

The optionality in Exxon Mobil

Exxon Mobil is the largest oil company in the world and it does have substantial undeveloped crude oil and natural gas reserves. In the last 10K (see pages 138 & 142 of pdf file), here is what Exxon reports as developed and undeveloped reserves:

- With crude oil, Exxon Mobil 8,657 million barrels of reserves, with 2,861 million barrels of undeveloped reserves. Of the undeveloped reserves, 921 million barrels are in the United States and 682 million barrels are in Asia.
- With natural gas, Exxon Mobil has 74,091 billion cubic feet of reserves, with 23,834 billion cubic feet of undeveloped reserves. About half of these undeveloped reserves are in the United States.

Given the argument that we made in class that natural resource options have optionality, this may seem like a good setting to try to value the optionality in these reserves. There are three factors that will get in the way:

1. To the extent that these are proven reserves, they are more akin to in-the-money options rather than all options. You would like to know the extent of all undeveloped reserves, proven or otherwise.
2. There is no specific information on the cost of developing these reserves. One can make guesses based upon the location of the reserves, but it would be still speculative.
3. There is no information on the variable cost per unit of production either. Again, one can speculate.

Overall, though, you have too little information to apply an option-pricing model. That does not mean that there is no optionality in the reserves. There clearly is and the question then becomes how much of a premium you will add on to your DCF value. I think that the premium will be small (in percentage terms) for the following reasons:

1. Exxon Mobil has only 30% of its overall reserves as undeveloped reserves, with 70% already developed.
2. The cash flows from the developed reserves are substantial (making Exxon one of the most profitable firms in the world). The value of these cash flows alone amount to more than \$250 billion.
3. To the extent that these are proven, viable reserves, the reason that they are not being developed is not because Exxon is waiting for higher prices but because the market would not be able to absorb the extra production, without a drop in prices.