

NORTH SEA OIL POLICIES: AN ASSESSMENT

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Introduction

The discovery of oil in the North Sea in late 1969 undoubtedly marked a watershed in the history of the UK economy. The exploration and development activities which ensued plus the subsequent hydrocarbon production have exerted major effects on the British economy. Both the exploitation costs and revenues have turned out to be large in relation to the whole economy. Given this background, Government policies towards the exploitation of this natural resource assume great importance: their effects will have implications not only for current inhabitants of the UK but for several future generations as well.

The current importance of North Sea oil and gas to the UK economy can be highlighted with a few basic statistics. In 1982 oil and gas contributed 4.75% of the GNP. Gross revenues were around £14.3 billion for oil and £1.0 billion for gas in the same year. In 1982-83 taxes and royalties from oil and gas exploitation comprised 9.8% of total central Government tax revenues excluding national insurance contributions and 7.9% of such revenues including national insurance payments⁽¹⁾. It follows that Government policies towards oil and gas are liable to have far-reaching effects on the whole economy.

II

Issues of Government Interest

It is instructive to approach the analysis of policies with a brief discussion of the areas of government concern regarding oil and gas exploitation. Main subjects of Government interest include the following:

1. The extraction of a large share of economic rents emanating from oil and gas exploitation. This objective is reflected in the legislation of every country in the world. Governments are always searching for comparatively painless sources of revenue and high profits from oil exploitation come into this category. Objective analysis suggests that economic rents form a suitable base for taxation since, if the tax system is sensibly devised, no distorting effects on investor behaviour should ensue. The pace of exploration and development should not be adversely affected.

2. Influence over the volume and pace of exploration. All Governments are interested in the pace at which exploration takes place. Many desire that the territories which are potentially oil bearing are systematically explored in order that the reserve base be established as fully as possible. There may be a conflict between maximising the pace of discovery and the attainment of the most comprehensive level of exploration of potential oil bearing areas.

3. Influence over field development plans and hydrocarbon depletion rates. Most Governments desire to have some influence over the types of production systems installed. They will be anxious to ensure that overall recovery from fields is maximised subject to the relevant economic factor. Governments will also desire to ensure that production systems do not cause unnecessary pollution or other environmental problems. Interference with fishing, for example, is a subject of concern. In the case of the UK, this led to the exploitation of the Beatrice field via a pipeline rather than by offshore tanker loading as the operator desired.

Many Governments desire to control the pace at which reserves are depleted. It is frequently stated that oil companies may deplete reserves at a faster pace than that which is socially optimal: the private investor's discount rate may be higher than the social discount rate. Whether this is so in practice is difficult to prove but it does legitimise Government interest in this area. Governments may view the pace of oil and gas depletion in the context of overall energy policy. They may be concerned about the emergence of potential "energy gaps". Policy reaction to this worry can take different forms. One possibility is the offer of incentives to accelerate the provision of new supplies. Another is intervention to deplete the existing stock

of reserves more slowly in order to provide more time for the development of alternative supplies and for conservation measures.

Governments have also been concerned about the indirect effects of large oil and gas revenues on the rest of the economy. Thus a rapid growth of revenues could have an adverse effect on other trading sectors of the economy. In an open economy, such as the UK one, the effect would come via an upward movement in the exchange rate. This would cause exports to become uncompetitive in foreign markets and imports to out-compete domestic production. There is much controversy about how strong this effect is likely to be in the case of the UK and how Government should react to the phenomenon⁽²⁾.

4. Security of supplies for the domestic market. Most Governments of oil producing countries take steps directly to protect the security of supplies for its own market. The supply disruptions of the 1970's were great in many consuming countries and the consequent damage to economies convinced most Governments that protective measures were necessary.

5. Influence over the domestic price of oil. Oil is a very important commodity in the economic systems of virtually every country in the world. Fluctuations in its price have insignificant effects on whole economies. Many Governments have accordingly felt it necessary to control oil prices at levels very different from free market ones. In the 1970's they were held far below such levels in many countries as part of Government attempts to control inflation.

6. Significant level ownership of an important national resource. Because of its undoubted importance most Governments in producing countries have felt it necessary to acquire at least part ownership of oil exploitation activities. National oil companies can fulfil several functions which may be summarised as follows:

- (a) National ownership. This means indigenisation rather than nationalisation.
- (b) State ownership. This is an application of socialist doctrine to an activity which is hopefully profitable.
- (c) State control of industry. This is an application

of dirigiste thinking.

- (d) Increased state revenues. Participation at the development phase increases state revenues from production through a business partnership rather than directly through increases in taxation.

7. The enhancement of local participation in oil-related employment and the provision of supplies and equipment. This is an example of attempts to maximise the share of oil-related activity accruing to the local economy.

III

The Approach of the UK Government

The policy framework adopted by British Governments to the above issues has essentially been a highly discretionary one. Most of the measures that have been introduced give the Government a wide degree of flexibility in their application. The main policy instruments employed have been in the licensing, depletion and fiscal areas. Licensing policy has been discretionary in several ways. Thus exclusive licences to explore and produce have generally been awarded at the discretion of the Department of Energy with only a few awarded on the basis of auctions. The licensing arrangements give the Department of Energy discretion over the number of licences to be awarded, the location of the blocs in question and the timing of the awards. The criteria that are employed by the Department in deciding which companies obtain licences are essentially the technical and financial competence of the applicants, and their contribution to the UK economy. In recent rounds, the performance of applicants in prior rounds has been a consideration. In discussion with the proposed licence operators the Department also has some discretionary influence regarding the precise obligations of licensees regarding, for example, the amount of exploration drilling to be undertaken.

At the development stage, under the provisions of the Petroleum and Submarine Pipelines Act (1975), the Department of Energy is given wide discretionary powers over field development plans and depletion rates. Thus the Department has to approve a field development plan

including the method of production, overall recovery factor and method of transport of the hydrocarbons. Annual production rates have to be agreed, as has the amount of permitted gas flaring. In practice then the Department has a large amount of discretionary influence over the timing of development of fields and the ensuing production rates. Further powers to alter depletion rates and the timing of field developments are given in the Petroleum and Submarine Pipelines Act. Thus field developments can be postponed if the Department desires. Under the so-called Varley Assurances full consultation with the companies concerned is necessary in this event to ensure that premature investment was avoided. The Department still has wide discretionary powers in this area. For example, it has freedom to determine the number of years that projects are delayed. The Assurances also stated that if production cuts were required from fields discovered before 1975 no cuts would be made until 1982 or until four years after the start of production, whichever came later. On new fields no production cut would be made until 150% of the capital investment in the field had been recovered. Promises were made that regard would be paid to the technical and commercial aspects of fields. There was an understanding that this meant that cuts should not exceed 20%. It is again clear that the legislation gives the Department a wide measure of discretion. No criteria are laid down in the legislation for determining the circumstances under which intervention on depletion grounds would take place.

The objectives which successive Governments have had regarding the pace of depletion have only been stated in very general terms. Thus in 1974, in introducing depletion controls, the Government stated that "The Government will, therefore, for current as well as future licences, take power to control the level of production in the national interest. This does not affect their determination to build up production as quickly as possible over the next few years. The question of reducing the rate of depletion is unlikely to arise for some years but the Government believe that they should take the necessary powers now"⁽³⁾. In 1980, in a statement on depletion, policy the present Government stated that "We expect that from later this year UK oil production will regularly reach a level equal to UK consumption. Thereafter, on present forecasts, production would rise to a peak in the mid-1980s giving a significant surplus over UK

consumption in the 1980s as a whole. We are likely to become net importers of oil again about 1990. Recent events underline the fragilities of the world energy scene. The Government believes that on strategic and security of supply grounds it is in the national interest to prolong high levels of UKCS production to the end of the century. This requires action to increase exploration, which we have already taken, and to defer some oil production from the 1980s. Such action accords fully with the recommendations to maximise indigenous hydrocarbon production on a long-term basis and with our other international commitments including net exports of 5 million tonnes in 1985 as agreed in the Community and the International Energy Agency"⁽⁴⁾.

The Petroleum and Submarine Pipelines Act also established the British National Oil Corporation (BNOC). It had a number of functions which varied between licence rounds. Under all rounds it had the right to buy 51% of all crude oil from licensees at market prices. Under the Fifth Licensing Round BNOC was also a full risk-sharing partner in exploration and development with ownership of 51% in the licences. Under the Sixth Round terms, participation was on a carried interest basis with the private companies being invited to bid at least a 51% stake to BNOC. The private company had to pay for all exploration and in the event of a commercial discovery BNOC would participate and reimburse the private investor for its share of exploration costs. As well as having other privileges (such as no liability to Petroleum Revenue Tax), BNOC was oil adviser to the Government while at the same time being instructed to act as a commercial oil company. With the advent of the Conservative Government in 1979 most of the privileges of BNOC were stripped and in the Seventh Round it had to compete for licences on the same basis as any other company. By the Eighth Round Britoil had been created out of BNOC as an exploration and production company and 51% of this company was sold into private hands. BNOC remains only as an oil trader purchasing 51% of oil from licensees.

Policy regarding onshore effects centred on the creation of the Offshore Supplies Office (OSO) attached to the Department of Energy in 1973. It was charged with the function of ensuring that "full and fair opportunity is provided to UK industry to compete for orders for goods and services". The OSO monitors procurement of equipment for the North Sea and assists in the promotion of the UK offshore supplies

industry both in the UK and overseas. Various official interventions have been made to assist the UK offshore supplies industries. For several years in the 1970's use was made of the Interest Relief Grant scheme under which interest payable on loans to offshore buyers was reduced by 3% provided that the import content of the order was no higher than 20%. The Department of Energy also helped to establish production platform sites in Scotland and large grants and loan guarantees were provided by the Government in the 1970's.

As a key element of North Sea policies special taxation measures were introduced in 1975. It was recognised that following the large oil price increases in 1973-74 the profitability of exploitation would be high. In brief, the system of taxation consisted of a royalty at 12% , normal corporation tax and the new Petroleum Revenue Tax (PRT) at 45%. There was a complex set of allowances for PRT, included to make the system less severe on small and less profitable fields. Since 1975 a large number of changes have been made to the system with major amendments being made in every year from 1979 onwards. These changes have modified both the level and structure of the system. Major increases in the fiscal burden took place in 1979, 1980 and 1981 followed by a small alleviation in 1982 and a major reduction for new fields in 1983⁽⁵⁾.

Special taxation of North Sea oil was deemed to be necessary because the Government allowed the oil to be priced at full world market values. This was in contrast to the policy which had been adopted for North Sea gas in the 1960's when long-term contracts were signed for the fields in the Southern North Sea. The prices negotiated by the British Gas Corporation and the producing oil companies were designed to give the companies a "fair" return at the beachhead. Regarding prices to consumers, the policy of the Gas Corporation was essentially to charge industrial and commercial consumers a price based on the value of the competing alternative fuel while for domestic consumers prices were based on what was required to achieve the overall financial target set by the Government. As the 1970's developed, the difference between domestic gas prices and those of alternative fuels became very large in the domestic market. After the Conservative Government was elected in 1979 the Gas Corporation was told to raise domestic prices by 10% above the inflation rate for a number of years. Because of the difference in pricing arrangements for

gas at the beachhead, PRT was not charged on gas contracts signed before July, 1975. For contracts after that date the same fiscal arrangements apply as those for oil.

IV

The Policies Assessed

Government policies can be assessed in relation to the policy objectives and against other policy instruments that might have been employed. Regarding licensing policy, a fundamental initial issue is whether licences should have been auctioned rather than awarded on a discretionary basis. There is a long-standing debate about the relative merits of the two systems. The case for auctions rests on the view that the bids made by investors will be based on their estimates of the economic rents likely to arise from exploitation of the oil in the acreage concerned. The sums bid are produced on an entirely voluntary basis and should therefore not produce any disincentive effects. It is argued that investors themselves (rather than Governments) are best placed to estimate pure economic rents and that if there is competition between them for acreage maximum revenues consistent with zero misallocative effects will result. It is also argued that investors are best placed to know what is the optimal amount of drilling in any particular acreage and that attempts by Government to impose specific drilling obligations are likely to result in resources being wasted in futile drilling.

There are several arguments against auctions. If investors collude rather than bid on a competitive basis the result will be that revenues will be less than those theoretically achievable under competition. It is, of course, difficult for any Government to know if collusion is taking place. Auctions may also conflict with other Government objectives. If a high contribution to the UK economy is deemed to be a major objective, a system of free auctions may conflict with this desire because the result may be that foreign-owned (especially American) companies would win a major share of the licences. This would simply reflect the dominance of US companies in the industry world-wide. A consequence would be that when profits from exploitation are received a correspondingly large share would flow overseas to the detriment of the UK balance of payments. The investors

making the highest bids may also not be the ones which would make the greatest contribution to the UK economy in other respects. It can also be argued that an auctioning system favours large established investors over small companies who would not have the financial resources to match the bids of the majors.

Such notions have formed at least part of the thinking of the Department of Energy which has stated the importance of thorough exploration, contribution to the UK economy and the encouragement of small companies in awarding licences⁽⁶⁾. At the same time the Department expressed the fear that these factors could not be given the same weight under an auction system⁽⁷⁾. It could be argued that the requirements of certain levels of exploration and contributions to the UK economy and an auction system are not mutually exclusive. It is also arguable that emphasis on contributions to the UK economy in awarding licences could result in exploitation not being undertaken at the lowest possible cost in resource terms. The award of licences (partly) on the basis of work programmes could lead to funds being wasted on fruitless drilling through the bidding-up of exploration obligations. There is thus very likely to be a conflict between the objectives of obtaining maximum direct revenues from oil exploitation and maximum spin-off benefits to the UK economy.

The oil companies make a different type of argument against bonus bidding. They suggest that the sums bidded are a drain on funds which would otherwise be used for exploration purposes. Oil companies obviously do have constraints on their exploration budgets and it is possible that bonus bidding would result in some reduction in exploration activity. It is not clear, however, that the institution of bonus bidding in one country would lead to a significant decrease in activity there. This would depend on the perceived prospectivity and expected returns. It is possible, in fact, that the result of the introduction of bidding in one country could result in lowered exploration in a completely different country where the prospectivity was comparatively low.

The UK Government has awarded only a few blocs on the basis of auctions in the Fourth and Eighth Rounds. In the Seventh Round some blocs were awarded under a hybrid system, namely a down payment of £5 million for each bloc chosen by the companies. The blocs put on offer

for auction in the Eighth Round were generally considered to be "mature acreage", i.e. where the geology is comparatively well-known and the prospectivity not so uncertain as in "frontier" areas where little exploration has taken place. The more knowledge there is available to investors concerning prospectivity, the more accurately will a system of bonus bids extract economic rents. From this point of view the choice of blocs by the Department was sensible. In "frontier" areas investors will attach a big risk premium to any bids.

When the Government first issued licences the whole of the North Sea could have been regarded as frontier territory. In those circumstances a licence auction system could certainly not accurately extract economic rents from oil exploitation. In fact it is arguable that such a system can only achieve the desired result in the presence of complete foresight regarding the size of reserves, costs of extraction and future oil prices. When there is a large degree of uncertainty surrounding these, a scheme of bonus bids needs to be reinforced by a system of taxation to ensure that unforeseen economic rents accrue to the state. The experience of the last decade certainly supports the view that the degree of uncertainty in North Sea oil exploitation is very high.

If a free system of licence auctions (backed up by taxation) had been consistently operated from the First Round it is clear that revenues accruing to the Government to date would have been higher, possibly by a considerable margin. It is also very likely that foreign ownership of the reserves would have been higher and the current outflow of profits and dividends from the UK higher as well. The UK content of orders for offshore supplies might have been lower, as would the intensity of exploration in the blocs awarded. A trade-off situation exists. If Government is primarily interested in maximising revenues and the other considerations are clearly secondary, then the case for auctions (backed up by taxation) is a very strong one. It is also arguable that successive Governments could have combined the auctioning of licences with the attainment of at least some of the other objectives noted above. Thus it is possible to combine specified drilling obligations with an auction system. The conclusion is thus that even when several objectives are present when licences are awarded arrangements would with advantage have been made to use the auction system to a greater extent without involving major sacrifices

to these other objectives. This is not to say that every bloc should be subject to auction but considerably more than the 30 blocs out of the 1109 made available under the eight rounds (528 under Rounds Four to Eight) could have been awarded on this basis.

Another central issue with regard to licensing is the frequency and number of blocs put on offer. Decisions on these matters should be related to the desired pace of exploitation: the availability of licences is a main permissive factor in the discovery of reserves and the pace of development of fields. Licensing policy is thus one element of policy towards depletion and should be examined (partly) in this light. Licensing policy itself does not, of course, determine the depletion rate: it is a necessary but not sufficient element.

Basic data on licensing are shown in Chart 1 which highlights the numbers of blocs awarded and the timing of these awards. These should be related to the amount of exploration drilling taking place and the oil discoveries made. Data on exploration wells drilled and oil discoveries made are shown in Chart 2. The fruit of these activities is shown in Chart 3 which exhibits the production profile from the 20 oil and gas fields in the Central and Northern North Sea which are currently producing or under development.

From Chart 1 it is seen that a comparatively large number of blocs were awarded in the 1960's and early 1970's compared to the mid and later 1970's. This is reflected in a very similar pattern of exploration drilling over the last decade or so. The causal link is fairly obvious. From Chart 2 it is seen that the volume of discoveries was very large in the first half of the 1970's and declined rapidly in the second half. The causal link with the award of licences is of course much more tenuous. It is to be expected that when a new oil producing province is opened up comparatively large discoveries will be made in the early years: both the number and size of discoveries are likely to be relatively large in the "early" period.

It is then arguable that the annual volume of discovery will tail off unless licensing policies are made more liberal with relatively more blocs put on offer. Whether this should be done, of course, depends upon the desired production rates. The main features of the profile shown in Chart 3 are the sharp rate at which production rises in the

later 1970's, the short peak period in 1985, and the rapid rate at which production falls thereafter. It should be stressed that the peaking of production in 1985 is now inevitable. Any conceivable new field developments can only moderate the pace at which the profile falls. The new fields are comparatively small in relation to total current output and lead times of 5-7 years are necessary between initial investment outlays and first production.

There is little doubt that Government desired a rapid build-up of production in the 1970's in order to bring relief to the weak balance of payments. The licensing policies adopted generally did not hinder this build-up. It is not so clear to the observer what Government have desired after "high" level of production has been attained. Official statements have discussed in general terms the need to maintain high levels of production and to defer some production from the 1980's. It is perhaps little wonder that objectives in this area have not been specified in precise terms. The various arguments noted in Section II which legitimise Government intervention to restrict the pace of depletion brought about by private enterprise do not lead clearly and neatly to specific production levels.

In the public discussion on this question, no consensus has emerged about whether depletion rates now or in the next year or two are excessive from a national viewpoint. Thus, regarding the possible adverse effects of rapidly rising revenues on the other trading sectors of the economy through appreciation of the exchange rate, there is no consensus on the size of the premium attributable to oil revenues nor on the magnitude of the adverse effects on the manufacturing sector. It is arguable that the potential adverse effects could be mitigated or even removed by appropriate Government macroeconomic policies⁽⁸⁾. On the basis of current knowledge it is not clear that Government should have intervened to modify the pace at which oil revenues are currently increasing.

The production profile in Chart 3 exhibits a sharp fall in production starting in the mid-1980's. This will create problems for the UK economy. Both the balance of payments and tax revenues will clearly suffer⁽⁹⁾. It is arguable that Government could have taken action over the last few years to ensure that the fall-off in revenues will not be so fast. One relevant element within the Government's

control is licensing policy. It is quite possible, given the estimates of likely reserves, that if more blocs had been licensed in the second half of the 1970's more reserves would have been discovered. This would at least have been a permissive factor in facilitating the development of more fields in the first half of the 1980's. The availability of extra discovered reserves does not of course guarantee the development of more fields. Decisions to develop fields depend upon expected post-tax returns which, in turn, depend upon the relationship between revenues and costs and taxes. The more proven reserves there are, however, the greater the likelihood that more fields will be viable. In addition the offshore industry itself was making requests for more acreage to be made available in the later 1970's⁽¹⁰⁾. There do not seem to be any convincing reasons why more acreage could not have been made available in the later 1970's, and so the conclusion is that the niggardly attitude towards licensing in that period has probably contributed to the likely outcome that revenues will fall off sharply in the second half of the 1980's.

The steps taken by Governments to restrict directly the pace of depletion of discovered field were noted in Section II. Doubts were expressed above about whether any restrictions have been necessary so far but it is also useful to examine the efficacy of the particular weapons chosen by Government to implement its depletion policy. The powers given to the Department of Energy to implement development delays and production cuts are very wide-ranging and leave a great deal of discretion to the investor. Thus there are no clearly defined criteria or guidelines specified for intervention but only general reference to national needs. The legislation gives the Department discretion on the number of years over which field developments may be delayed as well as on the particular fields to be chosen. These factors clearly increase the level of uncertainty facing investors. In their evidence to the House of Commons Select Committee on Energy on this subject, several oil companies expressed the view that the use of development delays would result in reduced exploration and higher threshold rates of return on new fields. One company expressed the view that development delays constituted a coarse instrument lacking in flexibility and demanded remarkable foresight of Government.

Development delays affect the pattern of production only in the medium and long terms. It may be possible for Government to see that the prospective production pattern in the medium term will be non-optimal though, as argued above, it is likely to be difficult to prove that changing the shape of the profile from that produced by the market would represent an improvement. Development delays can play a role here and may cause less misallocation of resources than production cuts from fields which have already been developed. But the legislation as it stands is too discretionary in nature. The uncertainties brought about would be reduced if the powers to delay field developments were subject to a maximum time constraint. The House of Commons Select Committee on Energy suggested a maximum period of 5 years⁽¹¹⁾. In addition, to reduce the uncertainties facing individual companies, clear guidelines should be applied by the Department in determining the order in which projects are approved for development.

Production cuts are less efficient in terms of resource allocation than development delays in implementing a restrictive depletion policy. They involve the under-utilisation of expensive capital equipment. Thus they should only be used when there is a clear short-term need to curtail output. The existence of discretionary legislation in this area can have an adverse effect on exploration and development. Well-defined limits on the scale of any cuts need to be clearly established in legislation. Substantial cuts early in field lives could greatly reduce post-tax discounted returns. In evidence to the Select Committee on Energy several oil companies suggested that royalty banking should be used in preference to production cuts. This is a variation which puts the costs of the cuts squarely on the Government's own shoulders. Though it may just be necessary to keep reserve powers to make short-term cuts in production, it should be made clear that implementation will only take place in emergency-type circumstances. It is arguable that the costs of economic emergencies should be borne by every section in a community and in this case oil companies as well as Government can be included.

One of the most hotly-debated elements of UK North Sea policy has been the role of a national oil company. The several roles that such a company can fulfil were noted in Section II. The creation of the British National Oil Corporation increased the UK ownership of

reserves, brought the prospect of an increased share of the profits accruing to the state, gave access, through participation, to a large amount of oil belonging to the other licensees, and provided the Government with an adviser on oil affairs. It thus had several distinct functions. As an equity participant it was engaging in the commercial risks of the oil business. There is an argument that public institutions should not be involved in such matters which are best left to private enterprise. Carried interest participation such as occurred in the Sixth Round reduces the risks to a considerable extent. The effect of this is to put more of the risks on to the private investor. In fact, in the Sixth Round one major oil company did not participate because the terms (including state participation) were viewed as unsatisfactory. Carried interest participation does, in general, act as a disincentive to exploration by reducing the upside potential returns to investors.

Assessment of the value of BNOC's role as an investor in oil exploitation depends in part on how efficiently it performed its task. The private oil companies who were forced to be its partners certainly complained about its behaviour in this respect. Learning by doing must have taken place within BNOC over its years of operation and it is difficult for an observer to come to a final judgment on this matter. Thus general judgment about the wisdom or otherwise of the privatisation of BNOC's exploration and production activities is also difficult to make. If BNOC was operating at comparable efficiency to the other companies there was no obvious reason to sell off a share in its assets. The timing of the sale is a separate issue. The criticism here is that the shares were sold at a time when oil prices were relatively weak and expected to fall further in the near future. To be acceptable, relatively high yields had to be offered. No one can forecast oil prices with accuracy but the pricing of the shares at the time of the sale was consistent with a very bearish view of future oil prices.

BNOC has remained as an oil trading company purchasing 51% of crude oil production. The main purpose of this arrangement is essentially to secure supplies to the UK market in the event of overseas supply disruptions. There must be some doubts about whether BNOC's trading practice could adequately deal with a major supply disruption. Thus BNOC sells most of the oil it purchases on a contract

basis. These are normally for three month periods. Whether BNOC is able at very short notice to divert possibly large amounts of oil to the UK market depends upon the precise provisions in its contracts dealing with circumstances of major market disruptions. Given that the price of oil will then change markedly it is possible that the terms would permit BNOC effectively to make a transfer.

The other area of North Sea policy which has attracted much controversy is taxation. The system introduced in 1975 was broadly acceptable to the industry. The complex scheme with the various special allowances for PRT was intended to make the system progressive in the sense that the (percentage) tax take would decrease with field profitability. The levels of tax were such that field developments were not deterred. Structural problems were in the distant future. In 1979, however, major increases took place to be followed by further hikes in 1980 and 1981.

Oil prices doubled in 1979-80, greatly increasing the profitability of exploitation. The level and structure of tax introduced in 1981 incorporating the new Supplementary Petroleum Duty (SPD) provoked a storm of protest from the oil industry. This system, the most severe to date, incorporated a top marginal rate of over 90% with two front-end production taxes in the royalty and SPD. The uplift allowance on capital expenditure for PRT was also reduced to the period of field payback and the safeguard benefits restricted to a period equal to 1.5 times the payback period. Compared to the previous situation the structure of the system was now less geared to profitability and the Government was not sharing in the exploitation risks to the same extent.

During this year several new development projects were shelved with the high tax burden being mentioned as one of the reasons. The shelving of field satellite developments was most closely related to the fiscal change which reduced the relief on incremental expenditures late on in field life. The extent to which the fiscal system was inhibiting the pace of field development continued to be a matter of dispute. The present author argued that the newer generation of fields which were available for development generally incorporated much higher costs per barrel and that insufficient incentives were available under the new fiscal system⁽¹²⁾. Fields which were clearly

acceptable on a pre-tax basis could readily become non-viable after tax. The structure of the system was responsible as well as the overall level with the high element of front-end, production-based taxes causing disincentives.

In 1982 the Government announced the abolition of SPD but increased PRT (APRT) to maintain its current revenues. The overall effect was usually to cause a minor reduction in tax burdens though in a few cases a field could end up being liable to more tax. The lack of new developments and the falls in oil prices in 1982-83 caused a radical rethink by Government and in the budget of 1983 a dramatic reduction in the burden on new fields was announced, with the abolition of royalty and the doubling of the oil allowance for PRT. The APRT will also be abolished. Incentives to develop new fields are certainly increased to a very significant extent by these changes⁽¹³⁾.

The fiscal system clearly contributed to the holding-up of field developments in the 1980-82 period and thus to the pace at which the production profile will fall in the second half of the 1980's. Government was using the oil industry as a source of revenue without much regard to its medium-term effect. The introduction of a large front-end production payment like SPD was contrary to the philosophy underlying the 1975 Act which permitted an investor to recover his outlays before heavy special taxes were imposed. The fundamental fiscal problem in the North Sea is that the range of costs per barrel, and so profitability, is very great and conventional fiscal systems cannot readily be made sufficiently progressive and sensitive to tax economic rents highly while having sufficient incentives on marginal fields.

Both Government and industry have set themselves against the introduction of a resource rent tax which is specifically geared to dealing with this type of problem⁽¹⁴⁾. To introduce such a tax after exploitation in a province has been taking place for some years certainly imposes serious transitional problems. On the other hand, if such a tax is not introduced the industry is likely to be faced with a continuing series of ad hoc changes in response to the problems which will be encountered with the existing system. This is the prospect at the moment. Problems will be encountered with the existing system when incremental investments later on in field life, either in the form of

satellite developments or enhanced oil recovery schemes, are under consideration. Further changes to PRT will be required.

All UK Governments have agreed that North Sea oil should be priced at its world market value even for domestic sales. This is undoubtedly the correct approach in terms of the allocation of resources. Gas has not been priced at its free market value especially for domestic sector sales. This procedure is inconsistent and in the 1970's caused an enormous amount of fuel switching by households in particular. As was noted above, the procedure has been that BGC, the monopoly buyer, offered the oil companies a price at the beachhead which was supposed to give them a "fair" return. As an ingredient of this policy no PRT is charged on gas from the Southern North Sea gas fields though it is on the new Northern sector fields.

It is argued by the oil companies that one effect of the pricing policies has been to cause a serious decrease in exploration for gas. Certainly the volume of exploration has been very low in the 1970's compared to the period 1964-70. It is also likely that British Gas will be faced with a supply problem from the later 1980's onwards. It has been argued by the oil companies that this would not have occurred if sufficient incentives to continue exploration had been present in the 1970's.

From the viewpoint of policy it is clear that the inconsistent pricing policies for oil and gas have led to misallocation of resources. The solution is to allow gas to be priced at its free market value which would generally mean at around the price of the oil product with which it is competing. Now that international trade in gas is quite common it is also possible to determine the free market value of gas at the beachhead. This should form the basis of pricing for purchases by British Gas from the oil companies. Special taxation should then be imposed on the profits of the oil companies as happens with oil. There is still scope for argument about the precise terms of taxation but the overall scheme would be conceptually superior to the present one. Taxation terms should be sensitive to differences in costs across fields.

Conclusions

In this paper the various possible areas of Government involvement in the oil exploitation activity have been examined. The various policies adopted by UK Governments since oil was discovered were then outlined and analysed. It was argued that in several areas they have probably not been optimal. With regard to licensing, more use of the auction mechanism could have been made without significantly detracting from the achievement of other objectives. The number of licences awarded in the second half of the 1970's was almost certainly too low and has contributed to the prospect of a sharp fall in revenues in the later 1980's.

In the area of depletion policy more narrowly defined, the case for intervention so far, in a restrictive sense, has not been proven. The policy instruments adopted by Governments for this purpose give a remarkably wide degree of discretion to the Department of Energy. This greatly increases the level of uncertainty surrounding investors. Clearer guidelines to investors and further limitations on the extent of such intervention should be introduced in legislation.

In the fiscal area there is evidence that the continuing changes in the period 1979-83 have created a large amount of uncertainty and discouraged new investments. Governments have also used the oil industry simply as a convenient source of short-term revenues. Conventional tax systems are not well-suited to extract a high proportion of economic rents while leaving incentives unimpaired on more marginal fields. Failure to adopt a system of taxation specifically designed for this purpose means that there is a high probability of frequent ad hoc changes having to be made. This danger still exists in the UK system.

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No. 3, July 1980, T. Barker and V. Brailovsky, Oil or Industry, Academic Press, 1981, and A.G. Kemp, C.P. Hallwood and P.W. Wood, "The Benefits of North Sea Oil", Energy Policy, Vol. 11, No. 2, June 1983.

3. See Offshore Oil and Gas Policy, Cmnd. 5696, 1974.

4. See Hansard, 23rd July 1980.

5. See for example A.G. Kemp, The Taxation of North Sea Oil (University of Aberdeen, Department of Political Economy, North Sea Study Paper No. 11, August 1976), A.G. Kemp and D. Cohen, "The New System of Petroleum Revenue Tax", Fiscal Studies, Vol. 1, No. 2, March 1980, pp. 36-50, A.G. Kemp and D. Rose, The 1981 North Sea Fiscal System (University of Aberdeen, Department of Political Economy, North Sea Study Occasional Paper No. 14, July 1981) and A.G. Kemp and D. Rose, "Tax Changes give new Incentives", Petroleum Economist, May 1983, pp. 163-165.

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8. See Kemp, Hallwood and Wood, op. cit.

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12. See A.G. Kemp and D. Rose, The Reform of Petroleum Taxation of the UK Continental Shelf (University of Aberdeen, Department of Political Economy, North Sea Study Occasional Paper No. 15, January 1982).

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14. For details of this type of tax and its possible application see R. Garnaut and A. Clunies Ross, "Uncertainty, Risk Aversion and the Taxing of Natural Resource Projects", The Reform of Petroleum Taxation of the UK Continental Shelf, North Sea Study Occasional Paper No. 15, January 1982, and The Taxation of North Sea Oil, The Institute for Fiscal Studies, December 1981.

UK OFFSHORE LICENCES

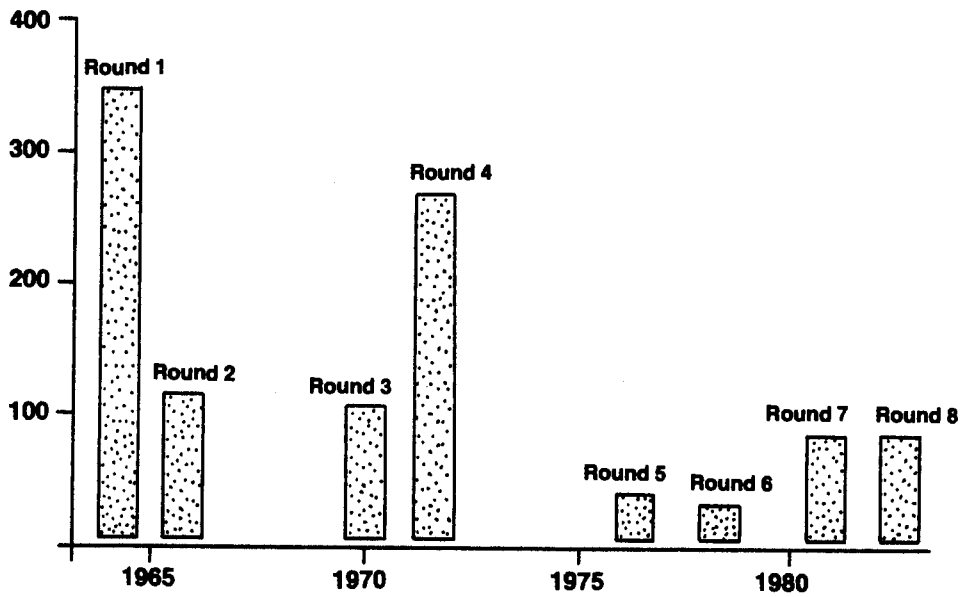


CHART 1

SOURCE: CONOCO

UK EXPLORATION AND OIL DISCOVERIES

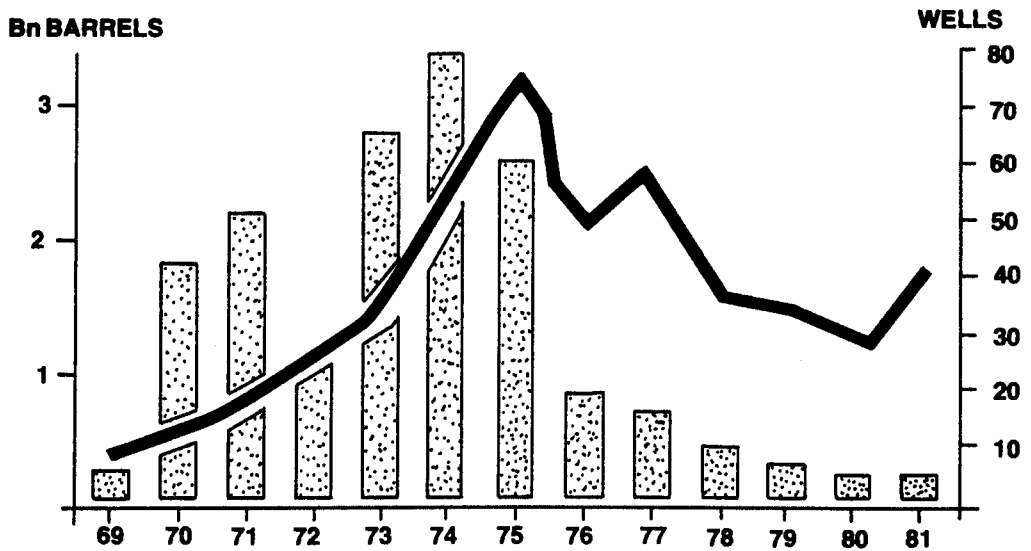


CHART 2

SOURCE: CONOCO

