




Valuation 101 – Oil and Gas Companies

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Introduction



Brian Reed, CPA/ABV, has more than 15 years of financial advisory experience ranging from acquisition due diligence to valuation services. With extensive experience providing services to the manufacturing, retail, distribution, software, oil and gas, and professional services industries, Brian's diverse knowledge and technical skills allow him to provide comprehensive consulting services to his clients.

Brian is an active member of several accounting professional organizations and is a frequent author of articles for professional and business publications. Brian earned a bachelor's degree from the University of Texas at Austin and a master's degree from Tulane University.


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Objectives

- ❖ To provide an overview of how to value oil and gas ("O&G") companies
 - Examine the various approaches utilized to derive the value of O&G companies
 - Examine earnings metrics that are most appropriate to utilize when determining value of O&G companies
 - How to account for various risks associated with O&G companies


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Relevant Units of Measurement

- Production volumes are typically measured as barrels of oil equivalent ("BOE") or Thousand Cubic Feet Equivalent ("Mcf") for gas.
- If a company has over 50 percent gas production, normally you convert into Mcfe; vice versa.
 - Energy Equivalent Units
 - 1 bbl = 1 BOE
 - 6Mcf = 1 BOE
 - 1MMBbl = 6 Bcf
 - 1bbl = 5.8 MMBtu


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Approaches

- A combination of the below approaches is preferred in order to corroborate the concluded value of the company.
 - Income Approach
 - Discount cash flow method
 - Market Approach
 - Business Enterprise Value ("BEV") / EBITDA
 - BEV / Production
 - BEV / EBITDAX
 - BEV / 2P
 - Asset (Mark to Market) Approach
 - Net Asset Value Method


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Income Approach - Components

- Reserve report to obtain net basis of oil and gas production
- Application of risk-adjustment factors to each classification types of reserves
- Future pricing assumption, also known as pricing deck, to multiply by production levels and obtain future cash inflows
 - Sources: Futures NYMEX pricing, published estimates (EIA, state agencies, commercial sources)
 - Pricing differentials
- Cash outflows
 - Operating costs
 - Expected investment
 - Production related taxes (Ad valorem, severance, federal)
 - Treatment for intangible drilling and development costs
- Apply discount rate to obtain the present value of future cash flows


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Discount Rate

- Weighted Average Cost of Capital
 - Typically utilizing the CAPM method to calculate cost of equity.
 - No "company specific" risk factors should be considered in valuing reserves such as size or company specific risks.
 - Risk to be included in discount rate should be related to the industry/market as a whole.
 - June 2014 SPEE survey – respondents indicated that discount utilized ranges from 4.96% to 29.24%
 - Average of 17.1%

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Classification of Reserves

- Classifications
 - Proved developed producing ("PDP")
 - Proved Developed Non-Producing ("PDNP")
 - Proved Undeveloped ("PUD")
 - Probable ("PROB")
 - Referred to as 2P reserves when aggregated with proved reserves
 - Possible ("POSS")
 - Referred to as 3P reserves when aggregated with proved and probable reserves
- Risk Adjustment Factors – Based on 2014 SPEE
 - Proved – Between 80% - 100%
 - Probable – 50%
 - Possible – 10%

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Classification of Reserves

- Proved – There is reasonable certainty (P90) of recovery under current economic conditions and technology
- Unproved – Geologic and engineering data delineate reserves at less than (P90); economic and technological conditions are insufficient to categorize as “proved”

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Pricing Differentials

- Pricing differentials
 - Represents the difference between published market prices and the price actually received when a producer sells a commodity
 - In other words, realized prices for a commodity often differ from posted prices due to quality, transportation, proximity to market, and more

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Other Considerations

- Drilling Type/Location
 - Vertical vs. Horizontal Drilling
 - Location/Geology
- Level of future Capital Expenditures

	Mineral Interest	Royalty Interest	Overriding Royalty Interest	Working Interest
Owens the underground minerals	Yes	Yes	No	No
Ownership continues after production stops	Yes	Yes	No	No
Generates revenue from well production	Yes	Yes	Yes	Yes
Collects upfront bonus payments	Yes	No	No	No
Remains in effect after the lease term expires	Yes	No	No	No
Pays to operate or drill the well	No	No	No	Yes
Participates in the lease operating expenses	No	No	No	Yes

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NYMEX Futures Pricing

- The advantage of NYMEX futures curve is it presents objectivity since the curve represents the expectations of market participants at a given point in time
- The disadvantage of NYMEX futures curve is potential for overreactions to political and economic events. Also the market could present a failure to adopt a long-term pricing perspective

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weaver Assurance • Tax • Advisory **Market Approach**

The primary method under the Market Approach that is relied upon is the guideline public company method. Under this method, publically traded companies as well as recently acquired public and private companies are considered.

- Selection of guideline public companies
- Application of derived multiples:
 - Business Enterprise Value ("BEV") / EBITDA
 - BEV / Production
 - BEV / EBITDAX
 - BEV / 2P

There are three methods under GAAP which differ in the treatment of certain operating expenses as they relate to exploration costs: The successful efforts method, the full cost method, and the income tax basis method.

1. Successful Efforts Method
 - Only capitalize exploration costs when reserves are successfully located. Unsuccessful exploration costs are expensed.

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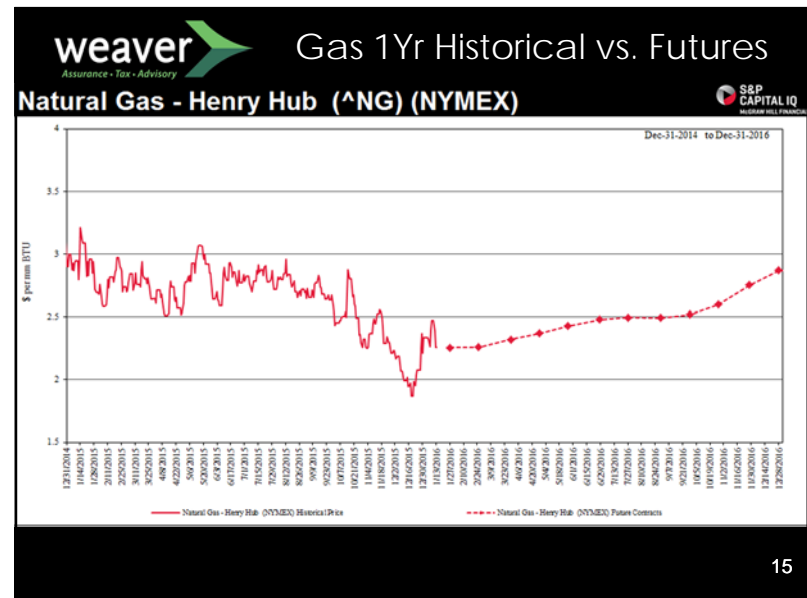
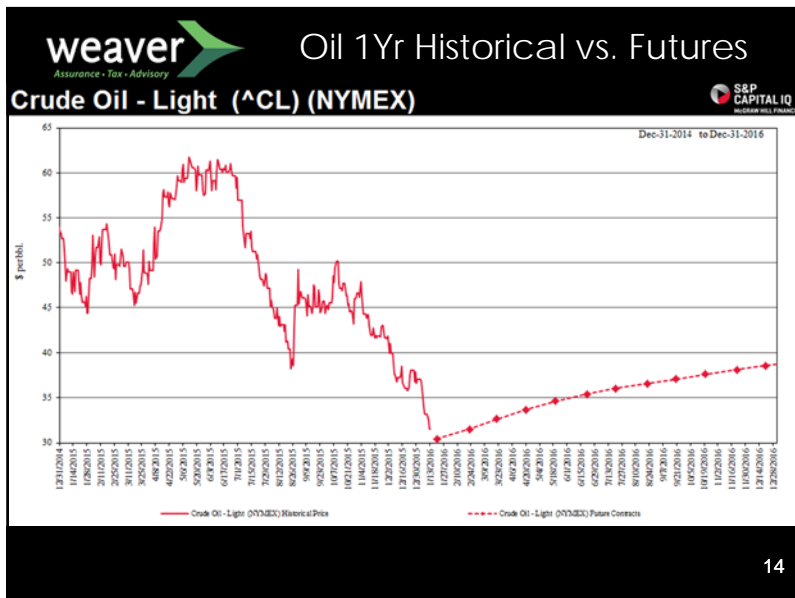
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2. Full Cost Method
 - All exploration costs such as carrying and retaining undeveloped properties, costs of collection and analysis of geographical and seismic data, and costs incurred with drilling an exploratory well, are capitalized.
3. Income Tax Basis Method
 - Costs will be expensed or capitalized based on the current income tax code and the company's elections.

- For firms utilizing the successful efforts method of accounting under GAAP, EBITDAX is relied upon under the market approach.
 - EBITDAX represents the earnings before depreciation, interest, taxes, depreciation and amortization, and exploration costs.
- Firms utilizing the full cost method have exploration costs captured in both depreciation and depletion, as such EBITDAX creates parity between both accounting methods.

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Methods of Accounting (cont.)

Item	Successful Efforts	Full Cost Method	Income Tax Method
Acquisition Costs	C	C	C
G&G Costs	E	C	C
Exploratory dry hole	E	C	E
Exploratory well, successful	C	C	B
Developmental dry hole	C	C	E
Developmental well, successful	C	C	B
Production costs	E	C	E

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