



Oil & Gas Merger Models and LBO Models: Key Differences

Merger models and LBO models are almost exactly the same for oil & gas companies – you’re still making purchase assumptions, combining and adjusting balance sheets, modifying the 3 statements, and so on.

You still care about IRR in an LBO and accretion / dilution in a merger model and you still calculate them in the same way.

So rather than going over how to build these models, we’re only going to point out the **key differences** here.

Assumptions

It’s pretty much the same as for normal companies. The main difference is that you may have an additional assumption for **commodity prices**:

LBO Resource Prices:		Gas	Oil / NGL	Hedged
		\$ per Mcf	\$ per Bbl	Price %
		\$ 7.00	\$ 75.00	110.0%
Price Cased Used in LBO:				LBO

If you do this in a merger model, you need to use the same prices for the buyer and the seller or the model wouldn’t make any sense – oil can’t be \$75 per barrel for one company and \$50 per barrel for another.

Oil & gas companies tend to be highly leveraged already, so often you cannot assume much for the debt to finance the transaction in either a merger model or an LBO model.

Other than that, you’re still assuming a purchase price, % cash/debt/stock (or just cash/debt for the LBO), interest rates on the cash/debt, and so on.

Purchase Price Allocation & Balance Sheet Adjustments

You still calculate Goodwill, adjust for PP&E and Intangible write-ups, write down existing DTLs / DTAs, and create a new DTL in the same way.

Fixed Asset Write-Up:			
PP&E Write-Up %:			5.0%
PP&E Write-Up Amount:			1,597
Depreciation Period (Years) - Book:			8
Yearly Depreciation Expense - Book:			200

One difference is that for the **PP&E write-up**, rather than just estimating a 5-10% increase over the existing balance, you might base it on the **PV-10 estimate** in the company’s filings.

We did not do it this way in the model because XTO’s PV-10 value was far below the value of the Proved Reserves on its balance sheet, but that is one option.



You combine balance sheets exactly the same way in a merger model – add up all the items individually, subtract cash used, take into account the write-ups and write-downs, add in new Goodwill, Intangible Assets, and Capitalized Financing Fees, modify the debt as appropriate, and wipe out the seller’s Shareholders’ Equity.

The same applies to the balance sheet adjustments in an LBO model, but there you’re just adjusting the company’s balance sheet by itself rather than adding another company’s balance sheet.

Acquisition Effects

Exactly the same as for a normal company: synergies, foregone interest on cash, new debt interest expense, new amortization expense, new financing fees amortization, new depreciation from PP&E write-up, and additional shares outstanding.

Depreciation of PP&E Write-Up:	
Amortization of Intangibles:	
Amortization of Financing Fees:	
Operating Expense Cost Savings:	

Those apply to the LBO model as well, except for the synergies, foregone interest on cash (since you don’t calculate EPS accretion / dilution there), and the additional shares outstanding.

You could still make assumptions for items like cost savings and a sponsor management fee in an LBO as well.

Merger Model: Synergies

This is where the merger model is **most different** for oil & gas companies.

Revenue Synergies: These are problematic for natural resource companies because you can’t assume that oil or gas prices will climb post-transaction. Companies have no control over the prices they get, so you could not assume a price increase as you might for normal companies.

You *could* assume a production increase, but new oil wells and fields take years to come online so even if production goes up, it won’t have an impact on a 3-5 year model.

Bottom-line: Revenue synergies are even less relevant for oil & gas companies than they are for normal companies.

Expense Synergies: For traditional companies you might assume a reduction-in-force (laying off

Transaction Assumptions - Cost Synergies				
	Projected			
December 31,	2010	2011	2012	
Total Annual Production (Bcfe):	1,149.7	1,264.7	1,390.6	
Expenses Per Mcfe of Production (\$ as Stated):				
Production:	\$ 0.95	\$ 0.95	\$ 1.00	
Taxes, Transportation & Other:	0.65	0.70	0.70	
Exploration:	0.07	0.07	0.07	
DD&A:	3.00	3.00	3.00	
Accr. of Asset Retirement Obli.:	0.05	0.05	0.05	
G&A (Exc. Stock-Based Comp.):	0.22	0.23	0.24	
Acquisitions:	0.50	0.50	0.50	
Development & Exploration:	3.39	3.50	3.50	
Other Property Additions:	0.60	0.60	0.60	
Total Expenses Per Mcfe:	\$ 9.43	\$ 9.60	\$ 9.66	
Net Reduction in Per Mcfe Expenses Due to Increased Scale:				
Production:	0.07	0.07	0.07	
G&A (Exc. Stock-Based Comp.):	0.02	0.02	0.02	
Total Reduced Expenses Per Mcfe:	\$ 0.09	\$ 0.09	\$ 0.09	
New Total Expenses Per Mcfe:	\$ 9.34	\$ 9.51	\$ 9.57	
Increase in Operating Income:	\$ 103	\$ 114	\$ 125	



employees), operating lease consolidations, a reduction in CapEx, and so on.

If you have enough information to do so, you could still make these assumptions for oil & gas companies – especially if they indicate in the deal announcement that they expect a certain amount of synergies or will be reducing CapEx or headcount by a certain amount.

But most expenses for oil & gas companies are on a unit of production-basis, so you could also make synergy assumptions based on those.

Example: Due to increased scale, the seller's production costs per Mcfe will now be \$0.95 rather than \$1.00. That, in turn, corresponds to an annual cost savings of \$100 million based on annual production of such-and-such.

See the diagram on the previous page for an example of how to calculate these synergies.

Modifying / Combining the 3 Statements

This part is almost exactly the same – modify the income statement for the acquisition effects, make sure that debt and the new assets are being tracked properly on the balance sheet, and that you're adding back **all** the non-cash charges (new and old) on the cash flow statement.

One **difference** in the merger model is that if you have a Successful Efforts company buying a Full Cost company or vice versa, you need to adjust the financial statements for the Exploration expense.

Example: A full cost company is buying a successful efforts company. The successful efforts company has an Exploration expense of \$100 on its income statement.

In this scenario you'd have to remove the Exploration expense from the combined income statement and instead capitalize it and add it to CapEx on the cash flow statement.

LBO Model: Credit Statistics and Ratios

It's pretty much the same here – you're still looking at Leverage Ratios (Total Debt, Net Debt, Senior Debt, and so on divided by EBITDA) and Interest Coverage Ratios (EBITDA divided by Total Interest, Net Interest, or Cash Interest).

Two points to be aware of:

1. You normally use EBITDA rather than EBITDAX because EBITDA is the standard for all things debt-related; also keep in mind that Exploration is still a cash expense and will therefore reduce your ability to pay interest and repay debt principal.

- It's really important to look at (EBITDA – CapEx) in addition to EBITDA for all these ratios because oil & gas companies have very high CapEx requirements. Even if the leverage ratios and interest coverage ratios do not look bad based on EBITDA, they might look much worse based on (EBITDA – CapEx).

Merger Model: Contribution Analysis

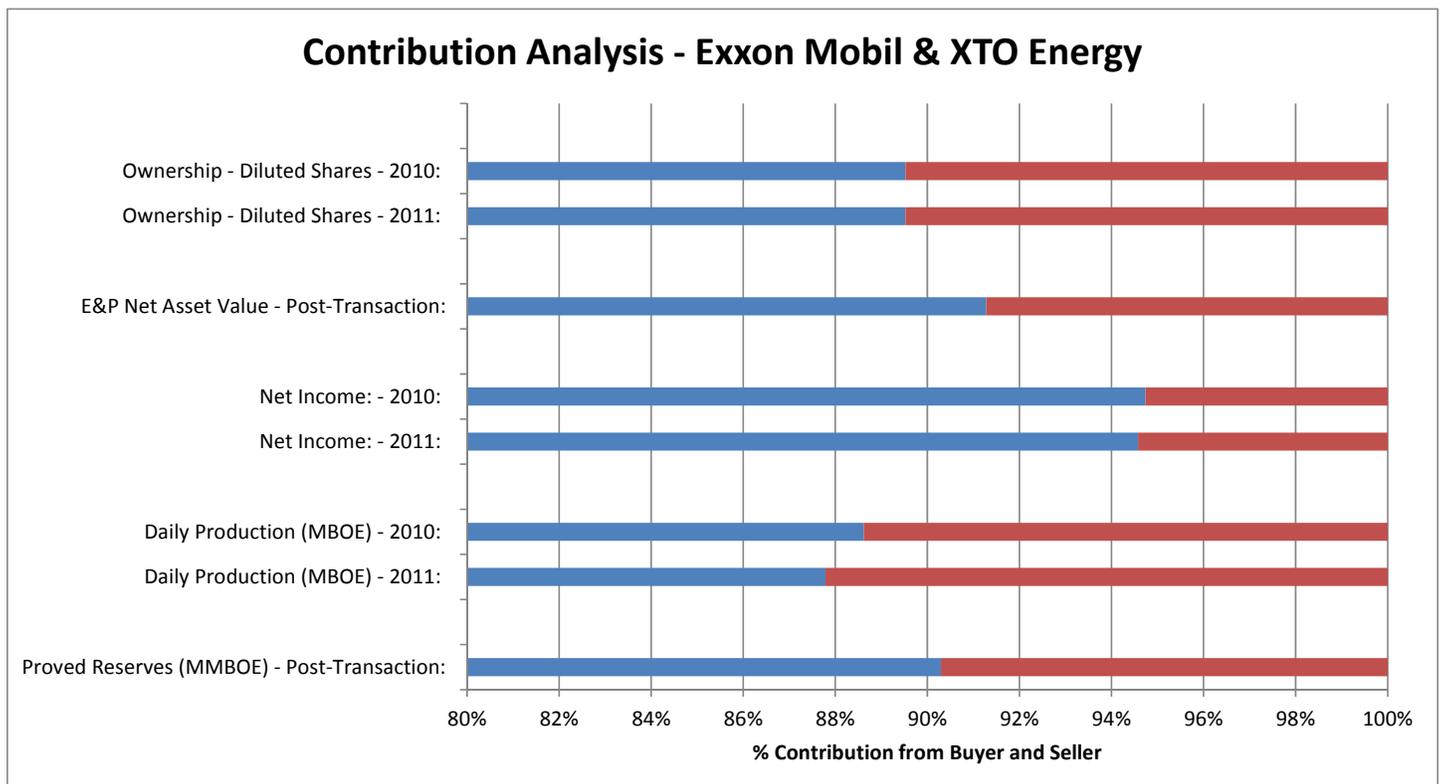
In a traditional contribution analysis, you'd look at how much revenue, pre-tax income, operating income, net income, EBIT, EBITDA, and so on the buyer and seller are "contributing" to the combined company.

For example, you might see that the buyer has \$900 million in EBITDA and the seller has \$100 million in EBITDA, and based on that you might say that the buyer should own 90% of the combined company.

The logic is the same for oil & gas companies, but you use a different set of metrics: Net Asset Value, Proved Reserves, and Daily Production are the best examples.

The only trick here is to make sure you're comparing apples to apples – e.g. if Daily Production is in BOE, make sure you convert the production from both companies to BOE rather than leaving it in Mcfe.

Here's what the analysis might look like:





Calculating Accretion / Dilution and IRR

These are both the same as for normal companies. Combine the buyer and seller’s pre-tax incomes, take into account acquisition effects, apply the buyer’s tax rate, and divide by the new shares outstanding to find the new EPS and calculate accretion / dilution.

For IRR, use the Excel IRR or XIRR function based on the PE firm’s initial equity contribution and then make sure you include any dividends / dividend recaps and the equity value on exit.

The only **difference** here is that in a merger model you can look at oil & gas-specific accretion / dilution metrics such as NAV Per Share, Daily Production Per Share, Proved Reserves Per Share, and so on.

PV-10 Proved Reserve Value:	\$ 115,156	\$ 10,861	\$ -	\$ -	\$ 126,017
Net Undeveloped Acres (MM):	71.92	1.55			
Estimated Value Per Acre:	\$ 150	\$ 759			
Undeveloped Land Value:	\$ 10,787	\$ 1,174	\$ -	\$ -	\$ 11,961
E&P Net Asset Value:	\$ 125,943	\$ 12,035			\$ 137,978
Balance Sheet Adjustments:	(30,094)	(10,144)			(29,741)
Diluted Shares (MM):	4,848.0	579.4	579.4	567.2	5,415.2
E&P NAV Per Share:	\$ 19.77	\$ 3.26			\$ 19.99
E&P NAV Accretion / Dilution:					\$ 0.22
E&P NAV Accretion / Dilution %:					1.1%

The Excel paste-in on the right shows an example of how to calculate the NAV accretion / dilution:

To be more complete, you could also look at the other business segments, apply a multiple to those and add them to the Net Asset Value so that it’s a true Enterprise Value metric rather than just the Net Asset Value of the E&P segment.

The NAV accretion / dilution is meaningful no matter what kind of transaction it is, because you’re taking into account new shares issued, debt raised, and cash used (the latter 2 are in the balance sheet adjustments).

Daily Production and Proved Reserves accretion / dilution are most meaningful in an all-stock deal because the share count will actually change there.

If you’re not using stock at all, these metrics are pointless because the deal will always be accretive – there are no new shares and cash/debt does not affect production or reserves.

Sensitivity Tables

Purchase Price vs. Natural Gas Prices (5x EBITDA Exit Multiple, Existing Debt Refinanced, 2x Leverage)										
			Natural Gas Prices (\$ / Mcf):							
			\$ 4.00	\$ 5.00	\$ 6.00	\$ 7.00	\$ 8.00	\$ 9.00	\$ 10.00	
Per Share Purchase Price & Offer Premium:	\$ 58.09	40.0%	(50.9%)	(17.8%)	(6.3%)	1.4%	7.2%	12.0%	16.1%	
	56.01	35.0%	(51.1%)	(17.2%)	(5.6%)	2.1%	8.1%	12.9%	17.0%	
	53.94	30.0%	(51.3%)	(16.6%)	(4.9%)	3.0%	8.9%	13.8%	18.0%	
	51.86	25.0%	(51.5%)	(16.0%)	(4.1%)	3.8%	9.9%	14.8%	19.0%	
	49.79	20.0%	(51.8%)	(15.3%)	(3.2%)	4.7%	10.8%	15.8%	20.0%	
	47.71	15.0%	(52.1%)	(14.6%)	(2.4%)	5.7%	11.9%	16.9%	21.2%	
	45.64	10.0%	(52.4%)	(13.8%)	(1.5%)	6.7%	12.9%	18.0%	22.3%	

The idea is the same: you look at how the returns and the accretion / dilution change based on the purchase price, the deal structure, % cash vs. % debt vs. % stock, synergies, and so on.



The key differences:

1. You could also look at **commodity prices** as one of the variables in these tables. Just make sure you're using the same price case for the buyer and seller in a merger model.
2. You often assume a wider range of **exit multiples** in the LBO sensitivity tables because oil & gas is a cyclical industry and you have no idea where the cycle will be when the PE firm sells the company.

What Differences?

As you can see, these models are not tremendously different for oil & gas companies – that is why we went through them quickly in this modeling course.

You are far more likely to get technical questions on accounting, operating models, and valuation for oil & gas companies, so focus on those when you're preparing for interviews.