

2010 PROJECT

BRIEFING NOTE

UK OIL & GAS REVENUES: IMPLICATIONS FOR UK & SCOTTISH PUBLIC FINANCES

PURPOSE – This Briefing Note is intended to look at the past and future prospects of the North Sea oil and gas industry and how these prospects affect public finance options for Scotland.

HEADLINES – NORTH SEA REVENUES

- The Scottish Government's latest Expenditure and Revenue Statement (GERS) highlights the importance of North Sea tax revenues as a contributor to funding public expenditure. Total tax from the UKCS¹ is forecast to reach £9.9 billion for 2008-09, something achieved only twice since 1985-86.
- This level of revenue is based on the Treasury's oil price assumption of \$84 per barrel (£42 per barrel), 34% lower than the average price already achieved in 2008 of around \$112 per barrel (£57 per barrel). In their 2007 study on Scotland's hypothetical share of North Sea tax revenues, Kemp & Stephen were assuming a 'high' oil price assumption of \$75 per barrel (2007 prices) or £37 per barrel and their medium price assumption was \$68 (£34) per barrel (2007 prices).
- **To inform the current debates on greater fiscal powers for Scotland, the potential independence referendum in 2010 and the possible size and shape of any proposed future Oil Fund, greater clarity is required on what is the potential size of Scotland's share of North Sea tax revenues.** Kemp & Stephen estimate Scotland's geographical share was between 82% and 84% during the period 2002 and 2006 and is anticipated to rise to between 88% and 90% between 2007 and 2013.
- Even as oil prices continued to rise, in both dollars and sterling terms, total North Sea revenues fell back in 2006-07 to £9.1 billion from £9.7 billion in 2005-06. This illustrates the importance of both rising and high sterling oil prices in helping to maintain North Sea tax revenues as production continues its downward path.
- **Applying its entire geographical share of North Sea tax revenues in recent years would greatly reduce Scotland's overall fiscal deficit, but it does not eliminate it.** Assuming Scotland's public sector net fiscal balance is reasonably accurate, rising North Sea tax revenues are also required to help support

¹ UK Continental Shelf

Scotland's public finances. However, these revenues can be highly variable in nature and so difficult to predict.

- This poses problems for any Government seeking to plan a public sector expenditure programme. Alternatively, it may be desirable for Scotland's share of North Sea tax to be used to develop an Oil Fund, in order to support expenditures that can be varied as the fund varies. However, used in this way greater clarity on how any fiscal deficit is to be funded is required.
- **Although the North Sea as a source of tax revenues is growing in importance, it is incumbent on those seeking to utilise them more directly to explain what their contribution in the future is likely to be, how the associated uncertainty can be accommodated in any budget proposals and how any related Oil Fund is expected to be funded given Scotland's current fiscal position.**

HEADLINES – NORTH SEA REVENUE FACTORS

- Forecasts for Scotland's share of North Sea tax revenues in the future will be based not only on the future level of oil and gas prices but also on the level and timing of capital and operating costs, production rates, tax rates as well as the geographical location of reserves. Given the relatively high degree of uncertainty surrounding a number of these factors, tax revenues arising from the North Sea are equally likely to be uncertain. Future public spending predicated on Scotland's North Sea tax revenues would therefore require very careful planning.
- Capital cost efficiencies in the UKCS are falling and the operating cost per unit of production is rising as the more difficult to reach oil and gas is targeted. So, although oil prices are high, higher gross revenues are now required to encourage continued development of existing as well as new production.
- North Sea oil and gas production have both peaked; 1999 in the case of oil and 2000 for gas. Since then output has fallen 44% and 27% respectively. Gas now accounts for over 45% of the total hydrocarbons produced (on a barrel of oil equivalent basis) in the North Sea. Forecasts for oil and gas production are for continued decline. BERR² forecasts oil production to fall by between 2.5% and 8% per annum between 2007 and 2013 and gas by between 2.5% to 9% per annum. Kemp and Stephen forecast slightly lower rates of decline; 2.5% per annum for oil and 5.8% per annum for gas. The IEA's³ most recent report suggests oil production will fall over 10% alone between 2007 and 2008.

² The UK Government's Department for Business Enterprise and Regulatory reform

³ International Energy Agency

Recommendations and Next Steps

The Scottish Government should seek to:

- Expand the Kemp and Stephen work to identify what future North Sea tax revenues might accrue to Scotland over time and over a range of oil and gas prices, provide an assessment of how variable they are likely to be and finally produce a ready-reckoner to evaluate the revenue effects caused by changes in the key Kemp & Stephen model assumptions.
- Provide greater detail on what possible options there are for a Scottish Oil Fund including, inter alia, the timing of its development and for what such a fund might be used.
- Provide more detail on how Scotland's fiscal deficit might be brought more into balance in the event some of the North Sea tax revenues are utilised by an Oil Fund.

Introduction

This purpose of this Briefing Note is to look at the past and future prospects of the North Sea oil and gas industry and how these prospects affect public finance options for Scotland.

As international oil prices reach record levels, tax revenues from the North Sea are again offering a boost to the UK government's coffers. Irrespective of these North Sea fortunes, the Scottish Government receives its revenues from the HM Treasury through the application of the Barnett formula. North Sea fortunes have also played little or no direct role in triggering the debate on greater fiscal powers for Scotland. Nonetheless, to help inform this debate as well as any related to the potential 2010 referendum, more information about the future for North Sea tax revenues is now needed. The importance of this issue can be clearly seen in the latest Scottish Government's Expenditure and Revenue Statement (GERS)⁴. If Scotland were to receive its geographical share of North Sea tax revenues, its fiscal balance for 2006-07 would have been be -£2.7 billion, down from -£10.2 billion without.

Although high oil prices are a key component in maintaining relatively high tax revenues from the North Sea, other factors play as much of a role. In addressing these factors, this paper will look at the following:

- North Sea reserves and production rates
- Oil and Gas prices
- The costs of extraction and abandonment
- North Sea UK Government tax revenues
- Scotland's hypothetical share of North Sea taxes

North Sea Reserves

The UK Government's central estimate for the remaining oil and gas reserves in the UKCS (ie, proven plus probable plus possible, here on referred to as p+p+p) are 1.25 million tonnes of oil and 967 billion m³ of gas (see Table 1). This amounts to 28% of the total p+p+p oil reserves and 32% p+p+p gas reserves, down from the 2006 estimates of 30% and 33% respectively. Whilst higher oil prices may help, at the margin, to increase total reserves, the industry anticipates much of the new investment forecast for the next 5 years will be directed towards maintaining or increasing production from existing fields⁵ at the expense of new field developments.

An interesting feature of the remaining gas reserves is the growing importance played by gas condensates. These account for 43% of the p+p+p reserves remaining, whereas dry gas, the dominant gas of the southern sector of the North Sea (typically assumed to be non-Scottish waters), now accounts for only 34% of the total.

⁴ The Scottish Government, 2008, Government Expenditure & Revenue Scotland 2006-07 www.scotland.gov.uk/Resource/Doc/228544/0061858.pdf

⁵ UKOOA (2008), Oil & Gas UK 2007 Activity Survey

Table 1: UK Oil & Gas reserves and estimated ultimate recovery 2007 (central estimate)

Oil

<i>Million tonnes</i>	Proven	Probable	Possible	Max
Fields in production or under development	479	221	370	1,070
Other signif discoveries not fully appraised	0	77	108	185
Total Oil Reserves	479	298	478	1,254
Cumulative production to end 2006	3,167			
Estimated Ultimate Recovery	3,654	298	478	4,421

Gas

<i>Billion cubic metres (m³)</i>	Proven	Probable	Possible	Max
Dry Gas	166	84	77	327
Condensate Gas	161	130	124	415
Associated Gas	85	58	82	225
Total Gas Reserves	412	272	283	967
Cumulative production to end 2006				
- Dry gas	1,377			
- Condensate & Associated gas	709			
Estimated Ultimate Recovery	2,499	272	283	3,054

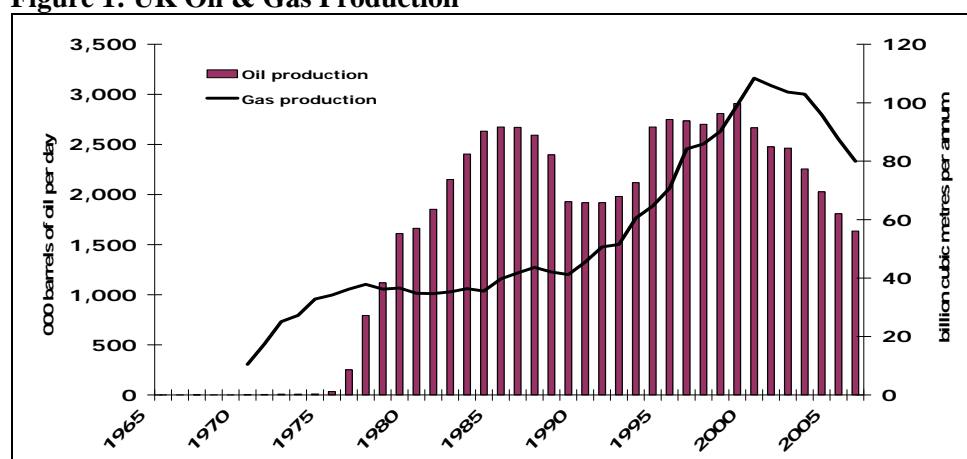
Source: BERR, UK Oil and Gas Reserves 2007,

www.og.berr.gov.uk/information/bb_updates/chapters/reserves_index.htm

North Sea Production

As Figure 1 illustrates, UK oil production reached a peak in 1999 at 2.9 million barrels per day. Gas production peaked one year later at 297 million m³ per day.

Figure 1: UK Oil & Gas Production



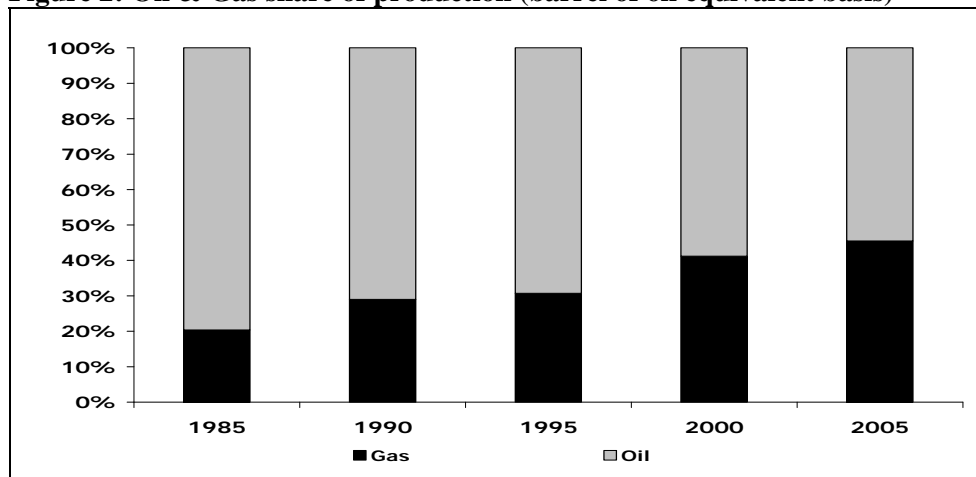
Source: BP Statistical review

The dramatic collapse in oil prices in 1986 had a significant impact on North Sea oil production; annual oil production fell from the then peak of 2.67 million barrels per day in 1985 to less than 2 million per day by 1992, a fall of over one quarter. Although real oil prices remained below \$25 per barrel (£15 per barrel) between 1992 and 1999, changes in production techniques and oil taxation rates meant oil production rose again to a new peak of just under 3 million barrels per day in 1999

before falling again to 1.6 million barrels per day in 2006. Recent increases in investment in the sector was assumed to deliver increases in oil production levels in 2007, however, delays in bringing on the associated new production meant oil output from the North Sea remained flat.

Despite this bounce back in oil output bouncing in the 1990s, gas production has still grown in relative importance (see Fig 2).

Figure 2: Oil & Gas share of production (barrel of oil equivalent basis)



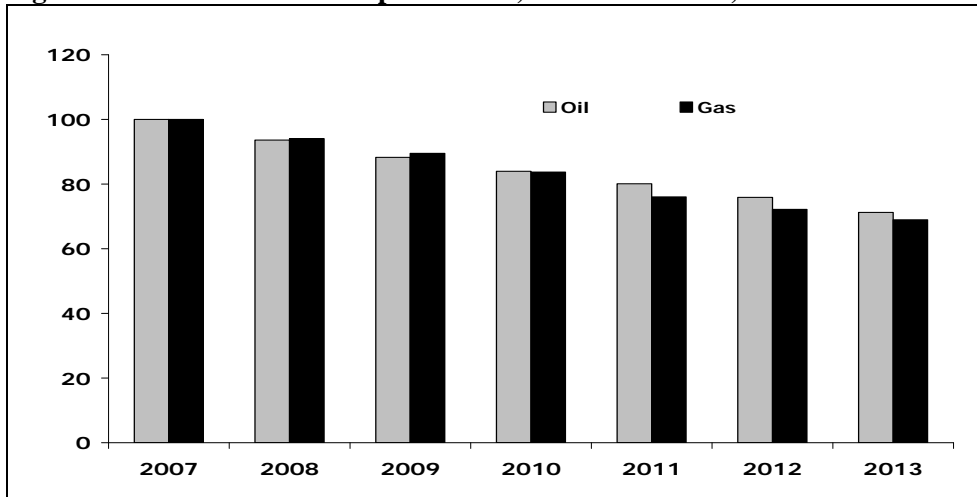
Source: BP Statistical review

In 1985 gas production accounted for just under 20% of the total UKCS hydrocarbons. By 2005, gas accounted for almost 45% of the total UKCS oil equivalent production. This highlights the growing importance not only of oil prices but also of gas prices to UKCS tax revenues.

Finally, production levels are also influenced by the ability of the industry to maintain production for many of the UKCS's older, more mature fields and on its ability to achieve the commencement dates for new production. The UK energy department's forecast for North Sea production of oil and gas is for continued decline with its central estimate assuming a 5% per annum reduction between 2007 and 2013 (see Fig 3) and with high and low estimates based on a decline of between 2.5% to 8% per annum for oil and between 2.5% to 9% per annum for gas. Kemp and Stephen⁶ forecast oil production to decline by roughly 2.5% per annum between 2006 and 2013 and gas by 5.8% per annum under their medium price scenario.

⁶ A Kemp & L Stephen (2008), "The Hypothetical Scottish Share of Revenues and Expenditures from the UK Continental Shelf 2000-1013"
www.scotland.gov.uk/Topics/Statistics/Browse/Economy/GERS/RelatedAreas

Figure 3: Forecast Oil & Gas production, central estimate, 2007=100



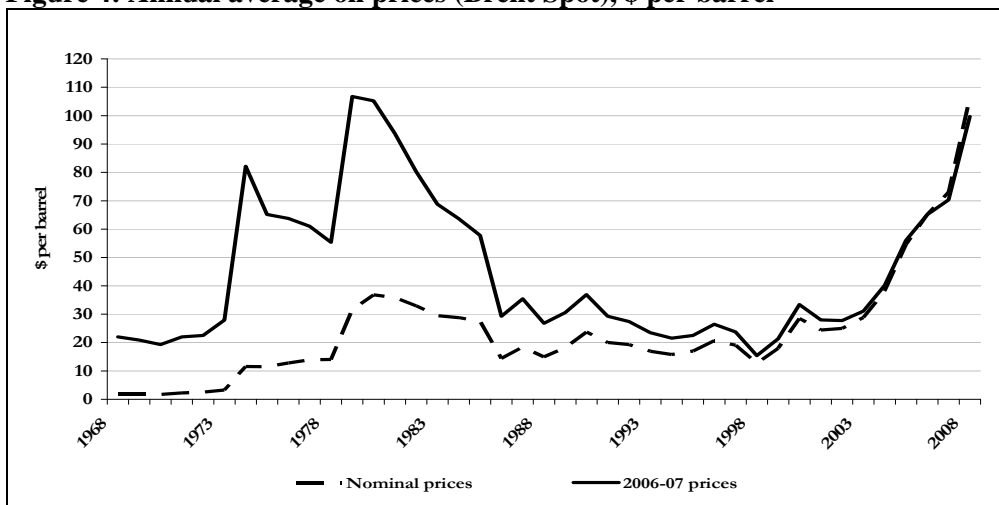
Source: BERR, March 2008

Prices

Oil

Rising oil prices have been a significant feature in recent years and key to those rising North Sea tax revenues (see Fig 4).

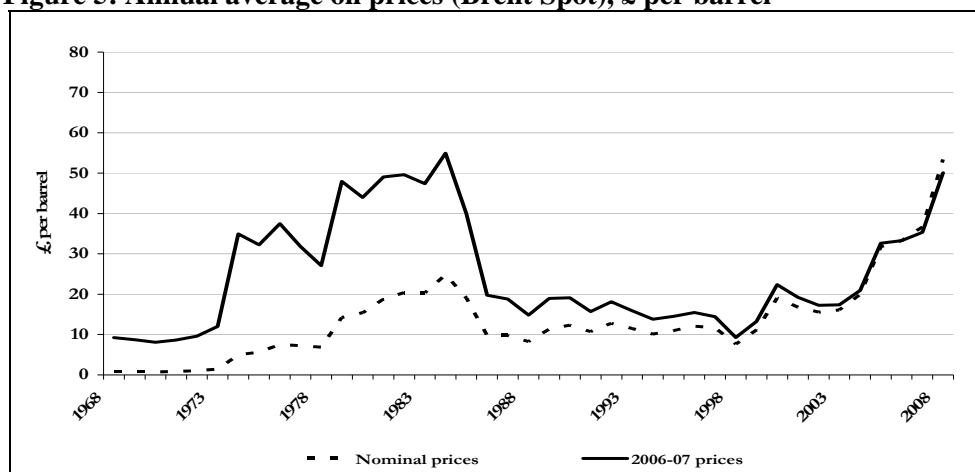
Figure 4: Annual average oil prices (Brent Spot), \$ per barrel



Source: BP Statistical review; RBS Databank

From its inflation adjusted high in 1979 of \$107 per barrel, the annual average price for Brent crude fell to just under \$30 in 1986, or around \$14 in nominal prices. The price then fluctuated at around \$25 per barrel in real terms until 2000. Since then, real oil prices have risen 3-fold and are now averaging around \$106 per barrel for 2008 (2006-07 prices), \$1 below their inflation adjusted 1979 level. Although dollar price increases have been significant, as Fig 5 shows, North Sea revenues have not benefited commensurately as the sterling equivalent price has been capped by the deterioration of the dollar against sterling. Nonetheless, current real sterling prices are also near their peak. The average real Brent price in 2008 has so far reached £55 per barrel the same as that averaged at its peak in 1984.

Figure 5: Annual average oil prices (Brent Spot), £ per barrel



Source: BP Statistical review; RBS Databank

Oil price forecasting is notoriously difficult. The sector requires long-term commitment and so needs certainty on prices over the longer term to justify investment. There are few published estimates for oil prices over the next 5-10 years. However, those that are available suggest prices are likely to remain high in the near future (see Table 2).

Table 2: Annual average oil price forecasts, \$ per barrel (nominal prices)

	2008	2009
RBS (price by March 2009)⁷		
- 50% probability		\$50 - \$80
- 15% probability		\$100
- 15% probability		< \$50
Kemp & Stephen (2006 prices)		
- Medium	68	68
- Low	60	60
- High	75	75
US Energy Department⁸	127	132
Norwegian Government⁹	100	80

The Royal Bank of Scotland suggests there is 50% probability the price will fall to between \$50 and \$80 per barrel by March 2009, a 15% chance it will rise to over \$100 per barrel and a 15% it will be below \$50 per barrel. Kemp and Stephen on the other hand, assume a high oil price of \$75 per barrel a medium price of \$68 and a low of \$60 per barrel (all in 2007 prices). Whilst the US Department of Energy¹⁰ projects

⁷ The Royal Bank of Scotland (March 2008), "Crude oil: when will the bubble burst?" www.rbs.com/economic03.asp?id=ECONOMIC/TOPICAL_INSIGHT

⁸ US Energy Information Administration (July 2008), *Short-term Energy Outlook* www.eia.doe.gov/emeu/steo/pub/contents.html

⁹ Norwegian Finance Ministry (May 2008), Revised National Budget 2008, www.regjeringen.no/en/search.html?id=86008&quicksearch=oil+price+assumptions

¹⁰ US Department of Energy, Energy Information Administration, (July 2008) "Short-Term Energy Outlook"

US oil prices¹¹ to average around \$127 per barrel this year and \$132 per barrel in 2009, the Norwegian Government assumes an average of \$100 for 2008 but is working on an assumption of around \$80 for 2009.

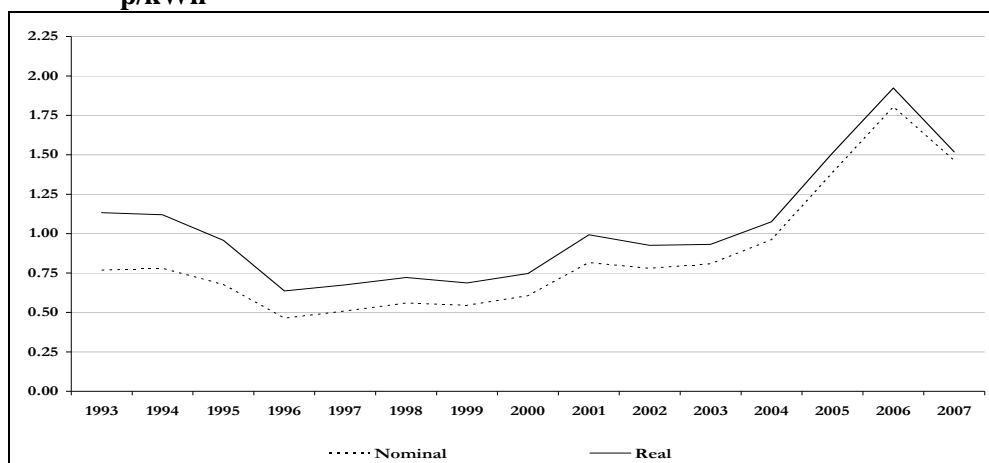
These forecasts simply highlight the uncertainty and volatility that are inherent in the oil sector. Any meaningful estimate of future tax revenues from the North Sea is therefore also likely to be volatile.

Prices

Gas

Gas contributes a relatively larger share than oil of total hydrocarbons production in the UKCS. As a consequence, Government revenues depend not only on the sterling value of oil but also on the sterling price for gas. During the 1990s the UK gas market's reaction to increased levels of competition lead to reductions in wholesale gas prices (see Figure 6).

Figure 6: Average gas prices for all Industrial Consumers (excl. climate change levy), p/kWh



Source: BERR, *Energy Trends*, Tables 3.3.1

www.berr.gov.uk/energy/statistics/publications/prices/tables/page18125.html

Between 1993 and 1999 gas prices¹² for industrial users fell almost 30% in nominal terms and just under 40% in real terms whilst consumption rose over 60%. Between 1999 and 2006 wholesale prices rose more than 3-fold in nominal terms and over 2.5 in real prices. Although 2007 saw something of a reversal with prices falling by around 20%, gas prices are expected to rise again in 2008 given a continued link to changes in the oil price.

¹¹ These are estimates for West Texas Intermediate (WTI) crude which is a lighter crude than Brent Blend and typically, though not always, is priced marginally higher to Brent.

¹² Historically, UK gas prices were determined via bilateral negotiations between the seller (field owners) and buyer (typically British Gas). Whilst changes to the market mean more is now traded on the spot market, prices are still highly correlated to both oil as well as electricity prices.

Costs

Oil prices at record levels will help to improve the economic viability of more of the UKCS' more mature and more marginal fields. However, economic viability also depends on extraction costs which have been rising substantially above inflation in recent years. On a barrel of oil equivalent (boe) basis, the latest industry survey undertaken by UKOOA¹³ indicates there has seen a 3-fold¹⁴ increase in the capital cost of delivering an additional barrel from around \$5 per barrel to over \$15 per barrel (2006-07 prices). The same study also indicates that the efficiency of this capital spend has been declining.

“Whilst investment in *money of the day* is 35% higher than 2002, it now delivers only 35% of the original oil and gas”

UKOOA (2008), p12

The survey's estimate of operating expenditures in the UKCS showed these too rose in 2007, up 8% in the year, a cost aimed at supporting continued recovery from existing fields. Notwithstanding this increased spend, oil production remained static and gas production fell 9.5% between 2006 and 2007, a 4.3% fall in the year on a boe basis. As a consequence the unit operating cost rose 28% in the year to \$12 per boe. The UKOOA survey also states that an additional £21 billion of capital investment is required to keep unit costs at around this level by 2012. The industry anticipates the cost of developing and producing a single barrel of oil or gas equivalent to rise from \$23 per boe in 2006 to an average of \$29 per boe between 2008 and 2010, an increase of over 20%.

There may be significant reserves remaining but extraction costs are growing substantially and decommissioning costs are also rising. UKOOA estimate decommissioning costs are expected to reach \$16 billion by 2030 which could contribute to an earlier end of field life or a reduction in tax revenues¹⁵. This cost environment requires higher oil and gas prices simply to ensure the production of the UKCS's harder to reach reserves.

North Sea government tax revenues

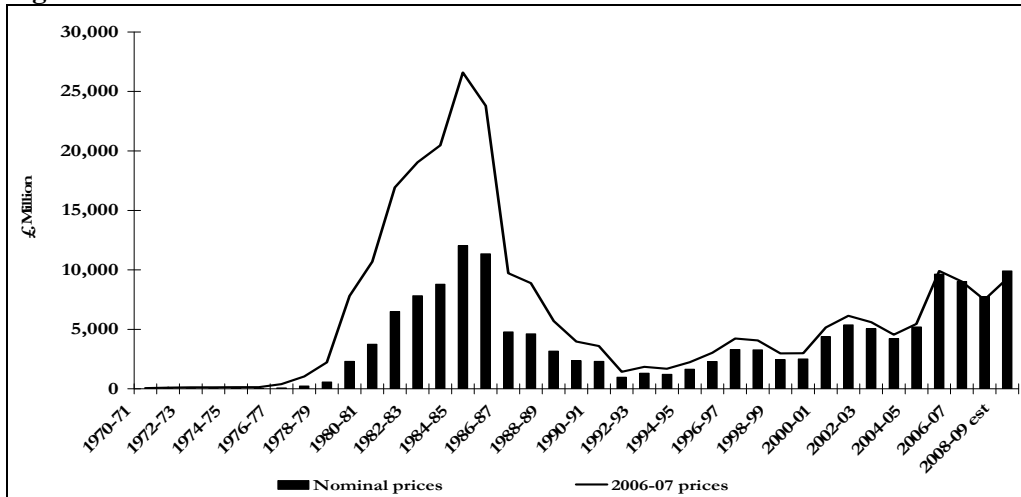
The value of North Sea revenues have been rising from their low point in 1991-92 (see Fig 7), when they contributed less than £1 billion (£1.43 billion in 2006-07 prices). In 2007-08, total North Sea revenues are forecast to reach £7.8 billion in nominal prices or £7.5 in 2006-07 prices.

¹³ United Kingdom Oil Operators Association

¹⁴ UKOOA (2008)

¹⁵ The economic life of a field will be influenced by the decommission cost needed; the higher the cost the earlier the field will be abandoned as it is deemed uneconomic. Decommissioning costs will also have an effect on tax revenues as, currently, they are an allowable cost to off-set against a field's tax liability.

Figure 7: North Sea Tax Revenues



Source: HMRC, www.hmrc.gov.uk/stats/corporate_tax/table11_11.pdf, ONS

The growing importance of the North Sea as a source of government revenues is neatly illustrated by the value of revenues raised in recent years (see Table 3). In the 3 years 2005-06 to 2007-08 total revenue from the North Sea was £26.4 billion or an annual average of £8.8 million, more than the annual average for the last 10, 20 and 30 years. Adjusting for inflation, the annual average tax revenue from the North Sea in these three years has only been exceeded in the period 1979-80 to 1987-88¹⁶.

Table 3: North Sea revenues, total and per annum, 1978-79 to 2007-08, £Billion

	<u>Nominal prices</u>		<u>2006-07 prices</u>	
	Total	Average per annum	Total	Average per annum
2005-06 to 2007-08	26.4	8.8	26.4	8.8
Last 10 years (1998-99 to 2007-08)	55.6	5.6	59.3	5.9
Last 20 years (1988-99 to 2007-08)	77.5	3.9	91.1	4.6
Last 30 years (1978-79 to 2007-08)	140.0	4.7	237.3	7.9

Source: HMRC, www.hmrc.gov.uk/stats/corporate_tax/table11_11.pdf, ONS

¹⁶ During the 1979-80 to 1987-88 total UK Government tax revenues amounted to over £140 billion (2006-07 prices), with over £20 billion per annum being generated in each of 1983-84, 1984-85 and 1985-86.

Scotland's share of UKCS tax revenues

All tax revenues from the North Sea accrue to the UK Government, with Scotland's "share" being allocated via the Barnett formula¹⁷. There is an increasing possibility that alternative means of funding Scotland's public expenditure will be proposed following the Calman Commission's¹⁸ review of Scotland's financial accountability. However, there is limited research to help understand what role, if any, North Sea revenues might play in the future either as a component of a revised Barnett formula or as a key revenue source in an independent Scotland.

Kemp and Stephen's analysis for the Scottish Government's GERS 2008 report provides one view of what total tax revenues could and might arise from the UKCS between 2002 and 2013. They provide estimates for Scotland's share of the UKCS revenues having applied a number of key assumptions on (a) the level of production, (b) the future oil and gas price, (c) the level of tax deductions and allowances provided to encourage investment and operating expenditures, (d) the nature and size of any taxes levied and, (e) the physical location of the reserves, ie, the percentage located in Scottish waters.

Although total oil and gas production in the UKCS is forecast to fall between 2007 and 2013, Scotland's geographical share is anticipated to fall by less; from 2.37 million barrels oil equivalent (Mboe) in 2006 to 1.8 Mboe by 2013 under their medium price scenario of \$68 per barrel, ie a fall of almost 25% in 7 years. Production would fall to only 1.87 Mboe under their high oil price forecast of \$75 per barrel (real terms), a reduction of over 20%.

Based on these production forecasts and using their medium price scenario, Kemp & Stephen estimate historical tax revenues from Scottish waters ranged between 82% and 84% for the period 2002-06. Estimates for future shares rise to between 88% and 90% for the period 2007 to 2013. This is a relative improvement for Scotland, reflecting the decline in production from non-Scottish waters rather than a rise in the Scottish sector.

Given these hypothetical shares, Table 4 illustrates what they mean for Scotland's geographical share of historic North Sea tax revenues. Over the 5 years 2002-03 to 2006-07 the total tax from the UKCS was £33,341 million with Scotland's geographic share estimated to be £27,775 million (83.3%). Whilst significant, the oil and gas tax revenues were not evenly spread over these 5 years. In 2002-03 they totalled only £3,522 million whilst they reached £8,130 million only 2 years later. Even as oil prices continued to rise, in both dollars and sterling terms, total North Sea revenues fell back in 2006-07 to £9,075 million. This illustrates the importance of both rising and high sterling oil prices in helping to maintain North Sea tax revenues as productions continues its downward path.

¹⁷ The Barnett formula is used to set the Scottish Government's annual revenues. Scotland receives its population share of changes to programme spending in comparable Whitehall departments.

¹⁸ See www.commissiononscottishdevolution.org.uk/about

Table 4: Geographical share of North Sea revenues: Scotland 2002-03 to 2006-07
£million (outturn prices)

	2002-03	2003-04	2004-05	2005-06	2006-07
Total North Sea revenues	5,097	4,284	5,183	9,702	9,075
Scotland's geographical share	4,232	3,522	4,328	8,130	7,563
<u>Average price per barrel</u>					
Dollars (nominal prices)	\$25.98	\$31.19	\$42.33	\$57.18	\$67.10
Sterling (nominal prices)	£15.69	£17.06	£22.89	£32.14	£34.13
Oil & Gas production (Mboe basis)*	4.03	3.68	3.32	3.01	2.88

*Oil & Gas production is on a calendar year basis (Million barrels of oil equivalent)

Source: Scottish Government, 2008, Table 5.4, RBS Databank (Brent price), ONS (GDP Deflator)

The potential value of North Sea tax revenues can also be seen from the Scottish Government's latest Expenditure and Revenue Statement¹⁹ (See Table 5).

Table 5: Scotland's Public Sector Accounts: Scotland's Net Fiscal Balance (NFB),
2002-03 to 2006-07, £million (outturn prices)

	2002-03	2003-04	2004-05	2005-06	2006-07
NFB excluding North Sea Revenues	-8,046	-8,886	-9,050	-9,620	-10,215
+ Scotland's geographical share of North Sea Revenues	4,232	3,522	4,328	8,130	7,563
NFB including North Sea Revenues	-3,813	-5,364	-4,722	-1,490	-2,652
<u>NFB as % Scottish GVA</u>					
- excluding North Sea revenues	-9.5%	-9.9%	-9.5%	-9.7%	-9.7%
- including North Sea revenues	-3.8%	-5.1%	-4.2%	-1.3%	-2.1%

Source: Scottish Government, 2008, Table 5.4, RBS Databank (Brent price), ONS (GDP Deflator)

Applying its entire geographical share of North Sea tax revenues in recent years would greatly reduce Scotland's overall fiscal deficit, but it does not eliminate it. Assuming Scotland's public sector net fiscal balance is reasonably accurate,²⁰ rising North Sea tax revenues are also required to help support Scotland's public finances. However, as we have seen, these revenues can be highly variable in nature and so difficult to predict. This would pose problems for any Government seeking to plan a public sector expenditure programme. Alternatively, it may be desirable for Scotland's share of North Sea tax to be used to develop an Oil Fund used to support expenditures that can be varied as the fund varies. However, used in this way greater clarity on how any fiscal deficit is to be funded is now required.

Although the North Sea as a source of tax revenues is growing in importance, it is incumbent on those seeking to utilise them more directly to explain what their contribution in the future is likely to be, how the associated uncertainty can be

¹⁹ The Scottish Government (2008), Table 3.1

²⁰ See www.cprr.ac.uk/media/media_84533_en.pdf for our views on some areas of continued uncertainty regarding GERS' data.

accommodated in any budget proposals and how any related Oil Fund is expected to be funded given Scotland's current fiscal position.

Conclusions

A high international oil price should help boost UK oil tax revenues this year. They should also give a boost to UKCS production as field life is extended. More reserves may be developed if the industry believes prices will remain high. However, there remains a high degree of uncertainty on what is the sustainable international oil price. As the UKCS enters its 4th decade, capital and operating costs are rising meaning the net benefit generated both for oil companies and the UK Government is diminishing. With lower efficiency from investment associated with the harder to reach oil and gas it is possible that prices may actually have to be higher and tax revenues sacrificed to support the longer-term continuation of activity in the UKCS.

The Kemp and Stephen's analysis assists our understanding of the potential Scottish geographical share of North Sea tax revenues. However, with the many assumptions underlying their analysis there remains a high degree of uncertainty on the future value of North Sea tax revenues for Scotland. Consequently, should it be deemed desirable to utilise North Sea tax revenues more directly to help fund Scotland's public expenditure, far greater clarity is required on the likely annual value of such revenues to Scotland, their possible variability as well on how best to utilise them.

Recommendations and Next Steps

The Scottish Government should seek to:

- Expand the Kemp and Stephen work to identify what future North Sea tax revenues might accrue to Scotland over time and over a range of oil and gas prices, provide an assessment of how variable they are likely to be and finally produce a ready-reckoner to evaluate the revenue effects caused by changes in the key Kemp & Stephen model assumptions.
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