Tax Design of Petroleum Industry: Comparative Analysis of Taxation of Upstream Petroleum Activities in the UK and Norwegian Continental Shelf

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Motivation

Host governments in oil producing countries collect shares of economic rents through taxation of oil extraction, but too heavy taxation can cause the deterrence of investments in the industry. Therefore, the solution is to procure the appropriate balance of interests between host governments and investors.

Research questions

1. Comparison analysis of Taxation of Upstream Petroleum Activities in the UK and Norwegian Continental Shelf.
2. Calculation of the pre-tax and post-tax NPVs of the two different sets of fields using taxes of two countries.
3. Calculation of the tax take of two countries.
4. Assessment of the progressivity of the two tax systems.

Tax regimes

The UK	Norway
Ring Fence Corpation Tax - 30%	Corporation Tax - 27%
Supplementary Charge - 20%	Special Tax - 51%
Investment Allowances - 62.5%	Uplift - 5.5% (total 22% over 4 years)

Methodology

Deterministic Sensitivity

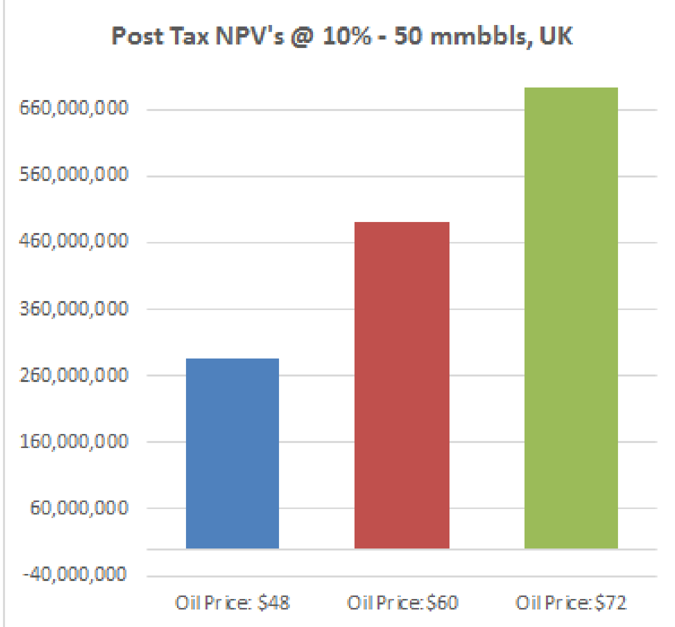
For Sensitivity Analysis the responsiveness of tax take percentages of 3 Fields in the UK and Norway to variations in four variables has been examined. Variables are oil prices, development costs, recoverable reserves and annual OPEX

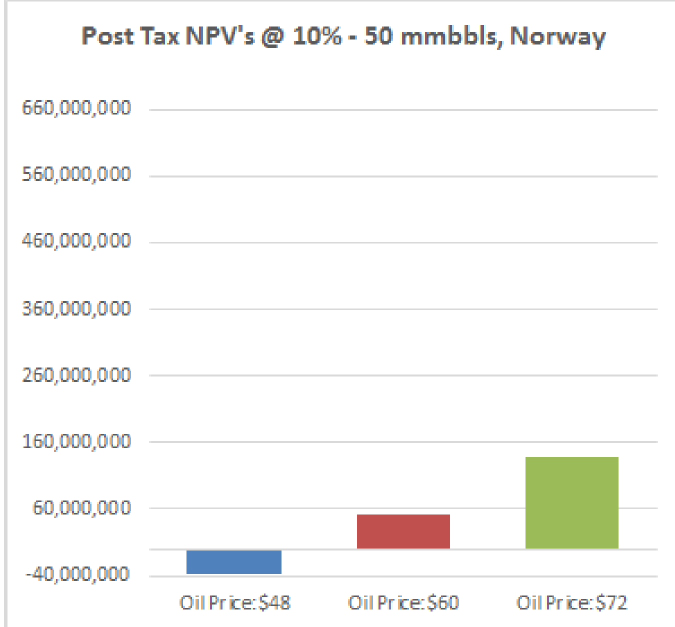
Stochastic (Monte Carlo)

Variables	Values		Distribution
	Mean	Deviation	
Reserves (million barrels)	50	25%	Normal
Oil Price $	60	33%	Normal
Total Development Costs (million $), UK	1,450	25%	Normal
Total Development Costs (million $), Norway	1,631	25%	Normal
Annual OPEX (% of accumulated development costs), UK	7.75%	10%	Normal
Annual OPEX (% of accumulated development costs), Norway	8%	10%	Normal

Results

Under all of the assumptions considered, the tax system in the UK is more favorable for the investor. Taxation in the UK is progressive; while it is regressive in Norway possibly leading to distortions in investment decisions.





In terms of post-tax NPVs, the investor at the development stage is better off under the UK tax regime due to progressivity of taxes and lower tax rates. These results are consistent with the outcomes under Monte Carlo Analysis.

Recommendations

1.To increase uplift from 5.5% to 12.5% leading to fall in tax take by 18% (from 92% to 74%)
2.Alternatively, to decrease depreciation period from 6 to 4 years causing decrease in tax take by 10% (from 92% to 82%)
3.On the other hand, to decrease Special Tax rate from 51% to 40% leading to decrease in tax take by 12% (from 92% to 80%)

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