Analysis of US Unconventional Producer Bankruptcies due to the 2014 to 2016 Commodity Price Collapse

Lessons Learned from Failures to Formulate an Optimum Strategy to Sustain Investor Confidence

Alison Johnson
7 Nov 2016
Background and Figures

- **Saudi Arabia Production Costs**: $9/bbl
- **North America Production Costs**: $25/bbl
- **North American producer debt by June 2016**: $169B
- **North American bankruptcy filings by June 2016**: $66.5B

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**U.S. Crude Oil Production & WTI Price vs Time**

- WTI Price
- U.S. Crude Oil Production

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**Icons**

- **$9/bbl**: Saudi Arabia Production Costs
- **$25/bbl**: North America Production Costs
- **$169B**: North American producer debt by June 2016
- **$66.5B**: North American bankruptcy filings by June 2016
Producer Groups

Successful Group

Bankrupt Group

Diamondback & Newfield vs WTI

Market Caps - 2013
Pecking Order Theory
Corporate Structure and Corporate Performance

Maintaining dividend distribution paramount for market sentiments.
Operational & Financial Value Chain
Retained Earnings ($, billions)

<table>
<thead>
<tr>
<th>Company</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrizo</td>
<td>$(1.5)</td>
<td>$(1.0)</td>
<td>$(0.5)</td>
</tr>
<tr>
<td>Diamondback</td>
<td>$(8.0)</td>
<td>$(7.0)</td>
<td>$(6.0)</td>
</tr>
<tr>
<td>PDC Energy</td>
<td>$(5.0)</td>
<td>$(4.0)</td>
<td>$(3.0)</td>
</tr>
<tr>
<td>Newfield</td>
<td>$(2.0)</td>
<td>$(1.0)</td>
<td>$-</td>
</tr>
<tr>
<td>Cimarex</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
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Dividends ($, billions)

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<td>$(6.0)</td>
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<td>$-</td>
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<td>Cimarex</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
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</table>
Total Liabilities

- 2013 Bankrupt Group Total Liabilities 2x Successful Group
- 2015 Bankrupt Group Total Liabilities 3x Successful Group
- From 2013 to 2015:
  - $3B Reduction for Successful Group
  - $.729B increase for Bankrupt Group

### Total Liabilities YoY Changes

<table>
<thead>
<tr>
<th>Group</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful</td>
<td>$12.6B</td>
<td>$14.3B</td>
<td>$9.3B</td>
</tr>
<tr>
<td>Bankrupt</td>
<td>$24.4B</td>
<td>$28.3B</td>
<td>$25.1B</td>
</tr>
</tbody>
</table>

- **Camzo**
- **Diamondback**
- **PDC Energy**
- **Newfield**
- **Cimarex**
- **Sandridge**
- **Lyon**
- **Bellefount**
- **Ultra**
- **Falcon**

**2014-2015**

**2013-2014**
Shareholders’ Equity

- Negative values signal unsafe investment
- From 2014 to 2015:
  - 28% decrease for Successful Group
  - 383% decrease for Bankrupt Group

### Shareholders' Equity YoY Changes

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<th>Group</th>
<th>2013</th>
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<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful</td>
<td>$9.6B</td>
<td>$12.4B</td>
<td>$7.8B</td>
</tr>
<tr>
<td>Bankrupt</td>
<td>$12.2B</td>
<td>$13.5B</td>
<td>-$3.0B</td>
</tr>
</tbody>
</table>

- Consolada
- Diamondback
- PDC Energy
- Newfield
- Centennial
- Sandridge
- Linn
- Broncbury
- Ultegra
- Balcon
Debt-to-Equity Ratios

- Newfield SCOOP & STACK acquisitions in 2013
- Halcon 41x normal range
- 2015: Bankrupt average 2.5x Successful average

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<thead>
<tr>
<th>Company</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrizo</td>
<td>3.565</td>
<td>1.702</td>
<td>1.508</td>
</tr>
<tr>
<td>Diamondback</td>
<td>0.470</td>
<td>0.768</td>
<td>0.800</td>
</tr>
<tr>
<td>PDC Energy</td>
<td>0.795</td>
<td>1.050</td>
<td>1.093</td>
</tr>
<tr>
<td>Newfield</td>
<td>2.458</td>
<td>1.461</td>
<td>2.153</td>
</tr>
<tr>
<td>Cimarex</td>
<td>0.874</td>
<td>0.935</td>
<td>0.803</td>
</tr>
<tr>
<td>Sandridge</td>
<td>-3.52</td>
<td>1.26</td>
<td>1.42</td>
</tr>
<tr>
<td>Linn</td>
<td>-38.10</td>
<td>2.61</td>
<td>1.80</td>
</tr>
<tr>
<td>Breitburn</td>
<td>2.48</td>
<td>1.03</td>
<td>1.11</td>
</tr>
<tr>
<td>Ultra</td>
<td>-1.32</td>
<td>18.96</td>
<td>-9.40</td>
</tr>
<tr>
<td>Halcon</td>
<td>61.48</td>
<td>2.54</td>
<td>2.70</td>
</tr>
</tbody>
</table>

2012 O&G Debt-to-Equity Ratio Range: .5 to 1.5
CAPEX Reductions YoY 2014-2015

Avg. Decline in U.S. CAPEX
CAPEX and CFO

- 2013: Successful financed 10% more than Bankrupt
- 2014: Successful financed 5% more than Bankrupt
- 2015: Bankrupt financed 110% of CAPEX vs Successful 72%
- Largely driven by CAPEX reductions, not increased C/F
Reserves

- 2014 not significantly affected from commodity prices (2008 PRMS revision)
- 2014-2015 average of individual YoY reserves:
  - Successful 6.6% increase in total vs Bankrupt 35% decrease
- 2014-2015 aggregate reserves:
  - Successful 4% / 6% oil / gas decreases
  - Bankrupt 36% / 43% oil / gas decreases
R/P Ratio

- Successful Group R/P Ratios smooth decline
- Absolute figures still larger than Bankrupt Group
- Bankrupt Group YoY volatility

**Combined R/P Ratio YoY Changes**

**Successful**
- Average 2014-2015 Bankrupt
- Average 2014-2015 Successful
- Average 2013-2014 Bankrupt
- Average 2013-2014 Successful

**Bankrupt**
- Average 2014-2015 Bankrupt
- Average 2014-2015 Successful
- Average 2013-2014 Bankrupt
- Average 2013-2014 Successful
2011 Study Comparison

Market Caps and Gas-to-Total Production

- Market Cap 2011
- Market Cap 2016
- Gas/Total Production 2011
- Gas/Total Production 2016
Production Percentages

2015
- Successful - Oil
- Successful - Gas

2014
- Successful - Oil
- Successful - Gas

2013
- Successful - Oil
- Successful - Gas

2015
- Bankrupt - Oil
- Bankrupt - Gas

2014
- Bankrupt - Oil
- Bankrupt - Gas

2013
- Bankrupt - Oil
- Bankrupt - Gas
## Revenue Dollar per BOE Production

### Price Differential (Successful vs Bankrupt)

<table>
<thead>
<tr>
<th>Year:</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Differential (Successful vs Bankrupt):</td>
<td>$3</td>
<td>$9</td>
<td>$5</td>
</tr>
</tbody>
</table>

### Bar Chart

- **Year:** 2013, 2014, 2015
- **Price Differential (Successful vs Bankrupt):** $3, $9, $5
- **Companies:** CRZO, FANG, PDCE, NFX, XEC, SDOCQ, LINEQ, BBEPQ, UPLMQ, HK
- **Legend:**
  - 2013
  - 2014
  - 2015
  - 2015 Successful Group Average
  - 2015 Bankrupt Group Average
Well Activity

- Bankrupt Group larger gross volumes
- Successful Group consistent YoY Changes

Gross Productive Successful

Gross Productive Bankrupt
## Key Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Successful Group</th>
<th>Bankrupt Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proved Reserves</strong></td>
<td>Year-over-year increases in proved reserves despite commodity prices; 6.6% increase in 2015.</td>
<td>Similar increase as Successful Group in first period followed by 35% decrease the following year.</td>
</tr>
<tr>
<td><strong>Production Levels and Composition</strong></td>
<td>Large increases in production with 36.8% increase in liquids production in 2015. Greater than 50% liquids production. Revenue per BOE consistently greater than Bankrupt Group with $4.94 differential in 2015.</td>
<td>Overall increases in production on smaller scale; 6.2% increase in liquids production in 2015. Less than 50% liquids production. Revenue per BOE consistently less than Bankrupt Group.</td>
</tr>
<tr>
<td><strong>R/P Ratio</strong></td>
<td>Successive steady decreases in R/P ratio; settled at 12.4 in 2015.</td>
<td>Large positive and negative swings in R/P ratio; settled at 10.3 in 2015.</td>
</tr>
<tr>
<td><strong>Well Activity</strong></td>
<td>Steady changes in well activity; does not appear alarmingly reactive.</td>
<td>Consistently higher volume of gross wells drilled with more significant swings than Successful Group.</td>
</tr>
<tr>
<td><strong>Retained Earnings</strong></td>
<td>Generally entered downturn with positive retained earnings. Increases in 2015 followed by decreases in 2015. Largest negative value still less than lowest negative Bankrupt producer.</td>
<td>Entered downturn with negative retained earnings. Continued to drop through following two year period.</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>On par with Shareholders’ Equity figure; substantially less than Bankrupt Producers.</td>
<td>Significantly greater than Shareholders’ Equity; double that of the Successful Group in 2013 and 2014, triple in 2015.</td>
</tr>
<tr>
<td><strong>Shareholders’ Equity</strong></td>
<td>Always positive and of similar value to Total Liabilities. Less than Bankrupt Group in 2013 but significantly more in 2015.</td>
<td>Entered downturn with positive, but by 2015 decreased to an average -$3B signaling significant distress.</td>
</tr>
<tr>
<td><strong>Debt-to-Equity Ratio</strong></td>
<td>Steady year-over-year changes. Averages generally fall into normal range of Unconventional Producers.</td>
<td>Volatile swings as observed by Linn Energy from 1.8 in 2013 to -38.10 in 2015 and Halcon from 2.7 in 2013 and 61.48 in 2015.</td>
</tr>
<tr>
<td><strong>Dividends</strong></td>
<td>Only 40% paid dividends; dividends paid notably less than Bankrupt Group.</td>
<td>80% paid dividends in substantial sums. Some producers would have had positive retained earnings had they cut dividends.</td>
</tr>
<tr>
<td><strong>CAPEX Spend</strong></td>
<td>Smaller reductions in CAPEX after oil prices dropped. Four out of five less than US E&amp;P average reduction.</td>
<td>Large reductions in CAPEX after oil prices dropped. Four out of five considerably higher than US E&amp;P average reductions.</td>
</tr>
</tbody>
</table>
Summary of Findings

• Company’s position entering downturn dictated ultimate performance

• Successful producers:
  
  - Targeted liquids-rich assets
  - Paid little to no dividends
  - Maintained positive retained earnings
    - Finance ongoing operations and for use as a safety net
Questions