Homework

April 2018

The Economics of Energy Corporations (2)

Questions

- Using the Shale Production profile, calculate the NPV and IRR using the following assumptions
  - Production starts in 2019
  - 75% oil exports (export oil price $60 real)
  - Capex of $10 per barrel, with 80% of capex in Year 1 (2018) and 20% in Years 2-5
  - Opex of $7 per barrel
  - Depreciation on a unit of production basis
  - Export tax of 30%, Royalty 5%, Other taxes 1% (all oil)

- WACC assumptions
  - Cost of Debt – 5% (tax rate 20%)
  - Risk-free rate – 1.5%
  - Equity market return – 11%
  - Company Beta – 1.2
  - Debt:Equity split is 40:60

1. Apply the same discount rate to the Conventional Model
   - What are the NPV, IRR and breakeven oil price now?

2. What is the breakeven oil price for the Shale model?

3. Create the spider graph to show the sensitivities of the Shale model (put in Word Document and briefly discuss)

4. Test the shale model with an oil price scenario and discuss the results

5. If you had to drill an exploration well to justify the shale model and were told that the risk was 33% and the well cost was $5mm would you proceed?
   - What would the risk have to be before you decided not to drill?

6. Compare the NPVs, IRRs, breakeven oil prices and sensitivities of the two projects. Which do you prefer?

- Please send me both models so I can see your workings

- Please write answers in a Word or Pages document and use graphs where appropriate