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Evaluating the Usefulness of the Interventionist Approach as a Policy Tool to Influence Oil and Gas Investment Activities: the Case of the UK

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Abstract – The UK petroleum fiscal regime was established in 1975 and tightened up with a number of different new taxes up until 1981. The objective of the tight fiscal terms was to secure more rent from the UK oil resources for the nation. However, the period 1983-2000 witnessed three petroleum tax relaxations. These took place in 1983, 1987-88, and 1993, and presented a clear change in the type of UK governance of its petroleum resources from a proprietorial to a non-proprietorial regime. This might be because of depending on wrong judgment to any potential petroleum resources in situ. This paper aims first at exploring the historical rationales which underpinned the UK petroleum tax relaxations, and secondly, at testing them from an ex-post position. The testing helped in deciding whether the Government policies behind the rationales for the tax relaxations were achieved. Moreover, testing clarified the type of mineral governance that is being used in the UK and evaluated its success. Furthermore, it evaluated the usefulness of the interventionist approach in trying to accelerate oil and gas investments by using the fiscal regime. The results of this paper showed that the UK Government was always the revenue loser as a consequence of these tax relaxations.

Keywords – Fiscal, governance, petroleum, regime, tax.

1. INTRODUCTION

Oil and gas exploration, development and production activities, and the companies which are involved in them, generally face additional taxation to that which applies to other industries and services. This is because the price of oil, for geological, market and political reasons, generally bears little relation to its cost of production, thereby giving rise to economic rents the size of which is largely unrelated to the efforts of oil and gas companies. Such a prospect, reinforced by concepts of sovereignty over natural resources endowments, has encouraged governments to establish specific oil and gas fiscal regimes, both to prevent oil and gas companies from capturing all of the oil rent, and also to make a claim on that rent on behalf of the citizens of oil and gas producing countries.

The UK has, over time, come to use its fiscal regime more and more as a tool of intervention. This is apparently an application of the interventionist approach; where a government may intervene in a business via the fiscal regime, or any other available econometric or policy tool, to either stimulate or deter investment. In other words, using fiscal regime as a tool to introduce investment incentives or disincentives rather than waiting for the market forces to play their roles in affecting and balancing investment activities.

In the case of the UK oil and gas industry, the Government had tried to apply the interventionist approach to stimulate oil and gas investment activities. This became particularly apparent from the 1980s onwards after the initial period of fiscal tightening which had occurred in the 1970s with the aim of securing a

higher share of rents for the UK during a period of high oil prices. The Government became increasingly concerned and wanted to stimulate more production and then to sustain it, particularly after 1986 when oil prices fell very sharply. Thus, it was that the UK underwent three fiscal relaxations in 1983, 1987-88 and 1993 by the end of which new fields would only be subject to ordinary corporation tax (CT), and royalties were on their way to being abolished. But did these interventions actually work? This paper asks this question, almost for the first time, and the answer or answers are extremely important for assessing the validity of the interventionist approach. In other words, the UK appears to have sacrificed fiscal revenues in order to stimulate or maintain production. But was this sacrifice actually worth it in terms of the results which were achieved?

2. A HISTORICAL EVOLUTION OF THE UK PETROLEUM TAXATION REGIME UP TO 2000

Britain had been producing oil for more than a hundred years before the discovery of North Sea oil. The history of the exploration and development of oil and gas resources in the North Sea is extensive. For centuries small quantities of oil were extracted in Britain from shale to produce kerosene, known as lamp oil. In 1913 production was over 3.25 million tonnes [1]. In 1937 an onshore gas field was found in Yorkshire. The first commercial oil discovery in the UK was in 1938 at Eakring. In 1943 UK oil production reached 3,000 barrels a day from 106 wells [2] – [4]. The international oil and gas industry first took an interest in the UK North Sea waters in 1959. This was after one of the biggest natural gas fields was discovered by the Shell and Esso oil and gas companies in the mid-1950s in the Netherlands [5]. In 1964-65 the UK Government put into operation the first comprehensive regime for exploration and production of petroleum in the North Sea. In the mid-1970s there were some remarkable

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changes in the UK oil industry. These were a sharp increase in the oil and gas prices resulting from the 1973 Arab-Israeli conflict; the recovery of oil and gas production; and 40 new offshore discoveries over the period 1970-1974. These changes, alongside the advantage of the proximity of the North Sea to the European market, led to a boost in the UK oil and gas industry and resulted in high profits [6]. This in turn created a need for the new legislation of 1975 in order to capture the expected super profits.

In 1974 when oil prices increased, the Labour Government introduced a policy aimed at providing more protection for national interests in relation to North Sea oil. This protection was seen through state participation in oil and gas operations alongside international oil and gas companies. In this year (1975) large profits were generated and more were expected from North Sea oil. These profits resulted from an increased production rate, and also from the very sharp increase in oil and gas prices arising from the Arab-Israeli conflict in 1973. In the light of these events, the UK introduced a Petroleum Revenue Tax (PRT) at a rate of 50 per cent to tax a high proportion of the super profits from the exploitation of the United Kingdom Continental Shelf's (UKCS) oil and gas. In other words, PRT was seen as a suitable device to secure more economic rent, or 'take' [7].

The Oil Taxation Act of 1975 introduced the safeguard concept, designed to encourage the development of explored marginal fields. This concept meant that a participator would pay PRT when his

adjusted profits for a period exceeded 15 per cent of his accumulated capital expenditure, though the total payment of PRT would not exceed 80 per cent of the participator's total gross profits [8] – [11]. Also in 1975, the concept of a 'ring fence' was introduced for the CT payments around any oil company's North Sea business. This concept meant that losses from abroad or from other activities could no longer be set against profits from North Sea production to reduce tax liabilities.

Following the substantial increase in oil prices in 1979/80, the 1981 Budget introduced a new tax called Supplementary Petroleum Duty (SPD) at a rate of 20 per cent [12]. By introducing SPD, there was thus a combination of taxes on oil and gas production during the period 1980-1981, and North Sea oil taxation became extremely complex and unstable. It consisted of four separate taxes at the same time; these were Royalties, Petroleum Revenue Tax, Supplementary Petroleum Duty and Corporation Tax. This combination expresses a total of 89.92 per cent as a marginal tax take for the UK Government during that time period. For detailed illustration of how the overall marginal tax rate is calculated, see Table 1. Above this, in 1982 the Government increased the rate of Petroleum Revenue Tax to 75 per cent [13].

A £100 Revenue	
Oil Company's Share	Government's Share
$\frac{12.5\% \text{ Royalty}}{\text{£87.5 Remaining Revenue}}$	$\xrightarrow{(100 \times 12.5\%)} \text{£12.50}$
$\frac{70\% \text{ PRT}}{\text{£26.25 Remaining Revenue}}$	$\xrightarrow{(87.5 \times 70\%)} \text{£61.25}$
$\frac{20\% \text{ SPD}}{\text{£21 Remaining Revenue}}$	$\xrightarrow{(26.25 \times 20\%)} \text{£5.25}$
$\xleftarrow{\text{£10.08}}$	$\frac{52\% \text{ CT}}{\text{£10.92 Remaining Revenue}} \xrightarrow{(21 \times 52\%)} \text{£10.92}$
£10.08	Total Revenue
10.08%	£89.92 89.92%

Note: Table 1 illustrates the sequence of tax deductions based on an assumption of £100 revenue. First of all, the Government would receive its royalty at 12.5% rate. This is a deduction of a £12.5 from the £100 revenue. The remaining £87.5 (100 – 12.5) would be subject to a 70% PRT. The PRT payment would be £61.25 (87.5 x 70%). The remaining £26.25 (87.5 – 61.25), after royalty and PRT deduction, would be subject to a 20% SPD. This is a £5.25 charge (26.25 x 20%), leaving a sum of £21 (26.25 – 5.25) to be taxed at a 52% CT, which comes to £10.92 (21 x 52%); leaving a £10.08 final revenue to the oil and gas company. This would make the Government share of the £100 revenue as 89.92%.

At this stage the Government decided that exploration and development activities were affected by the tax regime, and the development of North Sea oil was put at risk by the high level of taxation and the frequency of changes [6]. Therefore, it was decided that there should

be a relaxation of the tax burden to help recovery and to increase exploration and development activities [5].

The year 1983 was a time of change for the UK petroleum fiscal regime. In this year and in the Chancellor's 1983 Budget Statement, royalties were

abolished in the Petroleum Royalty Act 1983 for qualifying fields receiving development approval from the Secretary of State for Energy on or after 1st April 1982 [14]. In this sense, the Finance Act 1983 exempted a number of relevant new fields from royalty [15]. This was the first stage of abolishing royalties. Moreover, offshore fields outside the Southern Basin of the North Sea that had development consent after 31st March 1982 were entitled for double oil allowance for the purpose of calculating PRT profits, i.e., 500,000 metric tonnes per chargeable period up to a total of ten million tonnes per field [14]. Furthermore, since 16th March 1983 exploration and appraisal expenditure outside an existing field were allowed to be deducted against the PRT income from these existing producing fields [14]. On 31st December 1982, SPD was replaced by another tax called Advanced Petroleum Revenue Tax (APRT). APRT was abolished after one year [13].

In brief, the 1983 oil tax changes, relaxation, consisted of the following:

1. Phasing APRT out, which was completed by the end of 1986.
2. PRT allowance was doubled for new fields.
3. Royalties were abolished for fields outside the Southern Basin of the North Sea area that were developed after March 1982.
4. Immediate PRT relief against any field for expenditure incurred after 15th March 1983 on searching for oil or appraising reserves discovered.

The Finance Act 1987 introduced the concept of the 'Cross Field Allowance' [16], which stated:

"Where an election is made by a participator in an oil field (in this section referred to as "the receiving field"), up to 10 per cent. of certain expenditure incurred on or after 7th March 1987 in connection with another field, being a field which is for the purpose of this section a relevant new field, shall be allowable in accordance with this section in respect of the receiving field..." (Great Britain 1987, S. 65)

In other words, this concept allowed ten per cent of the development expenditure of offshore fields outside the Southern Basin of the North Sea and approved for development after 17th March 1987 to be deducted from income in other fields for the purpose of calculating PRT.

The Chancellor of the Exchequer announced in the 1988 Budget that all Southern Basin and onshore fields for which a development permit was given after 31st March 1982 would be exempted from royalties with effect from 1st July 1988 [17], [18], [15]. In this regard, the Petroleum Royalties (Relief) and the Continental Shelf Act 1989 [17] stated:

"1. —(1) Petroleum won and saved from any relevant Southern Basin or onshore field or relevant onshore area shall be disregarded in determining whether any and, if so, what -

(a) payments of royalty; and

(b) deliveries of petroleum, are to be made in relation to chargeable periods ending after 30th June 1988 as consideration for the grant of a licence to which this section applies." (Great Britain, 1989, S. 1)

This was the second stage of abolishing royalties. In the same year, the Income and Corporation Taxes Act (ICTA) 1988 tackled interest payments to a participator on the extra payment of PRT to the Government. It stated that this interest should not be considered when calculating the operator's profits for corporation tax purposes [19].

Also, in June 1988 it was announced that royalties would be taken in cash after 31st December 1988 rather than in kind [20], [21]. In the 1988 Budget, the Chancellor of the Exchequer reduced the PRT oil allowance from 250,000 to 100,000 tonnes per chargeable period with the cumulative limit reduced from 5 to 2 million tonnes.

In summary, the 1987-88 relaxation to the UK petroleum fiscal regime consisted of:

1. Introducing the Cross Field Allowance concept in the 1987 Finance Act (S. 65).
2. Abolishing royalties for Southern Basin and onshore fields.
3. Royalty payments to be received in cash rather than in kind.

During the early 1990s the petroleum fiscal regime had some problems as fields that were paying PRT faced a high marginal tax rate. This made the Government to consider another type of relaxation in the petroleum fiscal regime. During 1993 the Government made the following major changes to the petroleum fiscal regime:

1. PRT was abolished for oil fields with development consent on or after 16th March 1993.
2. The oil allowance for PRT purposes was abolished as well. In this regard the Finance Act [22] (Great Britain, 1993, S. 185 (4)) stated "(e) no expenditure shall be regarded as allowable (or allowed) for a non-taxable field under the Oil Taxation Acts".
3. The rate of PRT was reduced for oil fields that had development consent before 16th March from 75 to 50 per cent.

Government stated that the PRT was a tax which would not be amended significantly. Subsequently to its introduction in 1975, the legislation has been amended in seven different Finance Acts and one Petroleum Revenue Tax Act.

The period from 1993 to 2000 had not seen major changes in the petroleum fiscal regime. As can be seen from the above, the tax regime, which applies to any particular oil and gas field, depends on the date of receiving development approval. Depending on the age of any field and its taxable state, the marginal rates of tax varied between 69.4 per cent and 30 per cent. If a field were liable to royalties, PRT and CT then the marginal tax rate would be 69.4 per cent. If the field were liable to PRT and CT then the marginal tax rate would be 65 per cent. The marginal tax rate would be 30 per cent for fields that are liable for CT only [23].

3. RATIONALES FOR THE UK PETROLEUM TAX RELAXATIONS

In searching for and finding the rationales for the UK petroleum tax relaxation, data was collected in two stages. The first set of information helped to extract the rationales, and the second set is numerical data which helped in testing these rationales. For the purpose of

identifying the rationales data was collected from primary sources – government and industrial, and secondary sources, such as academic articles and also the relevant press material. These sources are explained here:

Government Resources and Publications

These resources are mainly official state documents, plus two interviews with civil servants. The following is a count of these resources: 1) The Oil Taxation Acts; 2) Parliamentary debates; 3) Energy Committee reports; 4) Standing Committee reports; 5) 'Development of the Oil and Gas Resources of the United Kingdom' (The Brown Book) is an official annual publication of the DTI; 6) The official web sites of the DTI and the Inland Revenue; and 7) Interviews. To make sure that I covered the rationales from the Government's standpoint, I conducted interviews with civil servants from the DTI and from the Oil Taxation Office of the Inland Revenue. Both of these interviews were tape-recorded. These government resources provide information about the rationales for the UK petroleum tax relaxations from the Government's point of view.

Industrial Resources

The following industrial resources were used: 1) Individual companies' annual reports and 2) Minutes of evidence taken before Energy Committee.

Academic Resources

The following sources were accessed: 1) Books, research papers and journal articles and 2) Interview, I conducted one interview with Professor Alex Kemp from Aberdeen University. Professor Kemp has been working on the economics of the North Sea oil since the early 1970s. He witnessed the UK petroleum tax relaxations and wrote about them and their rationales.

The Press

To complement the previous sources and make sure that I covered everything with regard to the rationales for the UK petroleum tax relaxations, I conducted a search for relevant journals e. g., the Oil and Gas Journal, European Energy Profile and Oxford Energy Forum. I also searched past issues of newspapers such as The Independent on Sunday, the Independent, the Financial Times and the Daily Telegraph. This was essentially to shed light on what was said at the time about any petroleum tax changes. Rich information was found here, giving a different perspective; this supplemented the Government, industrial and academic resources.

Using the above described sources, the following rationales were collected for the three UK petroleum tax relaxations.

Rationales for the 1983 Petroleum Tax Relaxation

1. To encourage oil and gas activities, which include exploration, appraisal and development activities.
2. To ensure that the regime secures an adequate share of North Sea revenues for the nation.
3. To help the oil and gas industry's cash flow to accelerate development activities.

4. To encourage the smaller and more costly fields (the marginal fields) in new areas to be explored and developed.
5. To encourage more exploration and development which would help increase the production level; this meant more PRT and taxes to be paid by the industry to the Government.
6. To make the whole tax regime more sensitive to changes in the world oil price by linking taxation exclusively to profit rather than to a mixture of profits and revenues.
7. To sustain indigenous production beyond about 1988/90.
8. To remove APRT, which would release some additional funds, which could be used for further investments.
9. Corrective action by the Government to the 1981 petroleum fiscal regime package, which introduced the SPD and gas levy.
10. To keep the whole Government revenues from existing fields and at the same time attracting the oil and gas industry to explore and develop new fields in new areas.

Rationales for the 1987-88 Petroleum Tax Relaxation

1. The unsuccessful 1983 petroleum tax relaxation was a reason for forming the 1987-88 relaxation.
2. To encourage further exploration and development expenditure on new fields.
3. The Cross Field Allowance will enhance the development of discovered marginal fields.
4. Introducing the Cross Field Allowance was to compensate for the dramatic fall in post-tax company cash flow from North Sea operations, and the implication of this for expenditure on new field projects.
5. Abolishing royalties for old fields was to achieve an improvement in the profit-relatedness of the Southern Basin of the North Sea regime.
6. Introducing the Cross Field Allowance was mainly due to the dramatic fall in post-tax company cash flow from North Sea operations and the implications of this for expenditure on new field projects.

Rationales for the 1993 Petroleum Tax Relaxation

1. To encourage more exploration and development activities of UK oil and gas resources by allowing companies to keep more of their profits.
2. To create incentives for oil companies to invest in old fields.
3. Abolishing PRT for new fields and reducing the rate to 50 per cent for old fields came about because PRT allowances cost the Government money in 1992, and removing it would enable the Government to gain more money.
4. Abolishing PRT for new fields and reducing the rate to 50 per cent for old fields was to balance the effect of removing the Cross Field Allowance on the PRT paying fields.
5. The PRT Reform was an attempt by the Government to make the UK petroleum fiscal regime flat in different areas.

4. METHODOLOGY OF TESTING THE RATIONALES

In order to test the rationales that were obtained from the first set of resources, other quantitative data were needed. Each rationale represents a hypothesis for this research that can be formulated as one or more research questions. For example, the first rationale of the 1983 petroleum tax relaxation can be formulated as the following research questions¹:

- a. What was the situation in the oil and gas industry's activities before the 1983 petroleum tax relaxation? The enquiry in this question relates to the *ex-ante* position.
- b. Did the state of these activities change after the tax relaxation? The enquiry in this question relates to the *ex-post* position.
- c. If the answer to (b) above is yes, then are these changes related to the 1983 petroleum tax relaxation? The enquiry in this question relates to the judgement of the successfulness of the oil tax relation policy, and hence to the usefulness of the interventionist approach in stimulating oil investment and production activities.

In order to answer the above questions, a set of detailed data is required. These data are related to the size of expenditure on each of the UK oil investment activities, and to the number of wells drilled in each activity before and after the tax relaxation. These data enable one to know whether there had been any noticeable difference in these activities or not. It is also essential to test whether there was a noticeable effect of each tax relaxation on the number of new projects. This will help in distinguishing those fields that would have gone ahead even without the tax relaxation's effects from those where the tax relaxation was the main reason for their start. In this regard, data to calculate the number of financial parameters such as cash flow (CF) and internal rate of return (IRR) are needed. The IRR is to be calculated and compared for each project before (the *ex-ante*) and after (the *ex-post*) the tax relaxation to see if there was a material changes in this measure (assuming that the oil and gas companies develop any project when its IRR reaches 15 per cent).

The selection of a 15 per cent IRR for this research seems appropriate on the basis that the Government set an average financial target for the British National Oil Corporation (BNOC) for the years 1980-1983 at 9 per cent after depreciation but before interest and tax [24]. The BNOC had been granted a 51 per cent share in each licence, and was also exempted from paying petroleum revenue tax. This means that the corporation's costs and possible risks were lower compared to other oil companies in the North Sea at that time. Furthermore, the above target was calculated after depreciation which means that it would be higher if it was calculated before depreciation. Moreover, a 15 per cent IRR was used by a number of analysts, such as Martin (1997) [25], and Kemp and Macdonald (1994) [26], as a target for oil companies when making investment decisions. Therefore, a 15 per

cent internal rate of return seems appropriate to be used for this research. However, to be able to do the above required analysis, data for each project, or 'field-by-field', and for the whole petroleum fiscal regime are required. These data were collected through the following four channels:

- I. The Brown Book, which contains annual statistical data related to individual fields and gross figures related to the UKCS.
- II. The North Sea Field Development Guide, which includes data relating to individual North Sea oil fields, and gives a brief explanation of each field's development conditions and plans.
- III. The Wood Mackenzie database (2004) [27], Global Economic Model Version 3.01. This database contains data presented on a field-by-field basis and also on a company-by-company basis. The model allows the application of different fiscal terms to fields and companies. This application was used for calculating the government and industrial take from each field according to different fiscal and price scenarios. Also the model allows the calculations of the IRR for each project using different fiscal and price scenarios.
- IV. The web sites of the DTI and the Inland Revenue, which have different types of data and statistics. Information on these web sites was used as a major source in testing the rationales for the UK petroleum tax relaxations.

Testing the rationales for the UK petroleum tax relaxations was carried out by taking the rationales for each tax relaxation and finding out whether each of them was/was not/ or was partly met by the policy. In other words, this was achieved by looking at the rationale itself as an aim behind a petroleum tax relaxation, and testing whether these aims have been met. Each rationale *ex-ante* and *ex-post* the tax relaxation was tested as appropriate. Each tax relaxation has several rationales, some of which are common to more than one relaxation. For example, for each petroleum tax relaxation there was the aim of encouraging oil and gas activities in the UKCS. Testing these rationales was applied by using similar methodologies. These methodologies used measures suggested in the literature, for example, the quantitative representations of exploration, development and appraisal activities.

In exploring the effects of the UK petroleum tax relaxations, the effects on development decisions were tested at a ten per cent real discount rate, as is assumed by the DTI, and used by other researchers, e.g., Kemp (1985) [28]. This assumes that oil and gas companies make development decisions when the IRR reaches 15 per cent.² The IRR was used, as it is an appropriate measure of pre- and post-tax return earned by investment [29]. However, development decisions for oil fields do not solely relate to fiscal changes, as economic and geological factors also impact on these decisions. However, it is not the author's intention here in this study to analyse in detail

¹ To encourage oil and gas activities, which includes exploration, appraisal and development activities.

² Petroconsultants (1996, Table 5s) [30] found that the average IRR for marginal UK oil fields was 16.37 per cent.

and isolate the effects of the fiscal, economic and geological factors that affect developing oil fields. The main focus is on testing the UK petroleum tax relaxation rationales to see if these rationales were/were not/were partly met by the tax relaxation policy, and hence evaluating the successfulness of the interventionist approach in stimulating oil investment activities.

5. RESULTS AND CONCLUSION

This paper has raised the following two general questions: 1) What kind of petroleum fiscal regime should a government establish? and 2) Relatively, whether governments should become more involved in influencing the behaviour of oil and gas companies by using the fiscal regime to encourage or discourage oil investments? These two questions were applied to the UK case, since the UK has used its fiscal regime more and more as a tool of intervention in oil investments over time. This was achieved by relaxing the fiscal regime three times during the period 1983-2000. Did these interventions actually work? This section will present answers to these questions. Relaxing the petroleum fiscal regime in 1983, 1987-88, and in 1993 after a period of tightening up between establishment in 1975 and the year 1982 reflects a clear change in the governance of UK petroleum resources.

The main objectives of the paper were to explore the historical rationales for the three petroleum tax relaxations, then to test them from an ex-post position. The outcomes of these tests are used as evidence for evaluating the level of success of the tax relaxation policy, and hence the interventionist approach, in influencing oil investment and production activities in the UK. This evaluation is used in turn to set out lessons for the UK and for other oil producing countries in relation to the use of the petroleum fiscal regime as a policy tool for encouraging or discouraging oil investments. The evaluation of the policy and the proposed lessons for the UK and other oil producing countries are significant findings of this research.

Overview of the Results of Testing the Rationales

The Government's objectives for each petroleum tax relaxation, as expressed by the rationales, varied. This is evident in the differences in the components, design and areas influenced by each of these relaxations. A common objective among the three relaxations, however, was to stimulate oil investment activities in new areas of the UKCS. The Government thought that relaxing the fiscal regime would encourage more oil investments and more oil production, and hence generate more tax revenues. But has the tax relaxation policy been successful, and have these proposals actually worked?

The overall evaluation of the 1983 petroleum tax relaxation is based on the tests of the rationales for this tax relaxation. The Government was not successful in achieving its aims: little came out of this tax relaxation, and there was a significant cost to the Government in forfeited revenue. The tests showed that the only successful aspect of this tax relaxation was that the new fiscal regime secured an adequate share of revenues for the nation. Apart from this positive sign, Government

policy was not successful: in most cases the rationales were found not to have been met or to have been only partly met by the policy.

However, three significant issues were clarified. The first was that abolishing royalties was more important to small fields than introducing PRT allowances. This is explained by the fact that these small fields would not have been liable to PRT in any case because of the safeguard protection,³ and hence PRT allowances added nothing to these fields in reality. The second was that it was always thought that small new oil fields would be more costly to develop compared with larger oil fields. In fact, such thinking had no empirical justification; as our analysis shows, the costs of production of the new, smaller fields were lower, not higher, than those of their larger predecessors. This comes as no surprise once it is borne in mind that the newer, smaller discoveries do not require new infrastructure - they can latch on to and make use of the infrastructure built at great capital expense to access the earlier discoveries. The third issue was that the 1983 petroleum tax relaxation was overshadowed by the sharp decline in oil prices in 1986. The timing and level of the fall in oil prices actually restricted the success of this tax relaxation; it adversely affected oil exploration and development activities and submerged any incentive to oil companies provided by the 1983 tax relaxation. Although oil companies' cash flows were increased after the removal of the Advanced Petroleum Revenue Tax (APRT), the effect was very limited because of the 1986 decline in oil prices. The loser was the Government, which obtained lower levels of tax revenues as a result of low oil prices and lower tax take from new fields. This was the result of the increasing application of a non-proprietary fiscal regime which is based on the belief of mineral resources being a free gift of nature to producers and consumers. To sum up, the behaviour of oil prices provides a bigger incentive/disincentive than fiscal changes could ever expect to do (see Table 1). The lack of success of this tax relaxation was one of the main motives for the Government to introduce the second petroleum tax relaxation in 1987-88.

The 1987-88 petroleum tax relaxation did have some successful outcomes. One of these was the Cross Field Allowance, which provided an incentive to oil companies to increase development activities in the central and northern North Sea. This is not surprising given that, in order to benefit from this tax relaxation, oil companies had to accelerate their investment activities in these areas. The Cross Field Allowance was also beneficial to oil companies because it compensated for the dramatic dip in post-tax company cash flow caused by the dramatic fall in oil prices in 1986.

The Cross Field Allowance in this last respect is revealed to have been a company incentive rather than a field development incentive, though it had an effect at field level. This is because eligible fields could not actually benefit directly from this allowance in terms of

³ The safeguard concept states that the PRT, which is payable by a participator in an oil field for any chargeable period, should not exceed 80 per cent of the gross profits, and should be levied only if his adjusted profit for that period exceeds 15 per cent of his accumulated capital expenditure at the end of that period [7].

increasing their profit or cash flow: the financial benefit came via a reduction in Petroleum Revenue Tax (PRT) payments in other liable fields. Hence, the operating company's cash flow increased as PRT liabilities in one or more of its PRT paying fields were reduced. However, some companies did not benefit from the Cross Field Allowance because they had no oil fields liable to PRT at the time it was introduced, LASMO being one such company.

The 1987-88 tax relaxation was much less successful in developing discovered, but not yet developed, marginal oil fields. Out of 85 discovered, but not developed, marginal oil fields, the relaxation stimulated the development of only three fields, namely Strathspey, Miller and Scott. It has also been suggested that the 1988 petroleum tax changes should have affected oil activities in the Southern Basin of the North Sea. However, this suggestion was found to be flawed since that is basically a gas basin and has not seen an oil field developed since 1982.

While the 1987-88 petroleum tax relaxation was successful in stimulating some development activity in the North Sea, and in increasing oil companies' cash flow, did it also increase the tax take? The answer is no. The Cross Field Allowance reduced Government revenues, and actually cost the Government £219 million in 1992. This was the main reason for abolishing this allowance in the 1993 Budget.

The 1993 petroleum tax relaxation acted primarily as a production incentive, as oil companies were encouraged to produce more at a reduced tax rate from old fields, while paying corporation tax only at 31 per cent on profits from new fields. The 1993 petroleum tax reform withdrew

the exploration expenditure allowance, which had acted previously as an exploration incentive. It abolished the Cross Field Allowance which had acted as a development incentive. Evidently, this tax relaxation did not stimulate exploration and development activities. The production aspect of the Government policy, which was incorporated in the 1993 petroleum tax relaxation, was successful (see Table 2). However, this was at the expense of the tax take. The removal of PRT for new fields and the reduction of its rate to 50 per cent for old fields were to the benefit of oil companies, which gained more from the PRT reforms than they lost from the removal of the Cross Field Allowance. The policy of removing the Cross Field Allowance and reducing the PRT rate to 50 per cent did not enable the Government to increase its total petroleum tax revenues after 1993. Moreover, oil companies with only small and very small oil fields did not benefit from this tax relaxation either, since these companies would not have been liable to PRT before the tax reform, and reducing the PRT rate to 50 per cent therefore meant nothing to them.

The 1993 petroleum tax relaxation added a new level of complexity to the UKCS. With the introduction of this tax relaxation, different areas of the UKCS became subject to different fiscal regimes. For example, fields in the new areas, which benefited from this tax relaxation, had to pay corporation tax only at 31 per cent. Fields that were developed before 1983 were liable to royalties at 12.5 per cent, PRT at 50 per cent, and corporation tax at 31 per cent. Offshore oil fields that were developed between 1982 and 1993 were liable to PRT at 50 per cent and corporation tax at 31 per cent. Therefore, this tax relaxation did not simplify the UK petroleum fiscal regime: it made it more complex.

Table 2: UK Oil Investment Activities, Production, Taxation and Prices 1980-2000.

Year	Exploration Expenditure (£M)	Number of Exploration and Appraisal Wells	Development Expenditure (£m)	Number of Development Wells	Oil and Gas Production (mmtoe)	Governmental Tax Revenues (£)	Oil Prices (\$)
1980	379	176	2163	141	111	3,743	36.83
1981	558	73	2477	146	120	6,492	35.93
1982	875	111	2370	134	135	7,822	32.97
1983	993	128	1818.1	102	147	8,798	29.55
1984	1,395	182	1802	123	158	12,148	28.66
1985	1,450	157	1859	151	163	11,370	27.51
1986	1,042	113	1735	99	165	4,803	14.38
1987	816	132	1274	140	163	4,645	18.43
1988	1129	177	1454	174	152	3,188	14.96
1989	1182	183	1712	157	129	2,426	18.2
1990	1637	224	2425	124	133	2,401	23.81
1991	1995	186	3343	149	137	2,343	20.05
1992	1508	131	3774	170	140	1,016	19.37
1993	1213	110	3229	169	154	1,339	17.07
1994	1,213	99	2,560	207	185	1,266	15.98
1995	939	98	2,876	265	193	1,683	17.18
1996	1,097	112	2,997	262	204	2,338	20.81
1997	1,194	96	2,934	259	204	3,351	19.3
1998	762	80	3,188	289	212	3,331	13.11
1999	457	36	2,000	239	224	2,514	18.25
2000	377	59	1,758	224	221	2,594	28.98

Source: former Department of Trade and Industry, 'the Brown Book'

Taxation Policy or Governance Style? A Lesson for Oil Producers

From the above it can be seen that the three petroleum tax relaxations had different effects on oil investments in the UKCS and on the tax take. This is because of differences in their components, design, coverage and objectives. A survey of the evolution of the UK petroleum fiscal regime shows that the Government tried to secure greater fiscal revenues from its oil resources up to 1982. It then relaxed the petroleum fiscal regime three times up to the year 2000. One of the main aims of the Government in introducing these relaxations was to increase oil investment activities and hence increase its tax take. The three tax relaxations each had a unique feature in terms of stimulating oil investment activities. The 1983 petroleum tax relaxation was not successful in stimulating investment activities in the UKCS, whilst the 1987-88 and the 1993 tax relaxations achieved success in this area. The Cross Field Allowance was an effective tool in encouraging development activities in the central and northern North Sea, and the 1993 tax relaxation encouraged more production (see Table 1). However, in all three cases, whilst each relaxation had resulted in oil companies' cash flow being increased, none of them led to an increase in the tax take from the North Sea. It was always the Government which sacrificed fiscal revenues as a result of these relaxations. This reveals a crucial shortcoming of the non-proprietary regime; interventions have not in fact resulted in a 'win win' situation for both oil companies and the Government.

It has always been the case that when countries and individuals gain more experience and the self-confidence to develop their mineral resources, they tend to move towards a more proprietary form of control [31]. This is because this form of governance focuses on granting the minerals' owner a greater share of the minerals e.g., as in the case of Indonesia. In the case of the UK, however, it has been shown that the opposite happened, with governance shifting from a proprietary regime between 1975 and 1982, to an increasingly non-proprietary one after 1982.

After 1983 the Government changed the way it governed its mineral resources, as a result of oil and gas investment activities in the earlier 1980s being negatively affected by the high marginal tax rate. Changes were incorporated in the three petroleum tax relaxations which revealed a clear shift in the type of governance from a proprietary towards an increasingly non-proprietary regime.

The tests of the rationales for the three tax relaxations showed that, in addition to failing to increase oil investments in the UKCS, the Government actually sacrificed, with each policy change, a significant part of its rent to the oil industry. After 1983 the Government increasingly played an administrative role in relation to petroleum resources, believing that natural resources are a free gift of nature. This seems more in accordance with non-proprietary governance [31]. The effect on producers and consumers, however, is different. While oil companies do not pay to obtain the resources as such, but to exploit them, oil is not a free gift for consumers, who have to pay a high final price when compared with the

exploitation cost. Producers alone enjoy the super-profits. This demonstrates that the UK oil policy was not very well planned: in fact it was mistaken in its unnecessary adoption of the non-proprietary type of mineral resources governance. The new fiscal regime followed the slogan "the land to the tiller" or "the minerals to the miner". Ultimately, it proved that the ownership of mineral resources is not very important compared with the type of governance exercised over these resources, which is mirrored by the taxation policies.

The above provides an answer to the question raised by this paper. The UK experience suggests that mature oil provinces should not move towards an increasingly non-proprietary regime. The sacrifice of Government revenues is likely to be great compared with the benefits gained. Why not let the market, via oil prices, produce the incentives? After all, any tax incentives which a government can offer tend to be insignificant compared with the effect of changing oil prices – as the fate of the 1983 petroleum relaxation demonstrated.

From the analysis in this paper, the overall policy lesson for other countries is that government intervention to change the fortunes of their oil industry using tax breaks is likely to fail. The effects of such breaks are likely to be overshadowed by the alternating incentive or disincentive effect of changing oil prices. Hence, governments will lose the revenues to no avail.

However, despite this overall conclusion, were there any components of the relaxations which were successful and which might usefully be emulated? Here the candidates would be the Cross Field Allowance, which stimulated development activities, and the reduction in PRT rate in 1993, which clearly stimulated current production. However, both of these measures resulted in the sacrifice of actual and likely future government revenues and thus might only be contemplated if other objectives, such as improving the balance of payments, were higher on a government's political/economic agenda.

The results of this paper support the view that the UK petroleum fiscal regime is one of the weakest regimes in the world. It provides a valuable lesson for oil producing countries, and in particular to the UK, regarding the usefulness and limitations of using tax relaxation as a policy tool for controlling oil and gas activities.

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