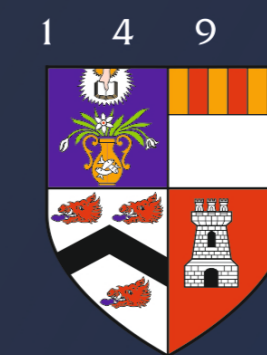


An appraisal of a production efficiency tariff for oil fields in the UK Continental shelf

Robert Steele



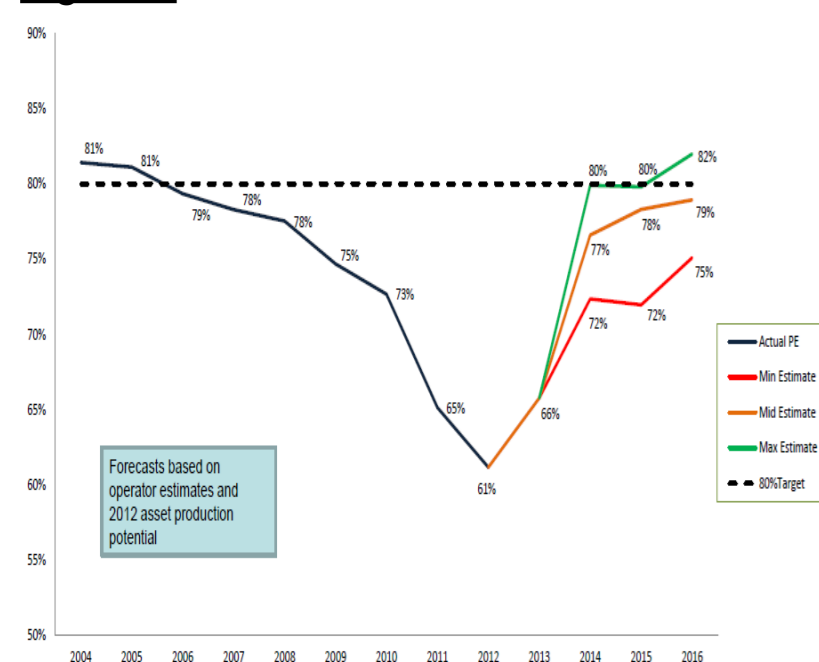
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Motivation

Low production efficiency rates have been identified as a key component of declining production output in the UK Continental Shelf.

Production efficiency trend for UKCS

Figure 1



Sources:

Figure 1: Oil and gas UK (2012)

Figure 2: (DECC) Maximising Economic Recovery Conference, OGUK, 2014

Research questions

- Would the introduction of a production efficiency tariff have a positive net impact on investment in the UKCS
- Would the introduction of a production efficiency tariff have a positive net impact on national welfare?

Methodology

A financial base model of eight potential oil field investments is produced in the form of a Capital Asset Pricing Model using Microsoft Excel.

A sensitivity analysis was undertaken to evaluate:

- The impact of production efficiency on oil field valuations
- The impact of tariff rate applied to oil field valuations.

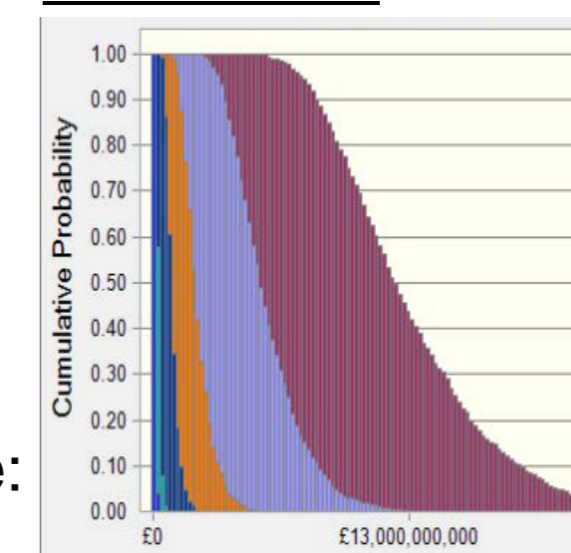
Monte Carlo simulation was used to assess the probability of outcomes based on oil price and production efficiency distributions.

Results

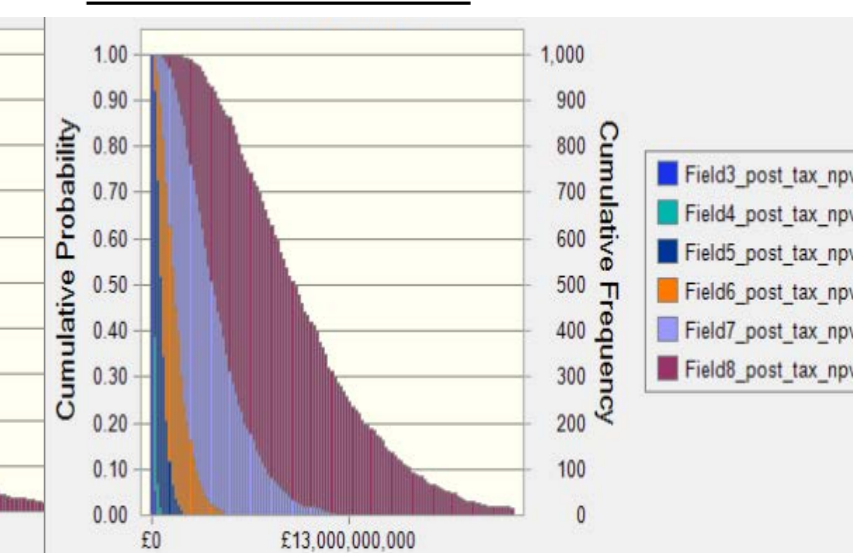
Increased Failure to monetise recoverable reserves fully

Fields 3 and 4 become uneconomical. Which represents a reduction of 13,139,111 barrels not produced as a direct consequence of the tariff.

Field NPV before tariff



Field NPV with Tariff



Increased Government Revenue (Short term)

The implementation of a Production efficiency tariff (at a rate of 10% price per barrel under produced) increases revenue resulting in a net increase of 15% to the Governments field valuations.

Lower Private Investment

Introduction of the same tariff rate would be at the expense of the £7,180 million reduction to investors NPV across the 8 fields. This represents a 49% decline in valuation.

Recommendations

Based on the work carried out for this report, the implementation of a Production efficiency tariff is not recommended.