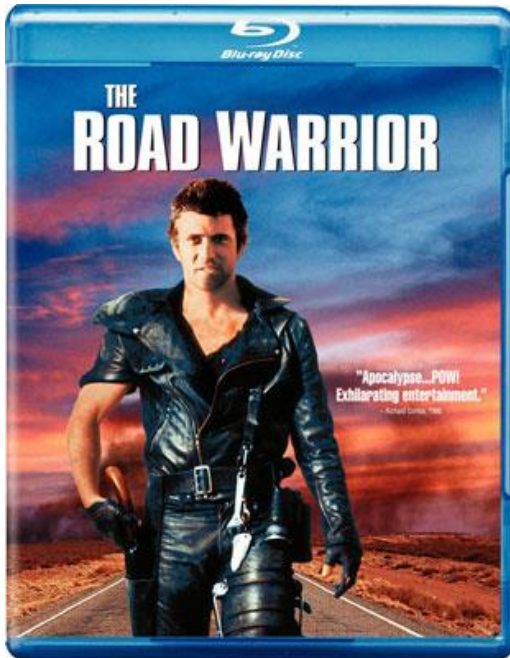
A little luck does not hurt



Will SPEE members survive?

Key Point:

- Expect and manage uncertainty versus hope and change...show up to work each day and add value.



“We cannot enter data about the future because such data are inaccessible to us. We pour in data from the past to fuel the decision-making mechanisms created by our models, be they linear or nonlinear. But therein lies the logician’s trap: past data from real life constitute a sequence of events rather than a set of independent observations, which is what the laws of probability demand. History provides us with only one sample . . . not with thousands of separate and randomly distributed numbers . . . the picture is never perfect. Once again, resemblance to truth is not the same as truth. It is in those outliers and imperfections that the wilderness lurks.”

P. Bernstein, Remarkable Story of Risk