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Mineral Resources Governance, the UK Petroleum Fiscal Regime: A Historical Evaluation

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Abstract

After 40 years of oil investments, the UK is now a mature oil province. During these 40 years or so, the UK Government has changed the type of governance it uses to manage its petroleum resources. This paper introduces the theoretical background to two models of mineral resource governance: the so-called proprietorial and non-proprietorial regimes. It investigates the adoption of these two models by the UK Government and their effect on the overall tax take from the UK`s petroleum resources. The analysis tracks the changes in the UK petroleum taxation system since establishment up until 2010. It assesses how these tax changes have affected the overall petroleum marginal tax rate. The study concludes that the UK Government adopted a proprietorial type of mineral governance during the period 1975-1982, before changing to a non-proprietorial regime in the period 1983-2000. Since 2000 it has begun to move back towards a proprietorial style of governance. This change is still in its early stages, however; the evidence shows that although there has been an increase in fiscal revenues, this increase has been small.

Keywords: mineral governance, petroleum, UK

Introduction

The mineral resources of any country are part of its national wealth, and the way in which these resources are managed can have a significant impact on its prosperity and economic development (Boadway and Keen, 2010: 13). The form of governance adopted will dictate how access to, control of and benefits from these resources are managed. In developing partnerships with international extractive companies, mineral rich countries seek agreements that will secure reasonable returns to them. This debate is not new; Hotelling (1931: 139) asks: "How much of the proceeds of a mine should be reckoned as income, and how much as return on capital". Mineral rich governments may have an incentive to offer relatively generous treatment to extractive companies at the planning stage of mining projects, but they are likely to be much less generous once production starts. We might infer that governments incentivise new projects and new entrants with reduced tax rates in order to harvest a higher tax take when production promises significant quantities (Boadway and Keen, 2010). However, this treatment may deter those investors who have long term strategies. To avoid this, some governments have been designed their tax regimes in such a way as to target the economic rent, rather than the gross income, of oil and gas companies operating in their areas.

Over the last 40 years or so, the UK has developed into one of the world's major oil production countries.[i] Successive administrations have developed a fiscal regime using the concession model. The main objective of the Government`s fiscal regime has been to provide tax incentives to oil and gas companies to explore and develop the UK oil and gas reserves while at the same time securing an appropriate share of these

resources for the nation. Fiscal policy has sought to remain flexible enough to cope with changes in oil prices but at the same time provide the industry with the necessary stability for future planning.

From the introduction of the first duty (royalty) on UK oil and gas production in 1964, up until 2010, four special taxes were levied alongside the standard Ring-fenced Corporation Tax (RFCT). These taxes were: Petroleum Revenue Tax (PRT), Supplementary Petroleum Duty (SPD), Advance Petroleum Revenue Tax (APRT) and the Supplementary Charge (SC). Removing the PRT, SPD and APRT duties weakened the UK petroleum fiscal regime in terms of governmental tax take and the balance between the state and oil companies (Abdo, 2008; 2010b; HMRC, 2010). However, the introduction of the SC in 2002, and the two increases in its rate – in 2006 and in 2011 – have gone some way to re-strengthening the UK petroleum fiscal system. This shift in the UK petroleum fiscal regime reflects a general shift in the governance of the UK`s mineral resources.

The objective of this paper is to examine to what extent the introduction of the SC rate and its subsequent increases – and indeed any other changes to the UK petroleum fiscal regime – have changed the way the UK`s petroleum resources are governed. It also aims to identify whether these changes have allowed the UK Government to collect higher tax revenues off these resources compared with the pre-2000 period. In other words, this paper will try to answer the question of how effective the post 2000 changes to the UK petroleum taxation system have been in increasing the Government`s tax take from its petroleum resources and in maintaining incentives for investment in the UK Continental Shelf (UKCS). Do these changes to the petroleum

fiscal regime mirror a change in the type of governance being employed to manage the UK`s petroleum resources? Answering these questions will help us arrive at an overall evaluation of the UK`s petroleum taxation policy and how useful changing the type of governance has been over the life of the UK`s commercial oil and gas investments. The following section discusses the various types of mineral governance.

Governance of Mineral Resources

Historically, mineral rich countries have used different tools and approaches to govern the extraction of their mineral resources. One of these tools was the contract, which has taken different forms and structures. The starting point was a 'concession' system where international operators exercised complete freedom in terms of investments and production. Then, in the 1950s, a new form of contract came into existence: the production sharing agreement (PSA). In this arrangement, the home government joined forces with a national oil company (NOC). NOCs were used to place tight direct control on national mineral resources. These companies were established with a number of objectives in mind, but primarily to reduce dependency on international companies for energy supply, and to help home governments to build up the knowledge and experience to develop their own mineral resources. NOCs therefore played a key role in negotiating new and existing contracts with international companies (Grayson, 1981).

In the early 1970s, North Sea oil was formally designated a national asset of the UK and the Government asserted ownership of North Sea oil and gas resources. The debate at the time was whether control of the extraction and disposal of petroleum resources would be better handled by the state or left to oil companies (Cameron, 1983: 42-45). In the event, the Government, although adopting the concession system,

exercised control over mineral resource extraction and disposal using a range of tools such as the fiscal regime and licencing systems.

Cameron (1983) argues that there are two forms of state governance when it comes to mineral resources: socialist and nationalist. Mommer (2002) later used different terms to express the same meaning: proprietorial and non-proprietorial. Mommer (2002) differentiated between private and public ownership and the governance of mineral resources. Whilst historically the British coal industry provides a good example of private mineral governance when the mineral rights remain in individual ownership, oil industries, apart from some exceptions in the US, are usually examples of public mineral governance. Yet Mommer (2002: 230) argues that "the controversy that may surround public mineral governance is not about *public vs. private* but *non-proprietorial vs. proprietorial* governance and fiscal regimes". For the purpose of this paper the author has accepted Mommer's more sophisticated differentiation. The characteristics of these two regimes are described below.

2.1. Proprietorial Regime

Under this type of governance, access to land or sea is only granted if the expected profits and fiscal revenues are considered satisfactory by both investors and the owners of the mineral resources. The main concern of the proprietor is not to allow free access to his land/sea. Royalties are an essential tool within this regime; this is to prevent a unit of production being lifted without ground rent being paid. Both sides understand that these royalties add to the producers` operating costs, putting additional pressure on the producing companies; this may restrict production and keep prices high. Thus, under this type of mineral governance the mineral resource owner

shares with the producer the risk associated with the price, but not that associated with the profit. In Wälde`s (2003) view, the proprietorial regime allows mineral owners to dispose of their resources as they see fit, and to secure the maximum possible payment for granting companies access. Furthermore, this model allows mineral owners to make their own decisions regarding the development and exploitation of resources and to deploy tools that will allow the maximum rent. Different devices may be used for collecting ground rent to secure a higher take at each level of the investment process. These might include higher royalty rates, higher income taxes and excess-profit taxes. The key aim of the proprietor is to collect a significant rent for every unit lifted, with the usual focus being on levies on gross income.

2.2. Non-Proprietorial Regime

Governments may see themselves as merely the administrators of their country`s natural resources, taking the view that these resources are public goods and a free gift of nature to producers and consumers alike. Overtaxing and restricting the exploitation of mineral resources risks reducing the investment activities which generate tax benefits for both a mineral rich government and its citizens. Mineral rich countries taking this attitude generally operate a non-proprietorial type of governance. This type of governance allows extraction companies relatively easy access to mineral resources. It is usually associated with a legal regime that weakens the strength of ownership over subsurface minerals in favour of extractive companies. The central concern in this model is the profitability of investment; this type of governance relies on a fiscal regime based on the taxation of excess profit, rather than gross income (as under the proprietorial governance regime). In this type of governance, there is usually no requirement for a customary ground rent. However, it is not unreasonable

to expect high excess-profit tax rates to suffer the same fate as high income tax rates and to settle, in the long run, at relatively modest effective levels. Non-proprietorial regimes are found in countries using concession type agreements; these grant international companies *carte blanche* when it comes to the amount and timing of investments and extraction. Overall, non-proprietorial fiscal regimes are not very efficient at collecting rent; it follows that bonuses are rarely used in this regime (Mommer, 2002: 88-95).

In the non-proprietorial model, the landlord – the state – grants his tenant – the oil and gas company – access to his land and/or sea for free (or free in practice) and his target will be the tenant`s economic rent. Of course, access is granted through a licensing agency, which regulates the granting of licences to tenants according to certain criteria fixed by the agency itself (Abdo, 2006; 2008). The landlord`s aims in allowing free access to his land might be to attract tenants to invest, benefiting both the private investor and the consumer, and at the same time to develop any marginal resources that could exist in his land or sea. The emphasis in this type of governance is on not leaving a unit of production in the ground as long as it is profitable to extract it, even if the rent the unit attracts falls to zero (Rutledge and Wright, 2010). The decision to adopt a non-proprietorial regime may sometimes be driven by social and strategic factors such as economic growth, inflation and unemployment.

Historical Evolution of the UKCS Petroleum Fiscal Regime

The historical evolution of the UK petroleum taxation system has been well described in a number of studies, for example Abdo (2006; 2010b), Nakhleh (2008), HMRC (2010) and Usenmez (2010). However, it may be beneficial here to outline the historical evolution of this regime up to 2010, focusing on the consequences of the

changes in the marginal tax rate. This should allow us to trace, from the tax changes and other indicators, how governance of the UK petroleum fiscal regime shifted between the proprietorial and non-proprietorial models.

From its inception, in 1964, until the early 1980s, the UK's petroleum fiscal regime was proprietorial in nature. Between 1983 and 2002, however, it could be described as non-proprietorial. This is because the fiscal regime underwent three relaxations in petroleum tax in this period – in 1983, 1987-88, and 1993. These relaxations were designed to stimulate investment in new, smaller and marginal fields, although they were in fact largely unnecessary (Abdo, 2009; 2010a).

3.1. The Period up to 2000

Following the commercial discoveries of oil and gas in the UK North Sea, the tax regime tightened steadily as the UK got to grips with its newly discovered hydrocarbon riches and the implications which they might have for government revenues. The starting point, in 1964, was to claim a 12.5% royalty. But it soon became apparent, particularly after the dramatic increase in oil prices in 1973, that this was too weak an instrument with which to claim a fair share of the rapidly escalating oil revenues for UK citizens. In 1975, therefore, a new tax, Petroleum Revenue Tax (PRT), a tax on cash flow, was chosen as the preferred instrument for claiming the Government's share of oil rent. On the 1st January, 1976 the British National Oil Corporation (BNOC) was created to represent the state in the oil and gas industry and to secure national ownership of produced oil and gas. Tax avoidance was also curtailed by ring fencing field operations for tax purposes. Subsequently, there were substantial increases in PRT up to a peak of 75% in 1982. A Supplementary

Petroleum Duty had been introduced by the first Thatcher government the previous year in response to dramatically high oil prices, but this was dropped in 1982 in favour of a higher basic rate of PRT and the introduction of Advanced PRT, in order to accelerate revenue collection. The Thatcher government also disposed of the BNOC to the private sector, having declared their intentions in the Oil and Gas (Enterprise) Bill on 17th December, 1981. Taking into account the 12.5% royalty, PRT at 45 % and RFCT at 52 %, the marginal tax rate was 76.9 % for PRT-paying fields, and 58 % for fields not paying PRT.[ii]

In 1979 the rate of PRT was increased from 45% to 60 % (Great Britain, 1975); by so doing, the Government increased its marginal tax take rate from its petroleum resources from 76.9% to 83.2% (58% for non-PRT-paying fields). UK petroleum taxation escalated further in 1980, when the rate of PRT was increased to 70% (Great Britain, 1980, S.104), raising the government`s marginal tax rate from 83.2% to 87.4% (58% for non-PRT-paying fields).

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% (Great Britain, 1981, S. 122: 5). With the introduction of SPD, there was thus a combination of taxes on oil and gas production during the period 1980-1981, and UK North Sea oil taxation became extremely complex and unstable. The instability of the petroleum fiscal regime arose from the fact that there were nine major changes over the period 1975-1982.[iii] It was so complex because of multiple applications and exemptions; four separate taxes were being levied simultaneously: royalties at 12.5%, Petroleum Revenue Tax at 70 %, Supplementary Petroleum Duty at 20%, and

Corporation Tax at 52%. This combination of taxes meant that, over this period, the UK government received a total marginal tax take of 89.9% of the final revenues (output) of UK oil and gas resources (66.4% from non-PRT-paying fields).[iv] On 31st December, 1982, the rate of PRT was further increased to 75% (Great Britain, 1982, S.132); this brought the marginal tax rate up to 91.6 % (66.4 % from non-PRT-paying fields).

It is clear that, with the steady upward escalation of the marginal tax rate from the 12.5% royalty charge in 1964 to the 91.6% total in 1982 (see Figure 1), the UK petroleum fiscal regime appears to have been following the proprietorial model of governance. The introduction of new taxes and the repeated raising of existing tax rates during this period are consistent with the character of a proprietorial regime, the aim of these increases in the petroleum tax burden being to capture a larger share of the revenues from petroleum wealth for the UK Government and its citizens.

However, when the marginal tax rate reached 91.6%, the Government recognised that exploration and development activities were being affected by the tax regime; it concluded that the further development of North Sea oil was being put at risk by the high marginal tax rate and the frequency of changes. On 31st December, 1982, SPD was replaced by another tax called Advanced Petroleum Revenue Tax (APRT). These tax reforms brought the marginal tax rate down to 89.5% (58% for non-PRT-paying fields).

When the number of new oil and gas projects being proposed by the industry started to show a significant decline, changes were made to the UK petroleum fiscal regime

in order to encourage exploration and development activities (Abdo, 2009; 2010b). In 1983, royalties were abolished under the Petroleum Royalties (Relief) Act 1983 for qualifying fields receiving development approval from the Secretary of State for Energy on or after 1st April, 1982 (Great Britain, 1983). Following this change, new fields (that is, those developed between 1st April, 1982 and March 1993) were subject to a tax rate of 89.5% (58 % for non-PRT-paying fields) against the 88% rate levied upon old fields. The RFCT rate was reduced in this year to 50%, making the marginal tax rate 89.062% for old fields and 87.5% for new fields. The removal of royalties for new fields might be considered a sign that the regime had become non-proprietorial, because royalties represent payments towards customary ground rent. However, it should be remembered that fields developed before April 1982 (the old fields) were still subject to this duty; in other words, this non-proprietorial-type measure was not applied to the UK petroleum fiscal regime as a whole.

The rate of the RFCT was further reduced to 45% in 1984, 40% in 1985 and to 35% in 1986 (Great Britain, 1984; 1985; 1986), and these changes brought the petroleum marginal tax rate down to 87.97% (86.25 % in new fields), 86.87% (86.25 % in new fields), and to 85.78% (83.75% in new fields) respectively. Again, although petroleum marginal tax rates were reduced, it does not follow that the reductions in the RFCT rate signalled the adoption of a non-proprietorial governance regime for the UK`s petroleum resources, since this tax is not a special petroleum tax but is paid by corporations across the UK.

The Finance Act 1987 also introduced the concept of the “Cross Field Allowance”. This concept allowed 10% 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 the income of other fields for the purpose of calculating PRT (Great Britain, 1987, S. 65). The Chancellor of the Exchequer also announced in the 1988 Budget that all Southern Basin and onshore fields granted a development permit after 31st March, 1982 would be exempted from royalties with effect from 1st July, 1988 (Great Britain, 1989; DOE, 1988; Bland, 1991). These fiscal changes in 1987 and 1988 were both signs of a non-proprietorial philosophy, since they reduced the tax burden on oil companies.

In 1990, the RFCT rate was lowered to 34%, bringing the marginal petroleum tax rate to 85.56% for old fields and 83.5% for fields developed after March 1982. The RFCT rate was further reduced to 33% in 1991; this lowered the petroleum marginal tax rate to 85.34% for old fields and 83.25% for new fields.

Another significant petroleum tax relaxation came about in 1993; PRT was abolished for oil fields where development consent was given on or after 16th March, 1993 (Great Britain, 1993, S. 185). This tax reform made the newest fields, i.e., those with development consents given after 16th March 1993, subject only to RFCT at a rate of 33%. The rate of PRT was reduced for oil fields that had development consent before 16th March from 75% to 50%. This tax reform brought the marginal tax rate for old fields to 70.69% and that for fields developed post March 1982 but pre March 1993 to 66.5% (41.4% for non-PRT-paying fields), while fields developed post March 1993 were subject to a marginal tax rate of 33%, which was the RFCT rate at the time. These tax reductions are the clearest signs that non-proprietorial governance was now in place for the UK`s petroleum resources, particularly for fields developed post

March 1993. Oil companies extracted the UK`s non-renewable oil and gas resources from the post March 1993 fields without paying any petroleum tax – as if these resources were nature`s free gift to them.

The RFCT rate was reduced in 1997 to 31%; this pulled the petroleum marginal tax rates for the three different areas of the UKCS down to 69.81% for old fields, 65.5% for fields developed post March 1982 but pre March 1993, and 31% for fields developed post March 1993. In 1999, the RFCT rate was lowered to 30%, reducing the marginal tax rates to 69.38% for old fields, 65% for fields developed post March 1982 but pre March 1993, and 30% for fields developed post March 1993.

As can be seen from the above account, the tax regime which applied to any particular oil and gas field depended on when it received development approval. Depending on the age of the field and its tax state, the marginal rate of tax ranged from 69.4% to 30%. If a field was liable for royalties, PRT and RFCT, then the marginal tax rate would be 69.4%. If the field was liable for PRT and RFCT alone, then the marginal tax rate would be 65%. Finally, the marginal tax rate would be 30% for fields that were liable for RFCT only (DTI, 2001, S. 3.28). The changes to the petroleum tax regime were initially intended to simplify the regime, as well as making the UK an attractive investment province for international oil and gas companies and former Prime Minister Tony Blair asserted that the UK oil industry enjoyed an “enormously favourable tax regime” (Corzine, 1998: 16).

The evolution of the UK petroleum fiscal regime between 1983 and 2000, illustrated in figure 1, clearly demonstrates that the UK`s governance of its mineral resources

underwent a significant change during this period. The Government loosened the taxation burden on oil and gas companies in order to attract more oil and gas investment and hence, in the long term, collect more revenues. Previous studies have however shown that the Government was not successful in meeting these objectives (Abdo, 2010a; Rutledge and Wright, 2010). By intervening in the oil business and relaxing the UK petroleum fiscal regime over the period 1983-2000, the Government was attempting to implement a non-proprietorial regime, but this attempt did not result in the expected win-win situation for the UK Government and the oil and gas industry. The consequences of the application of the non-proprietorial regime were increased profits and an enhanced cash flow for oil companies at the expense of the UK Government and its citizens. Since 2000, however, a number of tax changes have occurred which reflect a change in the Government`s approach to mineral resource governance.

3.2. The Period 2000-2010

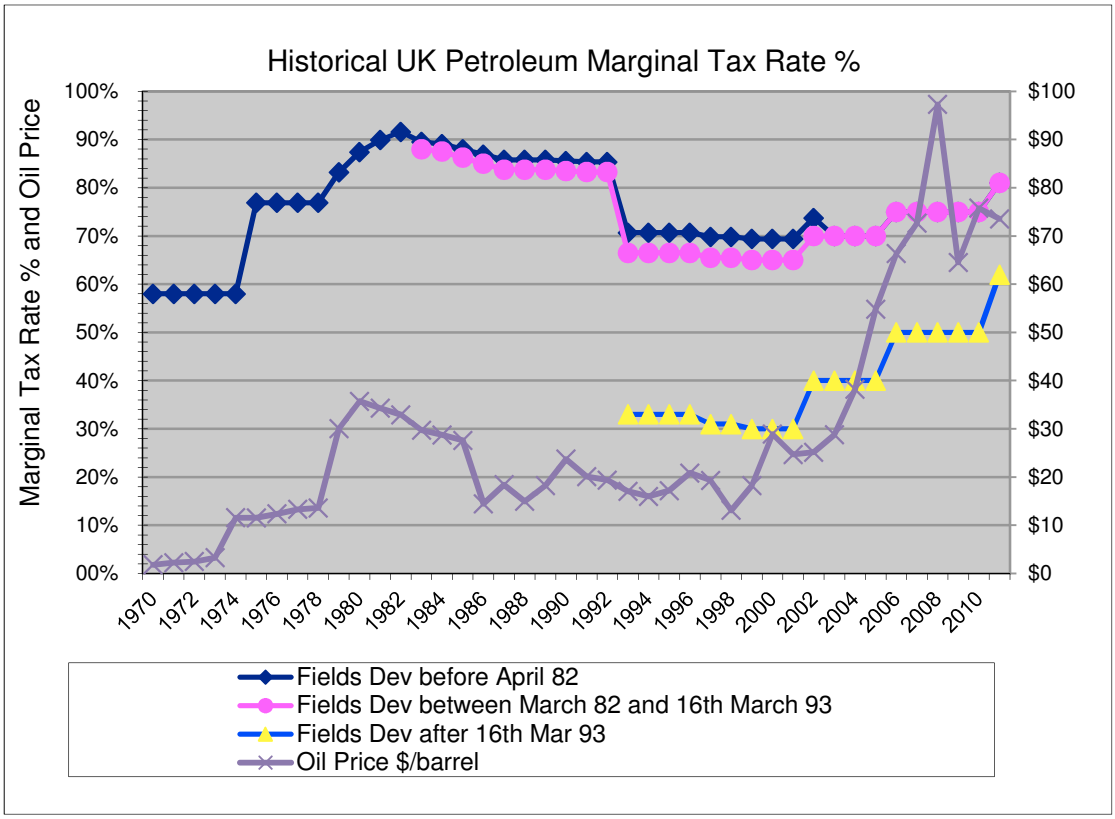
Since 2000, UK petroleum tax regime has again witnessed significant change with the introduction of a new petroleum tax, the rate of which has subsequently been raised twice. There are a number of possible explanations for this change in taxation policy: it may be put down to the dramatic increase in oil prices post 2000 (Rutledge and Wright, 2010); or it could be that the Government had realised that the type of mineral governance applied to oil and gas needed to be reviewed and possibly changed; or it could be a combination of the two.

A major tax change to the North Sea regime came about in 2002 when the Chancellor of the Exchequer announced on 17th April that companies producing oil and gas in

the UK or on the UKCS would pay a SC of 10% on their profits from ring-fenced trading on top of the 30% Corporation Tax already payable on these profits. Companies paid the SC on ring-fenced profits at the same time as their general Corporation Tax, and there were special rules for instalment payments to cover the transitional period (i.e. the accounting period that included Budget day). These special rules ensured that no underpayment of instalments would arise by virtue of the introduction of the SC (HMRC, 2010). Also in this year the Budget introduced 100% First Year Capital Allowances to be available for virtually all ring-fenced capital expenditure. This allowance was clearly aimed at stimulating oil investment in the UK North Sea. In the same Budget the Chancellor announced his intention to abolish the royalty charge completely (Great Britain, 2002). With the introduction of the SC, the marginal tax rate of the three areas of the UKCS changed to become 73.75% for old fields, 70% for fields developed post March 1982 but pre March 1993, and 40% for post March 1993 fields.

Royalty was abolished with effect from 1st January, 2003. This in turn changed the marginal tax rate for fields developed before March 1982 to 70%, while fields developed after March 1982 were not affected since these fields were not subject to royalty charges (HMRC, 2010). The interesting point about this reform is that it simplified the UK oil and gas fiscal regime: all those fields developed prior to March 1993 became subject to the same marginal tax rate from January 2003 (see Figure 1).

Figure 1



Source: based on data extracted from HMRC.

The rate of the SC was raised to 20% with effect from 1st January, 2006 (HMRC, 2010b). This increase in the SC rate increased the marginal tax rate for the two categories of fields in the UKCS to 75% for any field developed pre March 1993, and to 50% for fields developed post March 1993. A further increase in the rate of the SC – to 32% – came in the Finance Bill of 2011, taking effect from 24th March, 2011 (DECC, 2011). This increase in the SC rate increased the marginal tax rates to 81% for fields developed pre March 1993, and to 62% for posts March 1993 fields.

These changes have made the UK petroleum fiscal regime tougher, and the debate about whether they have de-incentivised investment in the UKCS has already started; see, for example, Muslumov (2011) and Pfeifer et al. (2011). Since January 2003 the UK`s oil and gas resources have been extracted under a concession system. As the

royalty charge no longer exists, however, the UK cannot be described as a royalty/tax country, even though it uses the concession type of oil and gas agreements. In 2009, the Government introduced a Field Allowance to encourage investment in small or technically challenging fields. This allowance was set at £75 million for small fields and £800 million for ultra-heavy oil fields and ultra-high pressure/high temperature fields. The Government believes that the introduction of this allowance will help unlock two billion barrels of the UK`s remaining oil and gas reserves, making a significant contribution to the supply side of UK energy security (HMRC, 2009).

Since 2000 the Government has harmonised the tax treatment of fields developed pre March 1993 while at the same time increasing the tax burden on oil and gas investments in the UKCS. This suggests that the current and future governance of petroleum resources is shifting back from a non-proprietorial to a proprietorial regime. The Government may have realised that the previous interventionist approach in the oil and gas business between 1983 and 2000 was imperfect; it brought in no increased investment and did not create the anticipated win-win scenario. Having realised that production from existing resources had peaked and that output was showing a downward trend, the Government appears to have decided that a change in governance was necessary if more tax revenues were to be secured from British petroleum resources.

Analysis and Discussion

Prior to 2000, the index of tax revenues fell very steeply and its relationship to both production and prices fundamentally changed. The changes may be broadly characterised as a disassociation between taxation and both production and prices

between 1986 and 1991, followed by a disassociation between taxation and production between 1991 and 2000. These changes can be illustrated by looking at the UK Government's tax take in relation to production in the years 1986, 1993 and 1999 (see Table 1). In 1986 the oil price was $14/barrel, oil and gas production was 165.6 million tonnes of oil equivalent (mtoe) and tax revenues were £4.8 billion. In 1993 the oil price was $17/barrel, oil and gas production was 160.1 mtoe and tax revenues were just £1.3 billion. In 1999 the oil price was $18/barrel and production of 227.9 mtoe was associated with revenues of £2.6 billion. In other words, production in 1999 was 38% greater than it was in 1986, but revenues were 46% less in money-of-the-day (considerably less in real terms) even though the oil price was higher. Thus, the UK Government and UK citizens forfeited significant windfalls, without a commensurate response from companies in terms of increased investment, particularly as a result of the adoption of a non-proprietorial regime during that period (Abdo, 2010a).

Table 1:

UK Petroleum Production, Prices and Tax Revenues						
Year	**Production of Liquids (Crude Oil + NGLs) (Mt)**	**Production of Gas (Mtoe)**	**Production of Oil and Gas (Mtoe)**	**Brent Crude Price ($/bbl)**	**Total North Sea Tax Revenues (£million)**	*of which* ***Petroleum Revenue Tax***
1980	80.5	33.1	113.6	36.8	3,963	2,410
1981	89.5	32.8	122.3	35.9	6,506	2,390
1982	103.2	32.9	136.1	33.0	7,868	3,274
1983	114.9	33.3	148.2	29.6	8,817	6,017
1984	125.1	32.9	158.0	28.8	12,171	7,177
1985	127.6	36.5	164.1	27.6	11,371	6,375
1986	127.1	38.5	165.6	14.4	4,804	1,188
1987	123.4	40.5	163.9	18.4	4,645	2,296
1988	114.5	38.7	153.2	14.9	3,193	1,371
1989	91.7	38.3	130.0	18.2	2,401	1,050
1990	91.6	42.3	133.9	23.7	2,343	860
1991	91.3	47.1	138.4	20.0	1,016	-216
1992	94.3	48.1	142.4	19.3	1,338	69
1993	100.2	60.1	160.3	17.0	1,266	359
1994	126.9	59.5	186.5	15.82	1,683	712
1995	130.3	64.8	195.1	17.02	2,338	968
1996	130.0	77.6	207.6	20.67	3,351	1,729
1997	128.2	79.0	207.2	19.09	3,331	963
1998	132.6	81.9	214.5	12.72	2,514	504
1999	137.1	90.8	227.9	17.97	2,563	853
2000	126.2	99.6	225.8	28.50	4,457	1,521
Source: DECC, various years, Oil and Gas Information						

Table 1 and Figure 1 above show that the UK petroleum fiscal regime was gradually being tightened until the early 1980s when it was relaxed - no new taxes were introduced until 2002. The relaxations considerably reduced both the Government`s marginal tax take and its economic rent from petroleum resources. This lead to UK petroleum tax relaxation being described as being 'weak' and evidently governed by a non-proprietorial regime (Rutledge and Wright, 1998).

However, since 2000 the Government appears to have changed its approach to the governance of petroleum resources and taken steps to capture a greater share of resources for the state. This was illustrated by the introduction of the SC in 2002 and the increases in the rate of SC in 2006 and again in 2011.

A simple investigation into the post 2000 petroleum tax changes leads to some interesting observations. The introduction of the SC in 2002 at a rate of 10% increased the marginal tax rate for old fields by 3.06 percentage points (6.1 percentage points for non-PRT-paying fields), and for fields developed post March 1982 but pre March 1993 it increased the rate by 3.5 percentage points. The abolition of royalty in 2003 benefited the old fields by 3.75 percentage points (7.5 percentage points for non-PRT-paying fields) but had no effect on post March 1982 fields since these were already exempted from paying this duty. The overall effect of the two tax reforms on the old fields was a benefit of 0.69 percentage points (1.4 percentage points for non-PRT-paying fields), while post 1982 fields experienced a loss of 3.5 percentage points.[v] In other words, the two reforms had different effects on these two categories of fields; there is as yet no clear indication of a change in the governance of petroleum resources in the UK, at least as far as old fields are concerned.

The story is different, however, when we look closely at the changes implemented since 2006. The increase in the SC rate from 10% to 20% had the greatest effect on non-PRT-paying fields. Whilst the marginal tax take from fields developed both pre and post March 1982 increased by 5 percentage points (from 70% to 75%), the marginal tax take from non-PRT-paying fields rose by 10 percentage points (from 40% to 50%). And, after the 2011 tax change, while the marginal tax take from PRT-paying fields increased by 6 percentage points (from 75% to 81%), it rose by 12 percentage points from non-PRT-paying fields (from 50% to 62%).

Thus, changes to the UK petroleum fiscal regime since 2000, including the royalty and SC reforms, have had the greatest effect on non-PRT-paying fields. While the overall effect of the tax changes on old fields has been to increase the marginal tax rate of these fields by 11.63 percentage points, and fields developed post March 1982 have seen their marginal tax rate go up by 13 percentage points, non-PRT-paying fields have been subject to a 23.5 percentage point increase. This suggests that the Government has decided to capture more tax revenues from the non-PRT-paying fields – possibly because these fields previously benefited from PRT exemption.

Although the Government removed the royalty charge completely in 2003, the marginal tax take for every field in the UKCS increased as a result of the SC rate increases in 2006 and 2011. This is a clear sign that the Government was attempting to retighten the UK`s petroleum fiscal regime in line with a proprietorial type of mineral resource governance.

As can be seen from Figure 1, changes in marginal tax rates mirror changes in oil prices, and the later (i.e. the changes in oil prices) mirrors changes in total UK tax revenues from the UKCS. But has the Government`s introduction of the SC, and the subsequent increases in its rate, succeeded in capturing more tax revenues? Or has the increase in the Government tax take actually been driven by the rise in oil prices since 2000? The answers to these questions should give a clearer idea of whether the introduction , and subsequent increase in the SC, reflects a change in the nature of the UK`s governance of its petroleum resources from non-proprietorial to proprietorial.

4.1. Increase in Tax Rates or in Oil Prices?

Table 2 shows that tax revenues from the UKCS, notwithstanding short term fluctuations, have grown steadily since 2000. A closer look at the figures in the table shows that this increase has not been driven by an increase in oil and gas production. In fact, oil and gas production declined over the period 2000-10. The increase in tax revenues can be related directly to either the increase in oil prices, tax rates or to both. For example, in 2004 oil and gas production decreased to 194 million tonnes of oil equivalent (mtoe) from 213 mtoe in 2003, but tax revenues from the UKCS increased to £5,172 million (£m) in 2004 from £4,281m in 2003. This increase in tax revenues can be linked to the increase in oil prices from $28.83/barrel in 2003 to $38.04/barrel in 2004. The increase in tax revenues is not directly related to the introduction of SC in 2002 because, as demonstrated above, old fields were better off by 0.69 percentage points and the effect on non-PRT-paying fields was insignificant.

Going back to 2003, it can be seen that tax revenues declined to £4,281m from £5,117m in 2002. This reduction is the result of abolition of the royalty in that year, the effect of implementing the 100% capital allowance in 2002 and a reduction in oil

and gas production; oil prices did not rise significantly in this period. It can also be seen from table 2 that the tax revenues from the UKCS materially increased after 2006. This is attributable to two main factors: the 2006 increase in the SC rate to 20% and the dramatic increase in oil prices, particularly in 2008.

The growth in tax revenues from the UKCS is mainly attributable to increasing oil prices rather than the increase in the petroleum marginal tax rate. Fields developed before March 1993 saw their marginal tax rate rise by 5 percentage points, while new fields faced an increase of 10 percentage points. However, as new fields tend to be smaller than old ones, the net effect of this change was minimal. Thus, the increase in tax take can be said to have been driven primarily by the rise in oil prices. Had oil prices remained constant, we could have expected to see tax revenues go down as oil and gas production declined from year to year. Even if production remained constant, tax revenues would not have increased without an increase in the tax rate. In the UK, such increases happened in 2002, 2006 and 2011. The effect of the 2011 tax rate increase is yet to be felt, but the effects of the 2002 and 2006 increases were evident in the higher tax revenues generated in 2003 and 2007. It is therefore reasonable to assume that any other increase in tax revenues must be a result of changes in oil prices.

Closer examination of the figures for 2008 and 2009 in Table 2 would support this view. Marginal tax take did not change between these two years, production declined by almost 10%, tax revenues declined by about 49%, and oil prices declined by about 36%. Since the year 2000, changes in oil prices have had the greatest impact on UK petroleum tax revenues compared to other factors such as increased tax rates. In other

words, the tax tool associated with the UK Government`s interventionist approach has not been entirely successful in changing the governance of the UK`s petroleum resources from the non-proprietorial to the proprietorial model.

Table 2

Tax Revenues, Oil and Gas Production and Brent Oil Prices								
Year	Licence Fee £M	Royalty £M	Petroleum Revenue Tax £M	Corporation Tax £M	Supplementary Charge £M	Total Tax Revenues £M	Total UKCS Oil & NG production mtoe	Oil Prices $barrel
1999	53	389	853	1268	0	2563	244	17.97
2000	55	552	1521	2329	0	4457	241	28.5
2001	59	548	1307	3515	0	5429	227	24.44
2002	63	434	958	3392	270	5117	224	25.02
2003	58	-13	1179	2317	740	4281	213	28.83
2004	57	0	1284	2841	990	5172	194	38.04
2005	57	0	2016	5427	1880	9380	175	54.52
2006	57	0	2155	3959	2750	8921	158	65.14
2007	55	0	1680	3378	2350	7463	150	72.39
2008	65	0	2567	6108	4250	12990	143	97.26
2009	66	0	923	3288	2280	6557	129	61.67
2010	66	0	1450	4530	3150	9196	121	79.61
Source: Tax revenues and production data from the DECC 2011, oil prices from BP Statistical Review 2010								

But the key question here is how far the Government`s petroleum tax revenues have been increased as a result of the post 2000 tax changes. The analysis began with the calculation of the tax paid per tonne of oil equivalent and the tax per tonne of oil equivalent as a percentage of the oil price. These calculations are presented in Table 3 below.

Table 3

UKCS Totals of Tax Revenues, Oil and Gas Production, Tax Per Tonne of Oil Equivalent, Oil Price per Tonne and Tax to Oil Price Ratio					
Year	Total Tax Revenues from UKCS £M	Oil and Gas Production from UKCS mtoe	Tax per toe £	Oil Price £tonne	Tax to Oil Price %
2000	4457	241	18.49	138.1	13.39
2001	5429	227	23.92	125.7	19.03
2002	5117	224	22.84	123	18.57
2003	4281	213	20.10	130	15.46
2004	5172	194	26.66	154	17.31
2005	9380	175	53.60	214.4	25.00
2006	8921	158	56.46	257.5	21.93
2007	7463	150	49.75	269.8	18.44
2008	12990	143	90.84	379.8	23.92
2009	6557	129	50.83	240.5	21.14
2010	9196	121	76.00	310.47	24.48
Source: DECC 2011					

This table shows that the tax per tonne of oil climbed steadily over the period 2000-2010. In 2008 the tax per tonne of oil was more than four times higher than in 2000 and 2002. The tax paid per tonne of oil in 2009, although lower than the 2008 level, was still about double the 2004 level. This suggests that the Government tax take has dramatically increased since 2000. Examination of the tax to oil price ratio column reveals that the Government has increased its tax take per tonne of oil as a percentage of oil price, though not by much. For example, in 2001 the tax to price ratio was 19.03%, while the highest rate, 24.48%, was achieved in 2010; it must be remembered, however, that in 2001 the SC had not yet been introduced, and that oil prices in 2010 were more than double what they were in 2001. From this analysis we can state that the UK Government has managed to increase its tax take from its oil and gas resources, but not by a significant amount. This conclusion suggests that, as part

of a proprietorial regime, the tax tool has been effective *to some extent* in increasing the total UK tax take from its petroleum resources since 2000.

Table 3 shows that oil and gas production from the UKCS declined over the period 2000-2010. It might be argued that this decrease is the consequence of reduced investment in oil and gas in the UKCS, and that this is directly attributable to the increase in petroleum marginal tax rates. Is this really the case? This is discussed in the next section.

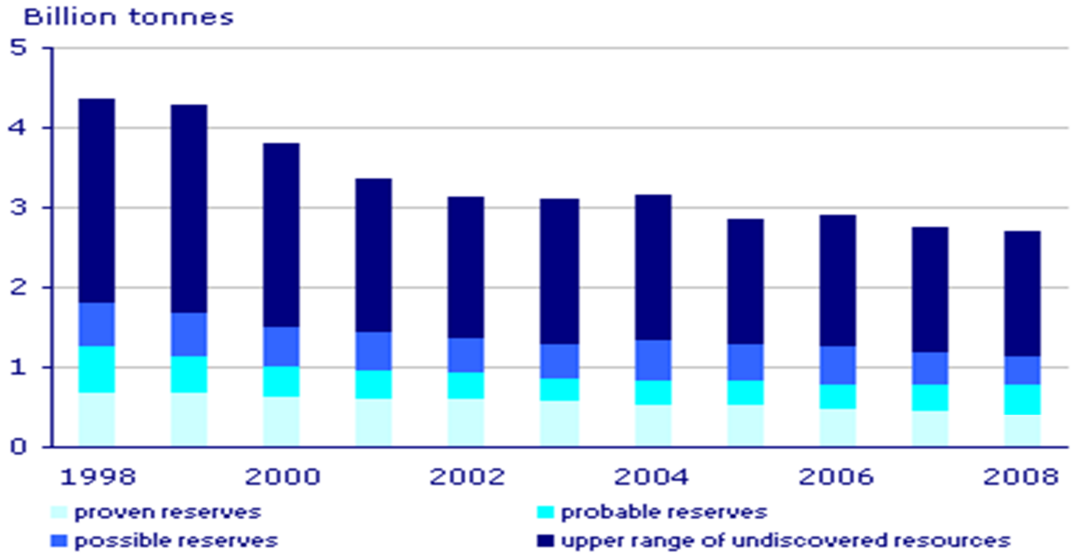
4.2. Oil and Gas Investments in the UKCS

After 40 years of investment in the UK oil and gas industry, UKCS production is now declining. Future investment activities will be determined by three key factors: geology, availability of finance and future oil prices. Because of the decline in production and the slowdown in oil and gas investments, the UKCS has been described as a mature petroleum province. This description conveys a number of characteristics: 1) the average size of newly discovered wells is getting smaller; 2) production rates are falling;[vi] 3) interest in exploration and development is declining; and 4) new reserves are insufficient to replace the depleted quantities in existing reserves (Kemp and Stephen, in Glomsrød and Osmundsen, 2005; DTI, 2006).

But is the increase in the marginal tax rate entirely to blame for the decline in oil and gas investment in the UKCS since 2000? There are in fact a number of reasons why oil companies might shy away from investing in the UKCS: 1) the new discoveries are getting smaller; [vii] 2) larger and more profitable discoveries are known to exist elsewhere in the world, for example Arabia and the Gulf of Mexico; 3) the cost of

investing in the UK North Sea has risen;[viii] 4) oil and gas production from the UKCS has already peaked and the remaining oil and gas reserves are declining[ix] (see Figure 2); and 5) the UK petroleum fiscal regime is perceived as unstable and uncertain, given the many changes it has undergone since the mid-1970s.

Figure 2



Source: Office for National Statistics (ONS): Oil and Gas Reserves, UK.

It is true that the UKCS is now a mature petroleum province, since less oil and gas is being produced from an increased number of oil and gas wells. This means that the new oil and gas fields are smaller in terms of the reserves and production capacity compared to old fields such as Brent. It is a fact in the oil and gas industry that the smaller the oil field, the less profitable it is. Table 4 depicts the above.

Table 4

Drilling Activities, Capital Expenditure and Oil and Gas Fields in Operation in the UKCS							
Year	Total Number of Offshore and Onshore Drilling Wells		Capital Expenditure £M			Number of Oil and Gas Fields in Operation	
	Exploration & Appraisal	Development	Exploration & Appraisal	Development	Total	Oil and Gas Fields in Production	Oil and Gas Fields under Development
2000	75	236	348	2,750	3,098	221	13
2001	67	312	420	3,570	3,990	239	22
2002	59	278	389	3,598	3,988	248	12
2003	49	224	334	3,412	3,746	259	84
2004	67	181	396	3,302	3,698	264	23
2005	84	249	460	4,371	4,831	277	19
2006	85	214	773	5,656	6,429	283	24
2007	126	180	1,090	5,303	6,393	300	17
2008	125	190	1,274	4,780	6,054	318	12
2009	79	142	na	na	na	317	10
2010	71	142	na	na	na	na	na
Source: DECC, 2011							

Note: figures for exploration and appraisal and development wells for 2009 and 2010 are not yet available from the DECC; the same applies to the number of oil and gas fields in operation in 2010.

This can be seen from Tables 3 and 4. Whilst the number of oil and gas fields in operation has been increasing since 2000, oil and gas production has been in continuous decline. Looking at Table 4 in conjunction with Figure 2, we can assume that the declining oil and gas reserves in the ground, the small size of new discoveries and higher extraction costs are the main reasons for declining capital expenditure in the UKCS. Added to this are the promising opportunities open to oil and gas companies in other parts of the world and the uncertainty of the UK petroleum fiscal regime. Taking all this into account, it can be argued that the post 2000 increases in the UK petroleum marginal tax rates are not the major cause of declining investment in the UKCS.

Conclusion

The UK petroleum fiscal regime has been subject to many changes since its establishment in 1975, both in its structure and tax rates. While pre 1983 fiscal changes saw consistent increase in marginal tax rates, this trend was reversed between 1983 and 2002, and then reversed again from 2002 onward. These shifts reflect the UK Government`s movement back and forth between two different types of mineral resource governance – what Mommer (2002) called proprietorial and non-proprietorial regimes.

In the early 1980s the UK Government appears to have believed that adopting a proprietorial regime would lead to a slowdown in oil and gas investments in the UKCS. Therefore, the Government decided to take an interventionist approach in the oil and gas business in the UKCS, relaxing the petroleum fiscal regime a number of times. The Government's rationale at the time was that relaxing the oil and gas taxation system would bring more investment into the UK North Sea and this would drive more oil and gas production and hence more tax revenues; in other words, adopting the non-proprietorial type of governance would result in a win-win scenario.

But the evidence for the period from 1993 to 2002 appears to indicate that this did not happen, and that what had actually happened was that while oil and gas companies enjoyed windfall profits and enhanced their cash flow as a result of the three tax relaxations, the UK Government lost tax revenues (Abdo, 2006; 2009; 2010a). This may have been a key reason why UK petroleum tax policy makers decided to change the governance model for the country`s mineral resources and move back towards a

proprietorial regime, while assuming that market forces would bring the required balance to the relationship between oil companies and the Government.

Under the non-proprietorial regime of the early 1980s, the Government seems to have encouraged the rapid depletion of the UK North Sea oil and gas resources, albeit for some understandable reasons. Self-sufficiency in oil and gas was a key driver, as was the increasing involvement of downstream UK companies in supplying offshore capital equipment. The UK achieved self-sufficiency in oil in 1980 and in gas in 1995, but this did not last long; self-sufficiency in gas was lost in 2004 and in oil in 2006. With the maturing of the UK North Sea oil and gas business, the policy objective seems to have changed to favour collecting higher revenues from the remaining UK petroleum resources. These revenues, if not used to reduce income tax for British citizens, were to be used for extra public spending, or to cut the current financial deficit. If this is still the Government`s intention, a proprietorial type of governance model for UK petroleum resources needs to be in place over the next few years.

The rationale behind the UK petroleum tax relaxations in the period 1980-2000 has already been investigated, and the results show that in most cases the policy objectives were not met; success was very limited. The adoption of the non-proprietorial regime between 1983 and 2002 cost the UK Government significant fiscal revenues. Mommer (2002: 235) has warned that "There remains a possibility that non-proprietorial governance will not prosper beyond the early advances it has already made in some exporting countries. A few years will probably be enough to show the heavy losses in fiscal revenues that non-proprietorial governance will entail for the exporting countries. Lessons may be learned in the future, but at what price?"

In the UK`s case, the lesson seems to have been revenue costly for both the Government and its citizens.

In order to evaluate the success of UK petroleum taxation policy post 2000, further investigation now needs to be conducted into the rationales for the post 2000 petroleum tax changes; this will be our next research.

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References

Abdo, H. (2006). *Exploring the rationales for relaxations in the UK petroleum fiscal regime, 1980-2000*. Ph.D. thesis, The University of Sheffield.

Abdo, H. (2008). Readings in the international oil and gas agreements: the governance of petroleum resources. *International Energy Journal*, September, Vol. 9, Issue 3, pp. 163-173.

Abdo, H. (2009). Evaluating the usefulness of the interventionist approach as a policy tool to influence oil and gas investment activities: the case of the UK. *International Energy Journal*, June, Vol. 10, Issue 2, pp. 1-9.

Abdo, H. (2010a). The taxation of UK oil and gas production: why the windfalls got away. *The Energy Policy Journal*, October, Vol. 38, Issue 10, pp. 5625-5635.

Abdo, H. (2010b). The story of the UK oil and gas taxation policy: history and trends. *Journal of Oil, Gas & Energy Law (OGEL)*, No. 4, November. Available at: http://www.ogel.org/journal-browse-issues-toc.asp?key=39

Bland, D. (1991). *UK Oil Taxation*. Third Edition. UK: Longman.

Cameron, P. D. (1983). *Property Rights and Sovereign Rights: The Case of the North Sea*. London: Academic Press Inc.

Corzine, R. (1998). National news: offshore oil sector keen to know what's in the pipeline: uncertainty over taxation may hit investment. *Financial Times*, London, 19th May 1998, p. 16.

DECC (Department of Energy and Climate Change) (2011). *The UK upstream oil and gas tax regime*. Available at: https://www.og.decc.gov.uk/upstream/taxation/TaxRegime.pdf. [Accessed on 2nd June 2011].

DOE (Department of Energy) (1981). *Development of the Oil and Gas Resources of the United Kingdom*. London: HMSO.

DOE (Department of Energy) (1982). *Development of the Oil and Gas Resources of the United Kingdom*. London: HMSO.

DOE (Department of Energy) (1988). *Development of the Oil and Gas Resources of the United Kingdom*. London: HMSO.

DTI (Department of Trade and Industry) (2001). *Development of the Oil and Gas* Resources *of the United Kingdom*. London: HMSO.

DTI (Department of Trade and Industry) (2006). *The Energy Challenge: Energy Review Report 2006*, presented to Parliament by the Secretary of State for Trade and Industry by Command of her Majesty – July 2006. Cm6887.

Grayson, L. E. (1981). *National Oil Companies*. Great Britain: John Wiley and Sons Ltd.

Great Britain (1975). *Oil Taxation Act 1975*. Chapter 22. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1980). *Finance Act 1980*. Chapter 48. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1981). *Finance Act 1981*. Chapter 35. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1982). *Finance Act 1982: Advance Petroleum Revenue Tax*. Chapter 39. Part VI. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1983). *Finance Act 1983*. Chapter 28. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1985). *Finance Act 1985*. Chapter 54. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1986). *Advanced Petroleum Revenue Tax Act*. Chapter 68. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1987). *Finance Act 1987*. Chapter 16. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1988). *Income and Corporation Taxes Act 1988: Petroleum Extraction Activities (Ch. V)*. Chapter 1. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1989). *Petroleum Royalties (Relief) and Continental Shelf Act 1989*. Chapter 1. London: HMSO.

Great Britain (1990). *Capital Allowances Act 1990*. Chapter 1. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (1993). *Finance Act 1993*. Chapter 34. In The Taxes Acts, 1997 Edition. Norwich: The Stationery Office.

Great Britain (2002). *Finance Act 1981*. Chapter 23. Available at: http://www.englandlegislation.hmso.gov.uk/acts/acts2002/ukpga_20020023_en_1. [Accessed on 28th March 2010].

HMRC (2010). *The taxation of the UK oil industry: an overview: other developments to the fiscal regime 1975 to 2010*. Available at: http://www.hmrc.gov.uk/manuals/otmanual/ot00190.htm. [Accessed on 10th December 2010].

Hotelling, H. (1931). The economics of exhaustible resources. *The Journal of Political Economy*, Vol. 39, No. 2, pp. 137- 175.

Kemp, A., and Stephen, L. in Glomsrød, S. and Osmundsen, P. (2005). *Petroleum Industry Regulation within Stable States*. England: Ashgate Publishing Limited. pp. 131-156.

Mommer, B. (2002). *Global Oil and the Nation State*. Oxford: Oxford University Press.

Muslumove, Z. (2011). Further complication for UK upstream tax regime. *Petroleum Economist*, 12th April. Available at: http://www.petroleum-economist.com/Article/2806185/Further-complication-for-UK-upstream-tax-regime.html. [Accessed on 19th June 2011].

Nakhleh, C. (2008). *Petroleum Taxation: Sharing the Oil Wealth*. London: Routledge.

Pfeifer, S., McNamara, W., Smith, P., Simon, S., Simon, B. (2011). Resources industry angry at tax increases. *Financial Times – Global Economy*, 2nd May. Available at: http://www.ft.com/cms/s/0/b1c38614-745d-11e0-b788-00144feabdc0.html#axzz1Pj7wu1Rl. [Accessed on 19th June, 2011].

Oil and Gas UK. (2010). Economics, Energy Policy and Gas. Available at: http://www.oilandgasuk.co.uk/economics.cfm. [Accessed on 25th July, 2011].

Rutledge, I. D. and Wright, P. W. (1998). Profitability and taxation in the UKCS oil and gas industry: analysing the distribution of rewards between company and country. *Energy Policy*, Vol. 26, No. 10, pp. 795-812.

Oil and Gas UK. (2010). Economic Report.

Rutledge, I. D. and Wright, P. W. (2010). *UK Energy Policy and the End of Market Fundamentalism*. Oxford: Oxford University Press.

Usenmez, E. (2010). The stability of the UK tax regime for offshore oil and gas: positive developments and potential threats. *International Company and Commercial Law Review,* Vol. 21, Issue 1, pp. 16-25.

Wälde, T. (2003). *Book Reviews of Global Oil and Nation State*. *CEOMLP Internet Journal*. Available at: http://www.dundee.ac.uk/cepmlp/journal/html/review80.html. [Accessed on 12th December 2010].

End Notes

[i] From an international perspective, the UK is the second largest European oil and gas producer, after Norway. Worldwide, the UK is the 15th largest gas producer and the 19th largest oil producer (Oil and Gas UK, 2010: 9).

[ii] These fields are protected from paying PRT by the "safeguard concept". This concept states that PRT payable by a participator in an oil and gas field for any chargeable period should not exceed 80% of the gross profit of that field, and that it should be levied only if his adjusted profit for that period exceeds 15% of his accumulated capital expenditure at the end of that period (Great Britain 1975, S. 9). Another category of non-PRT-paying fields were those exempted from paying PRT by the 1993 Finance Act, i.e. fields developed post March 1993; the Government calls these "non-taxable fields" (Great Britain, 1993, S. 185). Any PRT-exempted field is referred to in this paper as a "non-PRT-paying field".

[iii] Major changes to the petroleum fiscal regime over the period 1975-1983 were: the Oil Taxation Act 1975, provisions contained in seven Finance Acts and the Petroleum Revenue Tax Act 1980.

[iv] The marginal tax rate of 89.9% is calculated as follows: royalty = 100 x 12.5% = 12.5; PRT = (100 – 12.5) x 70% = 61.25; SPD = (100 – 12.5 – 61.25) x 20% = 5.25; CT = (100 – 12.5 – 61.25 – 5.25) x 52% = 10.92. Marginal tax rate = 12.5 + 61.25 + 5.25 + 10.92 = 89.92%.

[v] These have been calculated as follows: Old fields were subject to an increase of 3.06 percentage points because of the SC and these fields benefited by 3.75 percentage points from the abolition of royalties; the overall result was a benefit of 3.75 – 3.06 = 0.69 percentage points less on the marginal tax rate of these fields. Non-PRT paying fields (7.5 – 6.10 = 1.4 percentage points benefit. Post March 1993 fields were subject to an increase in their marginal tax rate by 3.5 percentage points.

[vi] The average daily production in 2010 was 13,000 barrels of oil equivalent compared with 47,000 boe in 1990 (Oil and Gas UK, 2010: 24).

[vii] With the maturity of the UKCS, new discoveries are typically one tenth to one hundredth of the size of the fields found in the early days of exploration in British waters. The average size of fields discovered over the last decade is around 26 million boe, with two thirds of all discoveries less than 15 million boe (Oil and Gas UK, 2010: 24).

[viii] Development and operating costs per barrel have more than doubled between 2001 and 2010. Such increases were already restraining new investment, even when oil and gas prices were rising steadily. Also, the Oil and Gas UK (2010: 26) states "the fall in oil and gas prices during 2008-9, after a period of rapid cost inflation, reduced operating margins. As a result the industry sought to reduce its cost structure and to focus on operational efficiency and extracting value from its assets. This lead to a reduction in total operating expenditure of 5% to around 6.6 billion in 2009".

[ix] Although UK oil and gas production has already peaked, the UK remains a substantial world producer today. In 2009, the UK was the 19th largest oil producer and the 15th largest gas producer (Oil and Gas UK, 2010: 9).