

Financing Unconventional Oil & Gas

Examining Different Future Oil & Gas Price Forecasts To Determine Which Financing Options Would Be The Best Bet Depending On Where You See The Market Going

Janelle Scheuer

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For Discussion & General Information Purposes Only



Natural Gas Market Summary

Current Natural Gas Pricing

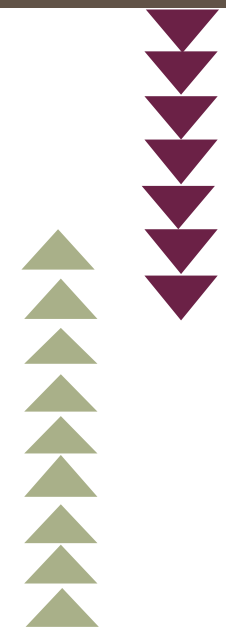
| | |
|--------|--------|
| Prompt | \$3.59 |
| Bal'11 | \$3.71 |
| Cal'12 | \$4.08 |
| Cal'13 | \$4.63 |

Pricing as of: 10/19/11

Natural Gas Indicators

Bullish Bearish

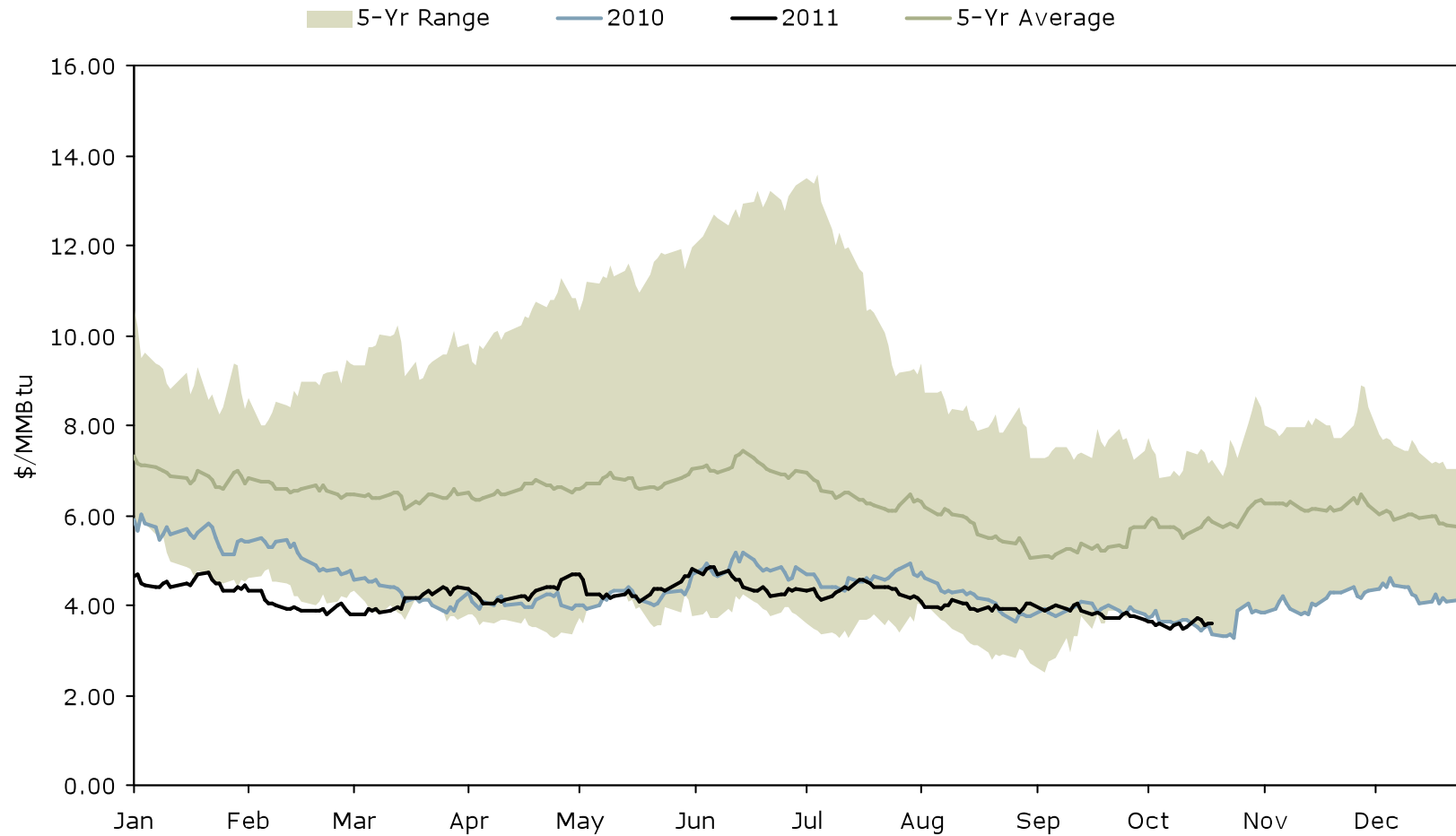
- Shale Shock! Hydraulic fracturing technology has dramatically increased supply
- Ample capex budgets propping up rig count: Joint ventures, foreign capital
- Non-price factors driving drilling: lease expirations, rig contracts, associated gas
- Underhedged producers sell on rallies
- Slow economic recovery undermining industrial demand growth; S&P downgrades U.S.
- Crude widening \$/Btu gas - NG more attractive; reinforces move to wet plays
- Haynesville rig plateau; held by production drilling to ease in 2011
- LNG imports low, diverted to Europe and Asia; Japan nuclear outages boosting Asian imports; US Liquefaction 2015?
- Environmental concerns: Nuke vulnerability; Clean Air Act amendment
- Fleets, vessels convert to CNG, LNG
- Exports to Mexico rise to over 1bcf a day
- Retirement of coal plants: ~51GW = 2.9 Bcf/d gas burn, Highest gas-fired electric generation levels
- Q4 seasonal rally
- Government regulations could be a wildcard



Expected Trend: RANGE-BOUND

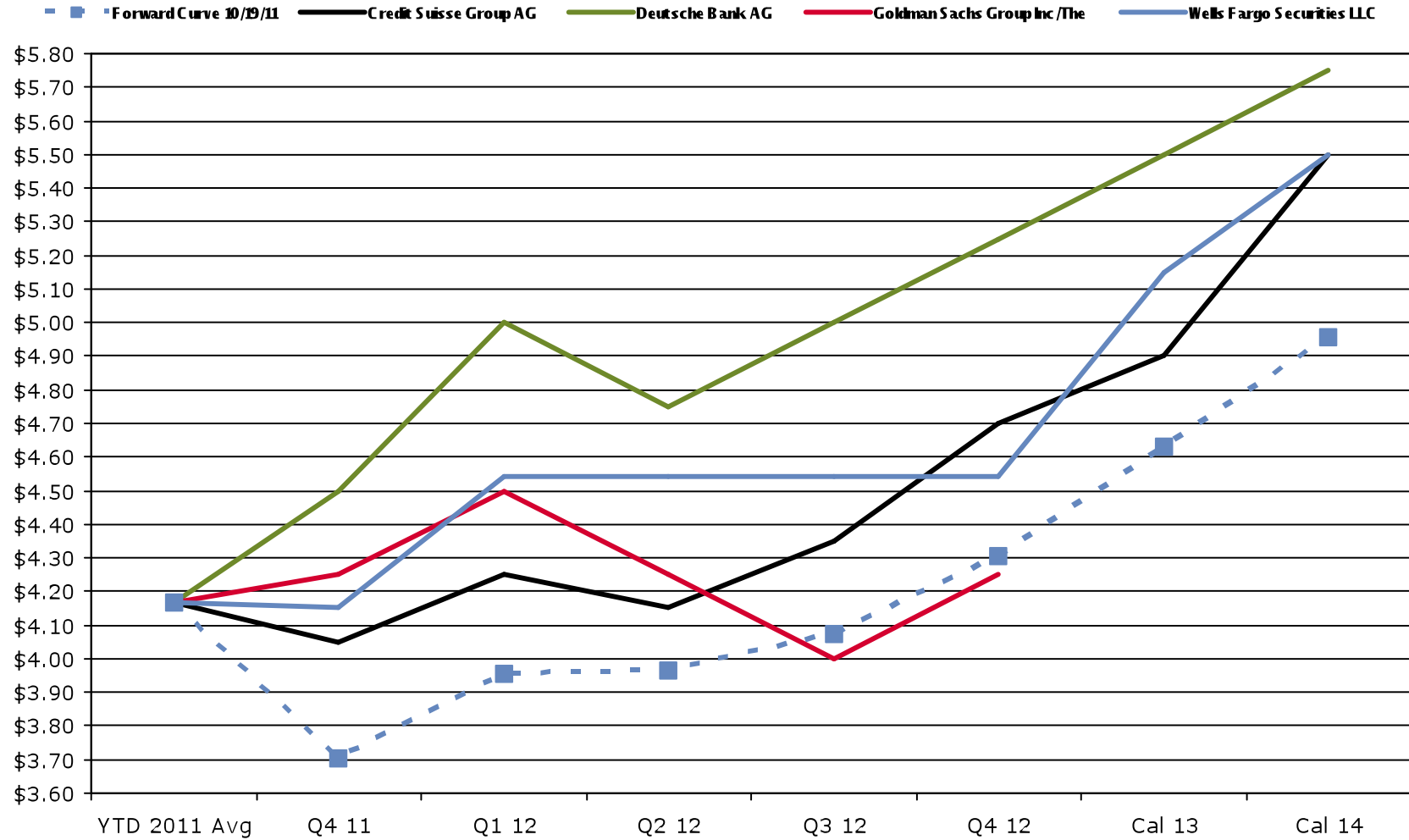
Natural Gas Prices

Historical NYMEX Henry Hub Natural Gas Prices



Current NG Price Forecasts

Current Price Outlook of Major Banks Through 2014



Source: Bloomberg, Wells Fargo Commodities

Wells Fargo

Crude Oil Market Overview

Current Crude Oil Pricing

| | |
|--------|---------|
| Prompt | \$86.33 |
| Bal'11 | \$86.40 |
| Cal'12 | \$87.17 |
| Cal'13 | \$87.87 |

Pricing as of: 10/19/11

Crude Oil Indicators

Bullish Bearish

US Crude Oil Inventories: 0.24% above 5-year average, 7.84% below 2010
 Cushing stocks 34.54% above 5-year average, 8.58% below 2010
 Global macroeconomic woes pressuring outlook: Greece Debt, US Debt
 US oil production up 10% in past 2 years as producers gravitate to "wet" plays
 Rockies production to double in 10 years; high Bakken production levels
 China takes measures to curb inflation
 Refiners constructing cokers to demand more heavy crude rather than light sweet (WTI)
 High Prices damage demand
 Crude widening to gas - Arbitrage opportunity?
 North Africa and Middle East unrest: Libya, Egypt, Tunisia, etc., production at reduced rates
 Geopolitical premium on threats to production: Libyan production reduced by ~1mm BPD
 Saudi Arabia needs \$100/BBL to balance budget
 Favorable crack spreads and high product demand causing stock drawdowns; Refining margins above \$20
 Tighter supply/demand balances with floating stock drawdown: 2011 more OPEC dependent
 Japan utilities double crude consumption
 Far East pulling up WTI prices, China refiners ran 6% more crude YoY

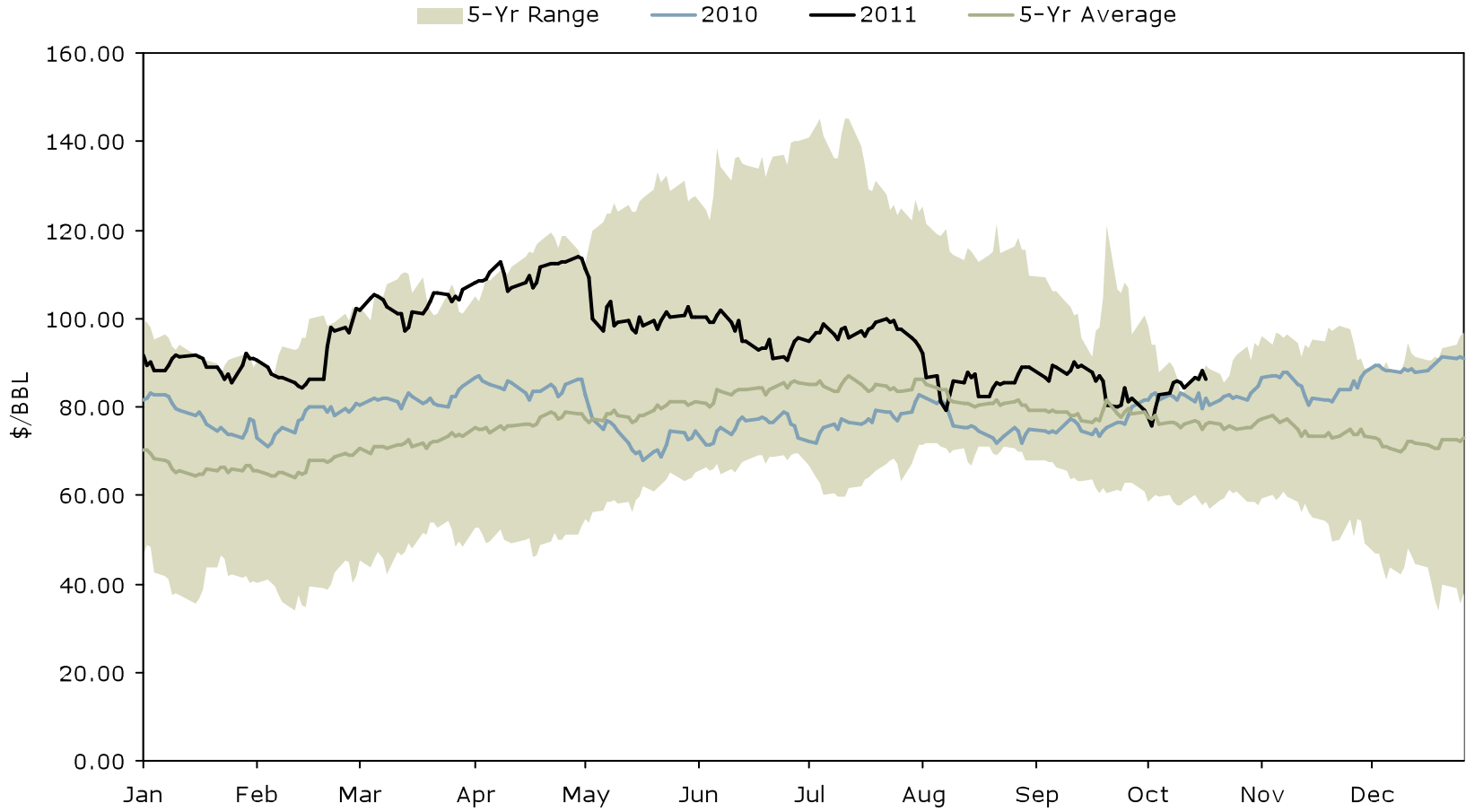


Expected Trend: MILDLY BULLISH

- Global Economics vs. China, US, India demand
- Lower incentive to store, more incentive to consume

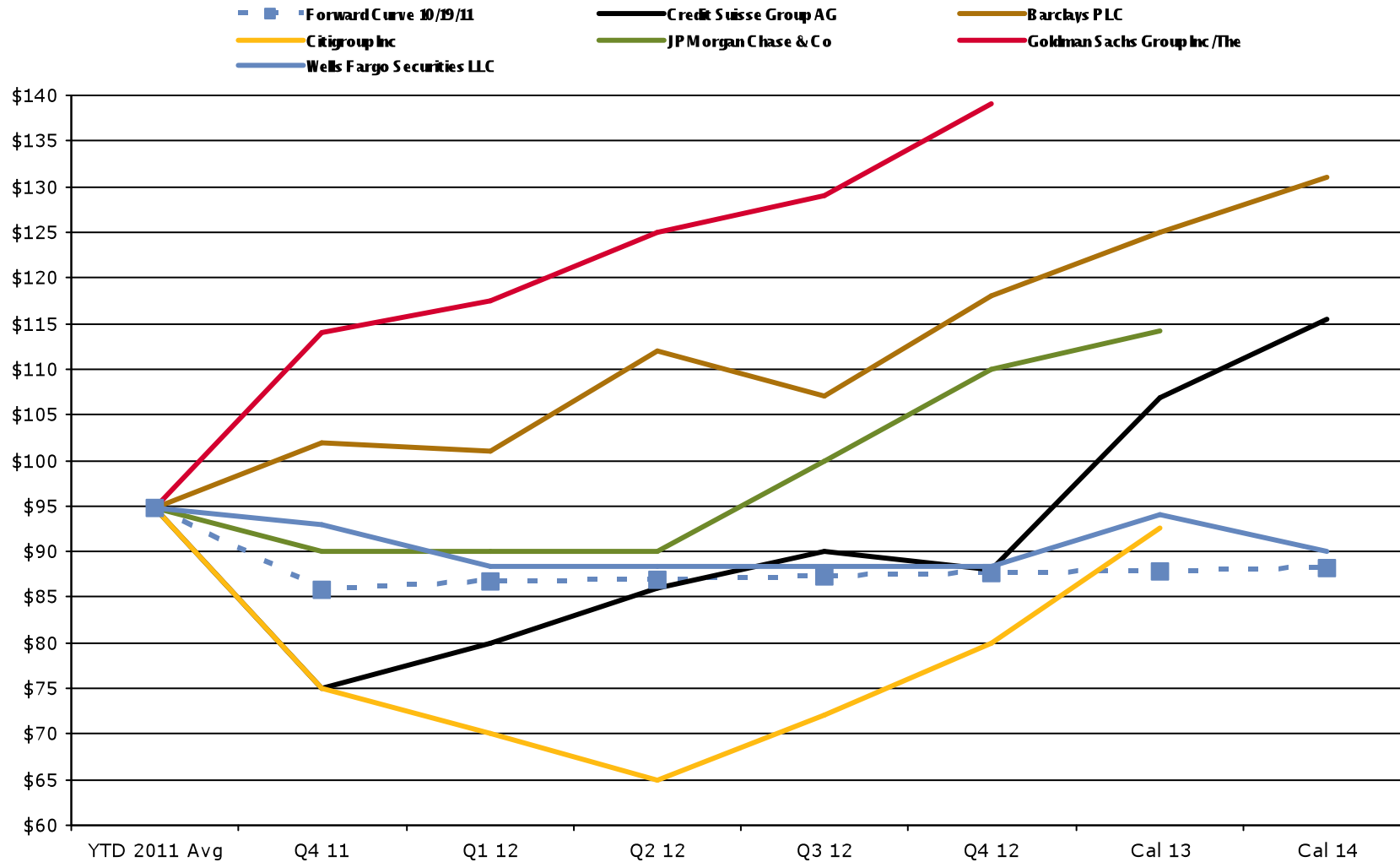
Crude Oil Prices

Historical NYMEX WTI Crude Oil Prices



Current WTI Price Forecasts

Current Price Outlook of Major Banks Through 2014



Source: Bloomberg, Wells Fargo Commodities

Natural Gas Liquids Market Overview

Current Mt. Belvieu NGL Pricing

| Ethane | | Propane | | N. Butane | | Isobutane | | Pentane | |
|---------|-------|---------|--------|-----------|--------|-----------|--------|---------|--------|
| Prompt: | 89.46 | Prompt: | 147.15 | Prompt: | 181.54 | Prompt: | 205.67 | Prompt: | 227.86 |
| Bal 11: | 88.82 | Bal 11: | 147.93 | Bal 11: | 184.56 | Bal 11: | 201.14 | Bal 11: | 230.04 |
| Cal 12: | 70.20 | Cal 12: | 133.15 | Cal 12: | 169.48 | Cal 12: | 176.76 | Cal 12: | 220.49 |
| Cal 13: | 57.36 | Cal 13: | 122.74 | Cal 13: | 158.79 | Cal 13: | 164.35 | Cal 13: | 210.19 |

Pricing as of: 10/19/11

NGL Indicators

Record production from gas processing (i.e. higher levels of ethane and propane); processing volumes 21% above 5-year avg

Ethane processing capacity projected to grow 200 - 300 MBBLS/d by 2015 from 900 MBBLS/d in 2010

NGL extraction processes at much higher efficiency (cryogenic vs. lean oil)

US residential demand for propane projected to decline 2.7% in 2011 and 4.0% in 2012 due to fuel switching and conservation

Midstream companies expected to add more than 600 MBBLS/d of fractionation capacity at MBV over the next 5 years

New overseas crackers in Middle East may pressure US ethylene and co-product prices

Seaway expansion and takeaway capacity will add additional supply to MBV (bearish MBV, bullish CNWY, neutral overall)

Steam Cracker operating rates at 93.6% capacity, 91.5% YTD; well above 5-year average rate of 84%

Brent/WTI spread at record highs

More heavy-to-light steam cracker conversions expected; expected to add 200,000 BBLs/d incremental ethane demand

Ethane demand from petrochemical plants rose to 921,000 BBLs/d; up 3.7% year-over-year

Increased use of pentane in ethanol production

Propane exports expected to rise 28.4% in 2011 and 21.4% in 2012

Demand from Canada for crude diluents; increasing demand for heavier NGLs

NGL demand from gasoline blending up 9.0% year-to-date; More butane and pentane going into gasoline via blenders

EXPECTED TREND: Neutral C2 / Bullish C3, C4, C5

Bullish Bearish

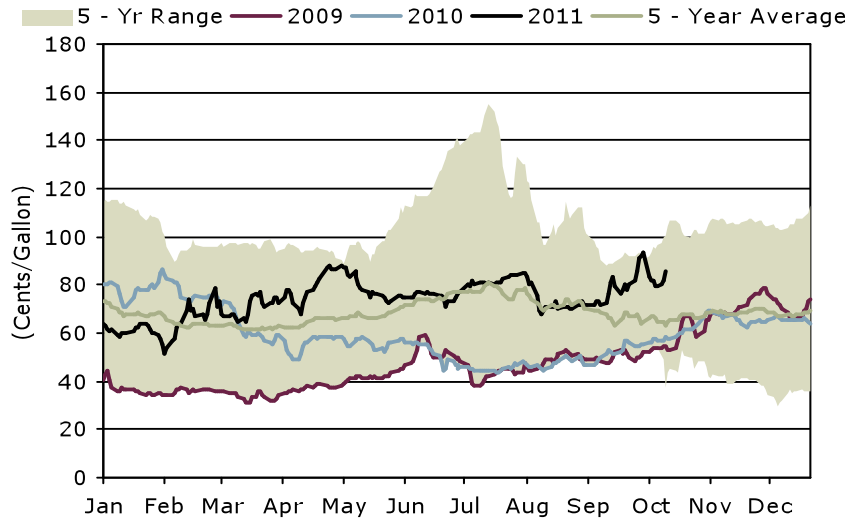


NEUTRAL

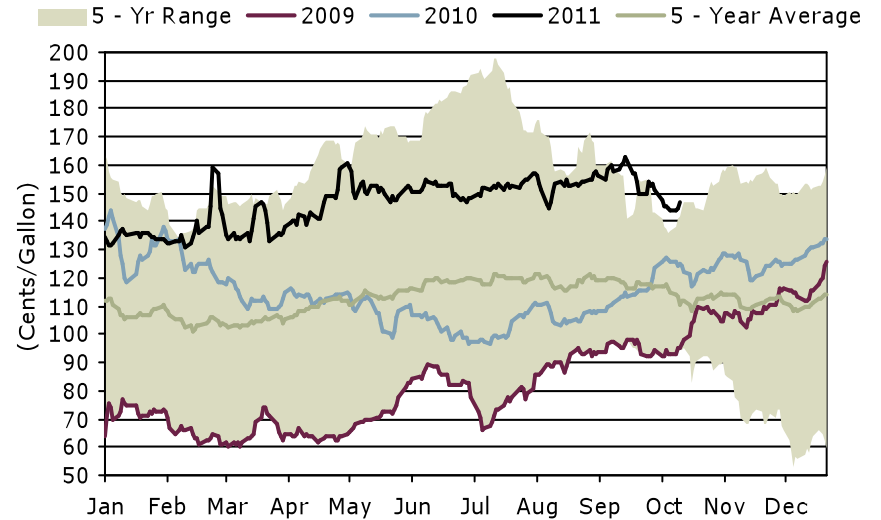


NGL Prices

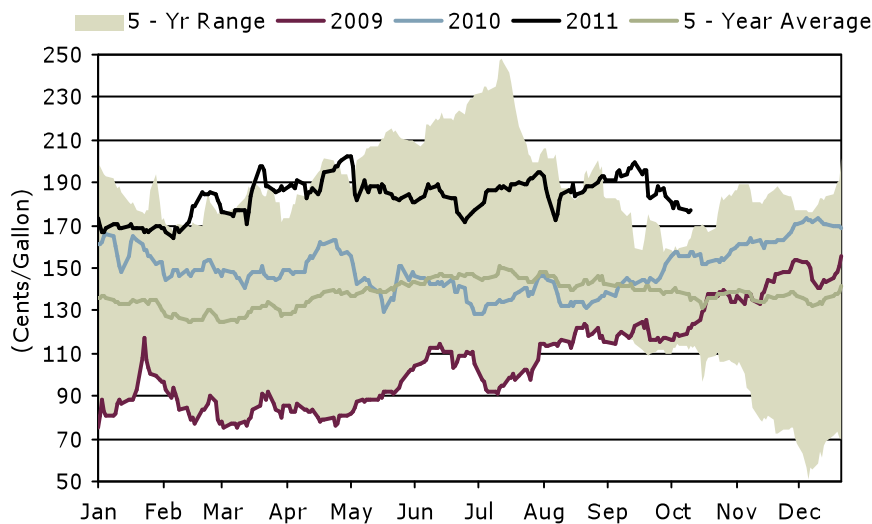
Mt. Belvieu Purity Ethane Prices



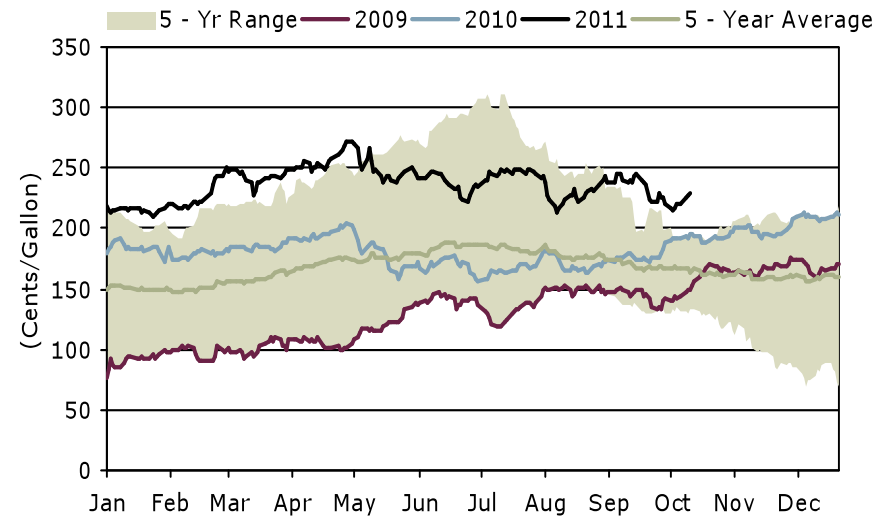
Mt. Belvieu Propane Prices



Mt. Belvieu N. Butane Prices



Mt. Belvieu Pentane Prices



Source: API, Wells Fargo Commodity Products, Bloomberg

Hedge Strategy Considerations: Sample Two-thirds, Two-thirds Strategy

Two-Thirds Upside, Two-Thirds Protected Strategy

Hedging Strategy

- Strategy Mix:
 - 33% Swaps
 - 33% Put Options
 - 33% Unhedged
- 66% Upside with Favorable Price Participation
- 66% Downside Protection against Adverse Price Movements

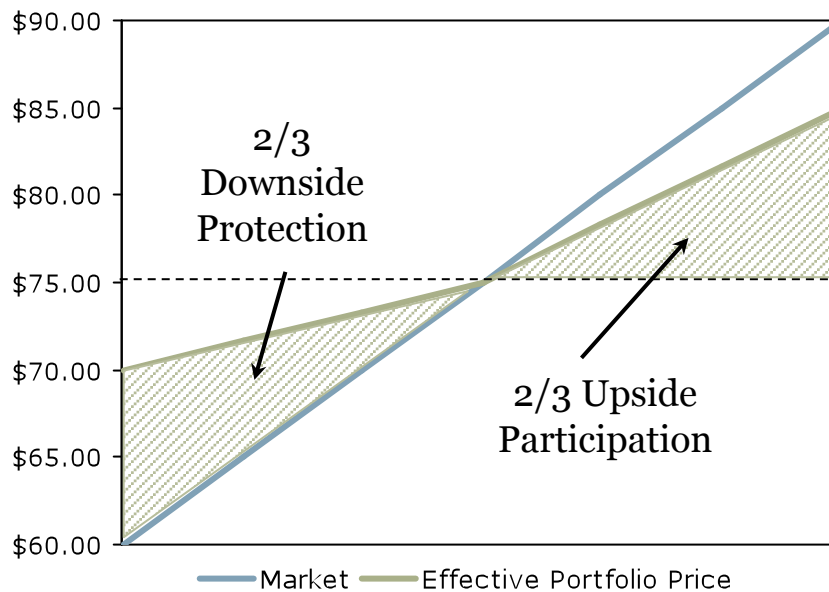
Characteristics

- Borrowing Base Protection on two-thirds production volumes
- Supports bullish market view
- Diversification of Hedge Portfolio
- Can be structured with NO upfront fee

Sample Portfolio Details

- 33% Swap @ \$75
- 33% Put @ \$75

Sample Portfolio Sensitivity



Hedge Strategy Considerations: Apply to Develop Program

Considerations

- Matching hedges to exposure
 - Onshore vs. Gulf of Mexico – WTI or LLS?
 - NGLs – Crude Proxy, % WTI, or NGL Basket?
 - Gas Basis Hedges?
- Target percentage hedged - desired upside and downside exposure
 - Max hedge percentage covenants?
 - Borrowing base considerations?
- Price Targets
 - Upside opportunistic targets?
 - Worst case scenario?
 - Dollar cost averaging?
 - Diversification of products?
 - Blended strips versus annual?
 - Value transfer in curve? Between products?
 - Sell optionality?

Sample Natural Gas Portfolio Strategy

| Term | Target % | Structure |
|--------|----------|--|
| Bal'11 | 65% | Swap |
| Cal'12 | 50% | Collar |
| Cal'13 | 35% | 3-way Collar Participating Swap 50% |

Sample Crude Oil Portfolio Strategy

| Term | Target % | Structure |
|--------|----------|--------------------------|
| Bal'11 | 65% | Swap |
| Cal'12 | 50% | 1/2 Swap, 1/2 Collar |
| Cal'13 | 35% | 3/4 Collar, 1/4 Swaption |

Sample Natural Gas Liquids Portfolio Strategy

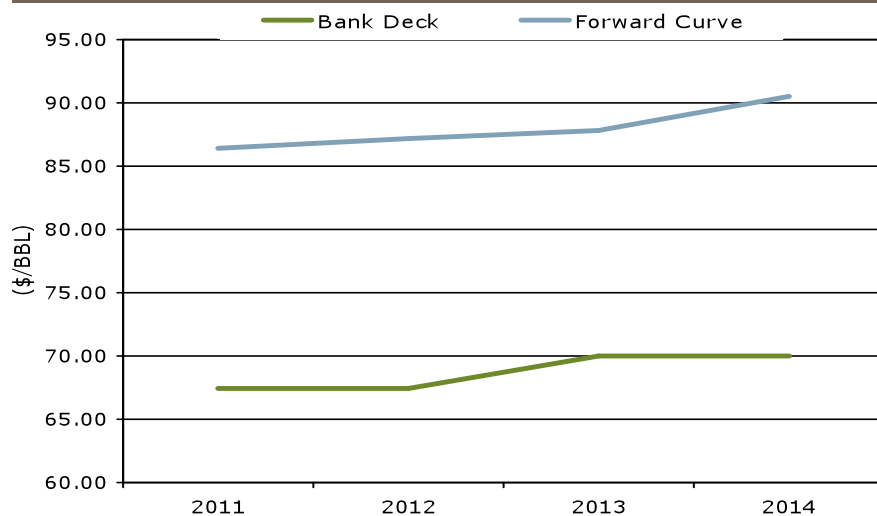
| Term | Target % | Structure |
|--------|----------|--------------|
| Bal'11 | 65% | Swap |
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| Cal'13 | 35% | 3-way Collar |

Borrowing Base Calculations

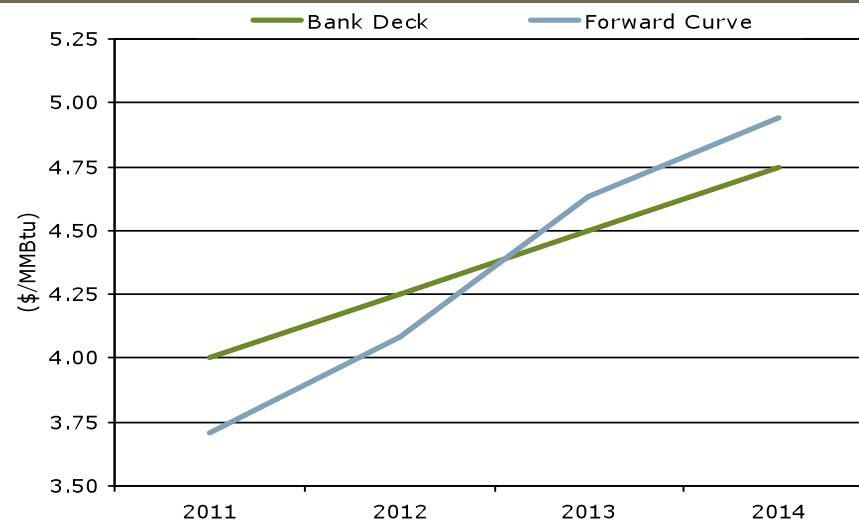
How do structures impact the Borrowing Base?

| Structure | BB Rule | Example | PV 9 Impact |
|--------------|--|--|----------------------|
| SWAP | Fixed Price regardless of Bank Price Deck level | \$96.56 | \$17.6 MM |
| PUT | If Bank Price Deck below Put, Put price If Bank Price Deck above Put, Bank Price Deck | \$90.00 | \$13.56MM |
| COLLAR | If Bank Price Deck below Put, Put price If Bank Price Deck above Put, Bank Price Deck If Bank Price Deck above Cap, Cap price | \$90.00 / \$102.75 | \$13.56MM |
| 3-WAY COLLAR | If Bank Price Deck above or equal to Lower Put, Higher Put Price If Bank Price Deck above Higher Put, Bank Price Deck If Bank Price Deck above Cap, Cap price If Bank Price Deck below Lower Put, Bank Price Deck + Difference in Put Strikes | \$67.50/\$90/ \$112 \$80 / \$90 / \$128 | \$13.56MM \$6.3MM |

Natural Gas Comparison



Crude Oil Comparison



PV9 Impact is calculated as of 06/01/2011; Structure details: Jan12-Dec13 for 1000 BBL/day

Acquisition Hedging Strategies

How do I lock-in acquisition economics?

Pre-Hedge with Property Seller and Novate

- Seller can hedge on behalf of Buyer between PSA and Closing
- At close, hedges are novated from Seller to Buyer
- Include language in PSA for terms governing hedges and transfer

Acquire Seller's Hedges: What if Buyer does not want the existing Seller's hedge mix?

- Novation from Seller to Wells Fargo
- Restructure: Wells Fargo engages in back-to-back trades with Buyer, retaining economics (mark-to-market) of original hedges, but structured to suit Buyer's hedge mix and allocation
- Restructure allows Buyer to change target price, volume, and instrument according to Buyer's preferences

Buy Swaptions

- Buyer pays Wells Fargo for right to execute a swap at specified level, expiry date to match closing date
- If deal does not close, swaption does not have to be exercised
- If prices rise between trade date and closing date, Buyer does not have to exercise swap
- Allows for worst case scenario protection
- No novation documentation necessary

Buy Put Options

- Buyer may buy put options without worrying about triggering maximum hedge percentage covenants
- At close, Buyer may sell call options to create collar or swap and receive cash flow
- Allows for worst case scenario protection
- No novation documentation necessary

Financing Vehicles Overview

Which Financing Options Are The Best? It Depends...

| Structure | Price Environment | Reserve Quality | Project Lifecycle |
|---------------------|--|---|---------------------|
| ISSUE DEBT | High Price Environment = More Debt Available | <u>Higher Quality Reserves</u> PDP PDNP | Past Initial Stages |
| ISSUE EQUITY | Low Price Environment = Less Debt Available | <u>Lesser Quality Reserves</u> PUD Probable Reserves Possible Reserves | Initial Stages |

Effect of Price Environment on Financing Decisions

High Price Environment

- More Debt Available

- Favorable to Hedge
 - Lock in higher price
 - Increase borrowing base

- Current Oil Markets
 - High Price Environment
 - More Debt Available
 - Lenders more aggressive on pricing

Low Price Environment

- Less Debt Available / More Equity Required

- Less Favorable to Hedge
 - Producers don't want to lock in low prices
 - Would need to hedge larger volumes than in a high price environment to raise the same amount of capital

- Current Natural Gas Markets
 - Low Price Environment
 - Less Debt Available

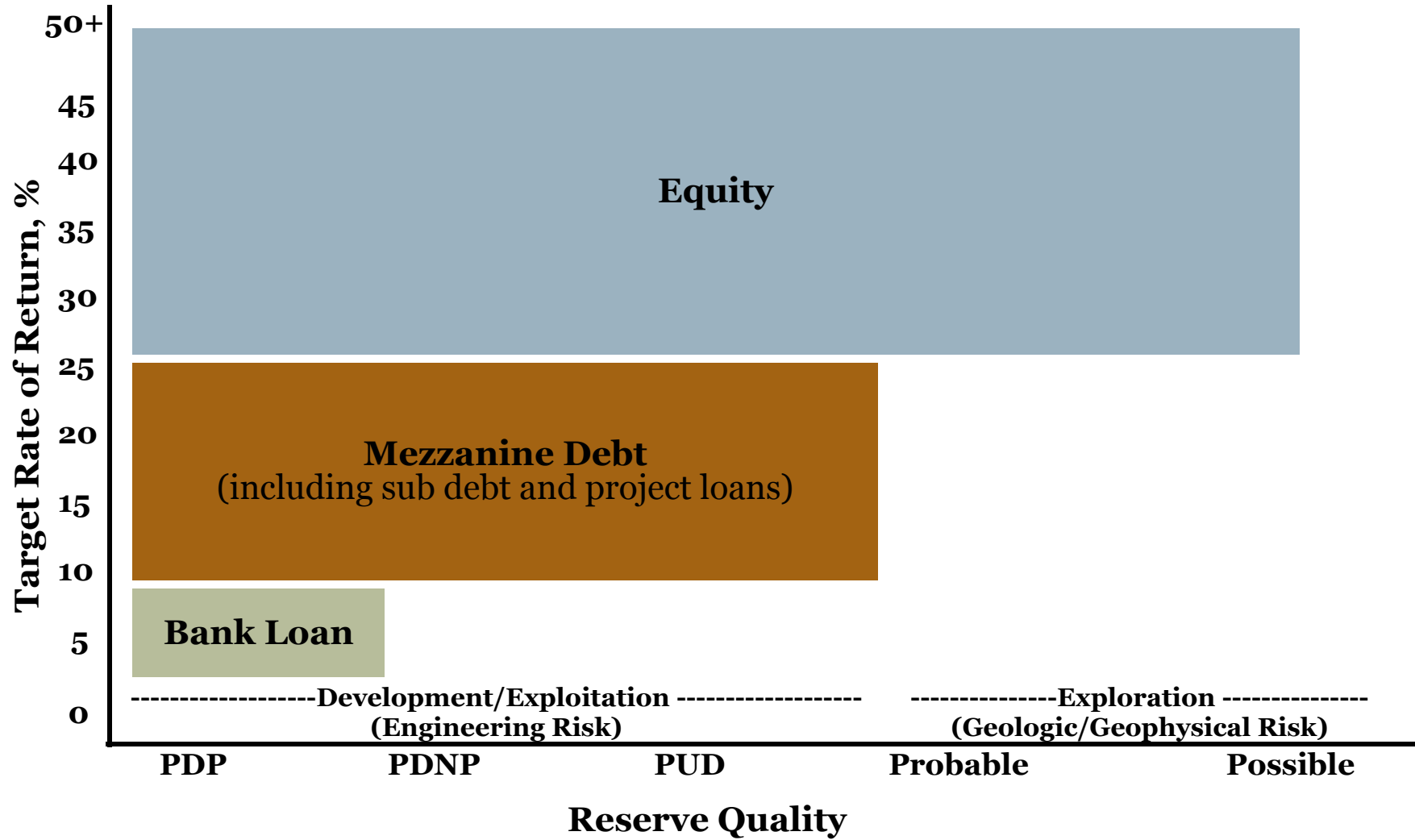
Effect of Reserve Quality on Financing Decisions

Producers want to achieve two objectives through their financing decisions

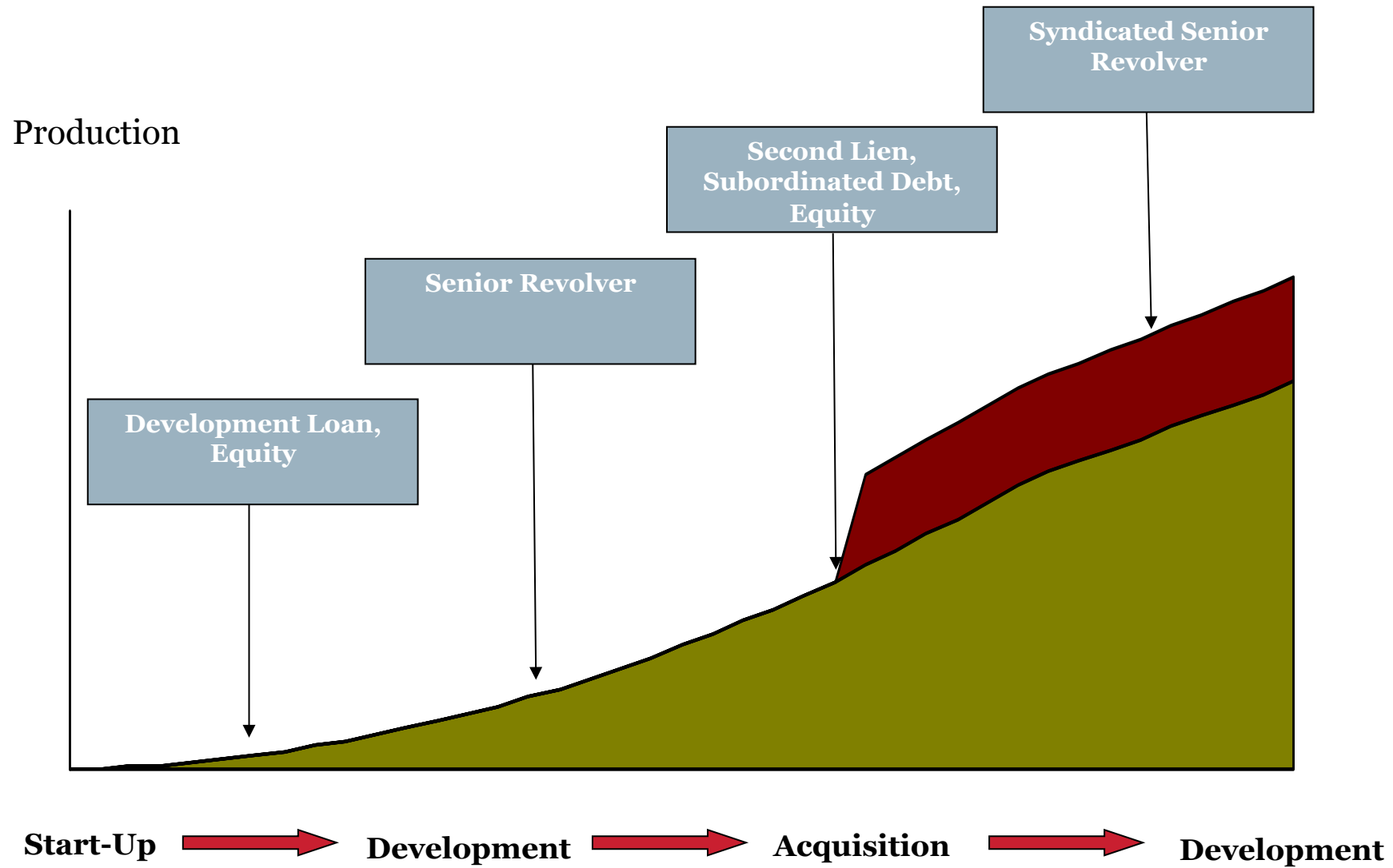
- **OBJECTIVE 1: Raise capital to support/expand drilling program**
- **OBJECTIVE 2: Protect value of assets**
- Depending on the quality of its reserves, producers can achieve these two goals via either debt or equity financing

| Debt/Equity | Reserve Type | Develop Drilling Program | Protect Assets |
|---------------|---|--|---|
| DEBT | Higher Quality Reserves PDP PDNP PUD | <ul style="list-style-type: none"> ▪ Higher Quality Reserves = Lower Risk <ul style="list-style-type: none"> ▪ Funding more readily available ▪ By hedging PDP, producer increases borrowing base | <ul style="list-style-type: none"> ▪ Producers can hedge PDP volumes using swaps/or and options <ul style="list-style-type: none"> ▪ Provides cash flow stability ▪ Less susceptible to unfavorable price moves |
| EQUITY | Lower Quality Reserves Possible/Probable Reserves | <ul style="list-style-type: none"> ▪ Lower Quality Reserves = Higher Risk <ul style="list-style-type: none"> ▪ Producer less likely to receive credit ▪ By issuing equity the producer can raise capital to both fund its drilling program as well as protect its asset's value. | <ul style="list-style-type: none"> ▪ Producers typically cannot hedge lower quality reserves via swaps (no credit line) ▪ Puts may be purchased. However it can be costly. ▪ By issuing equity, the producer can raise capital to purchase puts. |

Oil and Gas Industry Financing Spectrum



Financing Structures Also Determined By Development Stage



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