Evaluating Government Fiscal Policy in Maintaining the Attractiveness of the UK North Sea Province- A Time Line Analysis

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Objectives

- To analyse the evolution of the UK petroleum fiscal regime over the last 27 years and,
- To evaluate its impact on extending the life of the UK North Sea petroleum province.

Importance of Topic

- Significant contribution of the oil industry to the UK economy (Investments, Job creation, Fiscal revenues, etc).

- The structure of the current fiscal regime was formally legislated through the OTA of 1975. But, since 1975, the UKCS has undergone a major change: the maturity of the oil province:
  - Small fields remain to be discovered
  - Decrease in production from mature fields
  - Increasing range of alternative global investment opportunities

- Taxation policy will be of much greater significance than in the past!

Evolution of the UK Fiscal Regime

- Formal Structure established in 1975 (OTA):
  - 12.5% Royalty on Gross Revenues
  - 70% Petroleum Revenue Tax (PRT)
  - 52% Corporation Tax (CT)

- Typical structure in Concessionary regimes

- Various subsequent amendments. 3 major phases:
  - Abolition of Royalty in 1983
  - Abolition of PRT in 1993
  - Imposing 10% Supplementary charge in 2002

Controversy

- The UK Government has two key objectives from its petroleum fiscal regime:
  1. To ensure that an appropriate share of UKCS oil profits is taxed, and
  2. To maintain industry interests in the future of the UK's oil reserves.

- Controversy arises from the need to balance these two competing objectives.
  - 1975-1983: the UK Government leaned towards generating high revenues from the oil industry
  - 1983-2002: The emphasis has been on encouraging investment
  - 2002: first time increase in tax since 1983

- Significant controversy, even extreme views expressed, e.g.

  - *"The UK petroleum fiscal regime is the weakest in the world"* (Rutledge & Wright, 1998, p.801)

  - *"Although Government actions since 1983 appeared crazy and irresponsible, they were ordinary measures that led to hyperactivity in the UK sector of the North Sea and made the UK offshore the most active offshore province in the world"* (Johnston, 2003, p.6)

Methodology & Assumptions

- Oil field profitability and Government revenue are calculated on the following basis:
  - A representative sample of post 1993 producing oil fields in the UK North Sea:
    - 25 oil fields: 10 very small, 9 small, 4 medium and 2 large fields.
  - Nine tax scenarios:
    - S.1: Base Pre-tax Scenario
    - S.2-S.6 evaluate historical changes
      - S.2 Pre-1983 structure: 12.5% Royalty, 70% PRT and 52% CT
      - S.3 Post-1983 but pre-1993 structure: 75% PRT and 33% CT
      - S.4 1993 changes: PRT 50% and 30% CT
      - S.5 post-1993/pre-2002: 30% CT
      - S.6 post 2002 regime: 30% CT and 10% ST

- S.7-S.9 evaluate PRT reliefs
- PRT similar to RRT in Australia and ST in Norway, but more *generous* and more complex
- 3 reliefs: Uplift, Oil Allowance and Safeguard
  - S.7 10% ST, 30% CT and 50% PRT without the Uplift
  - S.8 10% ST, 30% CT and 50% PRT without the Oil Allowance
  - S.9 10% ST, 30% CT and 50% PRT without the Safeguard

Evaluation Techniques

- Oil field profitability and Government revenue are calculated using 3 evaluation techniques:
  - Discounted Cash Flow (DCF)
  - Modern Asset Pricing (MAP)
  - Real Options Theory (ROT)
- ***Why?***
  - To capture the correct impact of taxation, an appropriate evaluation technique needs to be adopted.
  - Controversy surrounds various techniques.

- Traditional Discounted Cash Flow (DCF) is used by oil companies and usually applied in previous studies.

- But DCF has several limitations:
  - The use of uniform discounting irrespective of risk profile of the different components of the cash flow
  - Constant discount rate implying that oil price grows at a constant rate over time
  - "Now or Never"concept- no flexibility in decision making.

- More modern techniques, Modern Asset Pricing (MAP) and Real Options Theory (ROT), were developed to overcome some of the weaknesses of DCF. ***How?***

- MAP:
  - A more efficient valuation of risk by adjusting revenues for oil price risk, while discounting the net cash flow at the risk free rate, instead of single discount rate under DCF.

- ROT:
  - Flexibility in decision-making instead of DCF "now or never" decision.

- MAP & ROT can more readily exploit a sophisticated model of oil price dynamics.

DCF

$$NPV = \sum_{t=1}^{n} NCF_t \times DF$$

MAP

$$NPV_e = \sum (R_t \times RDF_t \times TDF_t) - \sum (C_t \times TDF_t) - \sum (T_t \times TDF_t)$$

Impact on Field Profitability

- Post-tax NPV calculated under DCF is generally lower than MAP, particularly for larger, long-term projects. This is mainly a consequence of DCF constant discount rate applied to various components of NCF.

- Under DCF the impact of tax can be overestimated.

- However, consistency in findings with regards the impact of different fiscal packages on field profitability under DCF and MAP.

1. 1975-1983 fiscal package (12.5% Royalty, 70% PRT & 52% CT):

- This scenario generates a significant reduction in profitability for all fields, particularly for very small and small fields.

- Major effect of Royalty. Very small and small fields do not pay PRT as a consequence of the PRT Oil Allowance relief.

- Royalty occurs practically as soon as production starts and as such its impact is felt earlier than the other taxes. For instance, in the case of one field, Royalty occurs 3 years before CT and 6 years before PRT.

2. Abolition of Royalty (1983)

Post-1983/pre-1993 structure (75% PRT & 50% CT)

- As compared with the 1975 package, profitability is enhanced despite the higher rate *and* the higher take of PRT.

- For fields paying PRT, the take from this tax increased because:
  - Higher rate
  - Higher taxable income since Royalty is not anymore deducted from the income subject to PRT.

3. Abolition of PRT (1993)

Post-1993/pre-2002 structure (New fields 30% CT)

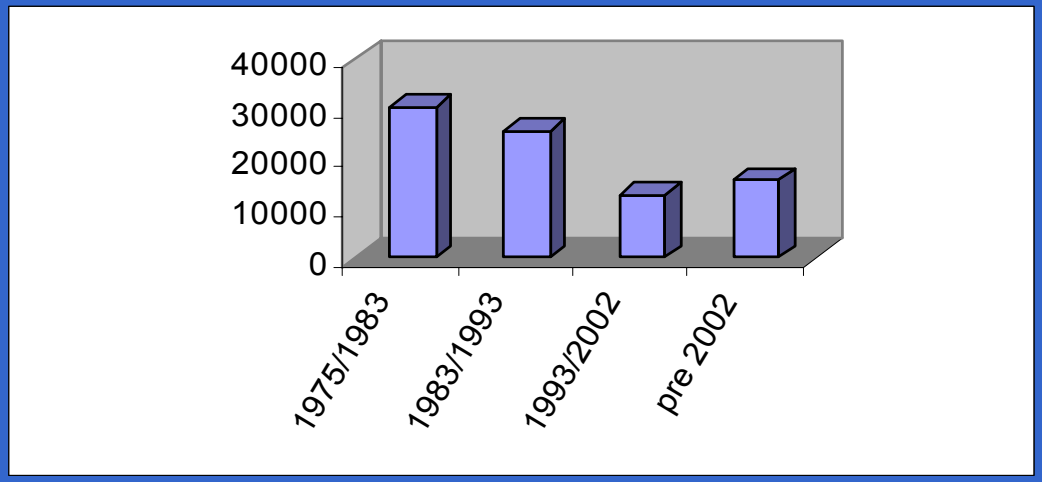
- This scenario generates the highest profitability for all fields.
- However, the abolition of PRT does not have a major effect on the very small and small fields, unlike the larger fields.

4. Imposing 10% Supplementary Tax (2002)

Post-2002 structure (30% CT & 10% ST)

- No dramatic decrease in profitability as compared with the 30% CT only.

Impact on Government Revenue



- Highest Government take under the 1975 fiscal package
- The abolition of Royalty does not significantly reduce Government take particularly from larger fields, as PRT is the major source of income.
- Lowest take under the post-1993/pre 2002 package
- The increase of 10% in income tax in 2002 managed to increase fiscal revenues but they are still lower than the pre-1993 packages.

- Such findings are based on the assumption that all fields (25) are developed.

- However, applying the ROT concept not all fields are going to be developed “today”.

- Under the 1975-1983 package, the development of 11 fields (4 very small, 5 small and 2 medium) out of 25 is unlikely to be undertaken. If the development of those 11 fields is deferred, the Government suffers a reduction in revenue of 47 per cent.

- Under the other fiscal packages the impact is less pronounced, as both PRT and CT provide significant fiscal reliefs encouraging by this early development.

- Tax instruments, like Royalty with limited expenditure reliefs, can encourage investment delay leading to delay/loss in fiscal revenues.

- This is not desirable in a mature province like the UKCS where there is a need firstly to sustain development and consequently production and, secondly to maintain the interest of oil companies in such a high cost province.

CONCLUSION

- The "toughest" fiscal package is the one that applied to oil development activity before 1983 since this is the only package that renders several fields unprofitable.

- If the UK Government had maintained the 1975 fiscal structure, many fields would have not been developed and some of those currently operating would have been rendered marginal and/or abandoned.

- Effectiveness of the abolition of PRT in 1993?
  - Major source of revenue is from large fields while small fields are protected against the payment of PRT.
  - Currently, with a majority of small fields in the UK North Sea, PRT is likely to be a poor source of revenue
  - Complicated.

- Maintaining the Pre-1983 structure would have resulted in many fields abandoned or undeveloped.

- Maintaining the Pre-1993 structure would have resulted in low fiscal revenues generated.

- The imposition of 10% ST in 2002 does not dramatically impact profitability. In fact, currently, with its 30% CT and 10% ST, the UK has one of the most favourable fiscal regimes in the world in terms of oil project profitability.

- However, one would expect that in a competitive world, areas with the least favourable geology, highest development and operating costs and lowest well head prices, would offer lenient fiscal terms.

- Although the UK offers a stable political environment, its petroleum fiscal regime witnessed frequent amendments, which are likely to affect adversely investor confidence even though not all those changes can be described as substantial.

- Currently if changes are inevitable, the Government on balance would appear to favour the use of fiscal reliefs as a means of encouraging the development of the remaining high cost fields.