THIS PAPER IS FOR DECISION **SC(09)37**

SCOTTISH CABINET

AN OIL FUND FOR SCOTLAND

PAPER BY THE CABINET SECRETARY FOR FINANCE AND SUSTAINABLE GROWTH

Purpose

1. Cabinet is invited to:

- Agree the text of the draft paper, *An Oil Fund for Scotland*, for publication, as attached in **Annex A**.

Timing

2. For discussion at Cabinet on 3 March 2009.

Background

3. In June 2008, the First Minister announced the commissioning of a study into the creation of an oil fund for Scotland. This work was initially intended to be published in autumn 2008, but has now been incorporated into the fiscal autonomy workstream of the National Conversation.

4. Cabinet discussed the plan for advancing the public debate on fiscal autonomy as part of the National Conversation on 16 December (paper SC(08)43rd Conclusions refers). It was agreed that, following the publication of *Fiscal Autonomy in Scotland: The Case for Change and Options for Reform* (SC(09)7th Conclusions refers), further papers on a Scottish Oil Fund and corporation tax would follow.

5. *Fiscal Autonomy in Scotland: The Case for Change and Options for Reform* was published 24 February 2009. *An Oil Fund for Scotland,* attached in **Annex A**, is intended to form the next stage of the Government's plan for advancing the public debate on fiscal autonomy and the wider National Conversation.

6. *An Oil Fund for Scotland* reviews the experiences of other countries in establishing oil funds, considers the economic rationale for creating a similar fund in Scotland and includes hypothetical estimates of the value of an oil fund, were one to be established and sufficient funds invested. It is argued that an oil fund assists in sustainable resource management, allowing returns from non-renewable oil and gas revenues to be converted into a pool of renewable assets. As such, an oil fund can

contribute to the long-term sustainability of a country's public finances by generating wealth long after a country's oil and gas reserves have been exhausted.

7. In Chapter 5, the report reviews the range of options for establishing an oil fund for Scotland, drawing on the experiences of other countries. This includes a detailed assessment of options and choices regarding investment strategy, long term objectives and day-to-day management. In the spirit of the National Conversation, a series of questions is posed, with the aim of encouraging the Scottish public to engage with the Scottish Government on the establishment of an oil fund (and the wider National Conversation).

Advice to Ministers

Key Results of the Study

8. *An Oil Fund for Scotland* examines the oil and gas industry in the UK and Scotland, surveys oil funds internationally and identifies lessons relevant for the operation of a similar fund in Scotland. It does not provide a detailed business case for one particular model of an oil fund but instead outlines options for how an oil fund might operate.

Timing for launching the debate on establishing an Oil Fund

9. Cabinet previously agreed that a paper on establishing a Scottish oil fund should form part of the development of the Government's plan for advancing the public debate on fiscal autonomy and the wider National Conversation (SC(09)24 refers). To this end, I propose that we build on the momentum created by the publication of the paper *Fiscal Autonomy in Scotland: the case for change and options for reform* and aim to publish *An Oil Fund for Scotland* as soon as possible. As previously agreed by Cabinet, I plan to follow this by publishing a further paper on the need for a competitive corporation tax regime. I intend to bring this paper to Cabinet in the coming weeks.

10. Cabinet paper SC(09)24 outlines in more detail the presentation and handling issues surrounding the fiscal autonomy workstream and sets out how this work contributes to advancing the broader National Conversation.

Financial Implications

11. Were a Scottish oil fund to be established, it would raise choices regarding Scotland's public finances both in the short and long run. These issues are outlined in detail in *An Oil Fund for Scotland,* attached in **Annex A**. In particular, the source of funds invested into an oil fund and the potential scope for investment into the fund would have to be considered, given current expenditure and revenue commitments.

Legal Considerations

12. Fiscal, economic and monetary policy, including oil and gas taxation, together with oil and gas exploration, exploitation and regulation, are largely reserved to the UK Government. UK legislation would therefore be needed to devolve the power to

tax North Sea oil and gas, and to create, invest in, and spend any income generated from a Scottish oil fund.

Relationship with UK Policies and Bodies; EU or Wider International Implications

13. There are two significant independent Commissions currently under way which are running parallel to the National Conversation – the *Commission on Scottish Devolution* and the *Independent Commission on Funding and Finance for Wales.* Although neither is directly considering the issue of North Sea tax revenue, both will provide recommendations on sub-national funding in the UK and could potentially have a significant impact on the work relating to fiscal autonomy. The work being undertaken by both Commissions is outlined in more detail in Annex A of Cabinet Paper SC(08)211.

Consultation

14. No specific consultation has taken place with other Cabinet Secretaries or Ministers in the preparation of this Cabinet paper. In developing the broader fiscal autonomy workstream, of which this paper is one element, I consulted with the Deputy First Minister, Cabinet Secretary for Justice and the Lord Advocate (Annex B of SC(08)211 refers).

Decisions Required

15. Cabinet is invited to:

- **Agree the text of the draft paper, *An Oil Fund for Scotland*, for publication, as attached in Annex A.**

JS
March 2009

ANNEX A

AN OIL FUND FOR SCOTLAND

(Text of draft paper follows.)

RESTRICTED

AN OIL FUND FOR SCOTLAND

FEBRUARY 2009

The Scottish Government

Office of the Chief Economic Adviser

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Executive Summary

- A significant number of countries with major oil and gas reserves have created 'wealth funds', also known as 'oil funds', into which they have invested a share of the returns from their oil and gas reserves.

- Oil funds operate in both advanced and emerging economies. This study examines the international evidence on oil funds and draws lessons for the potential operation of a similar fund for Scotland. The experiences of Norway, Alaska and Alberta appear the most relevant for Scotland.

- The basic function of an oil fund is to enable sustainable financial resource management, allowing returns from non-renewable oil and gas revenues to be converted into a pool of renewable assets. These assets could then be used to generate wealth long after a country's oil and gas reserves have been exhausted.

- Under the current devolution settlement, responsibility for the oil and gas sector, including the taxation and regulatory framework, is generally reserved to the UK Government. The UK is relatively unusual among major oil and gas producers in not having created an oil fund.

- North Sea production started in 1967. Since 1970, approximately 39bn barrels of oil equivalent (boe) oil and gas have been extracted from the UK's reserves in the North Sea, contributing over £269bn (2008 prices) in tax revenue to the UK Exchequer.

- A significant proportion of oil and gas reserves on the UK Continental Shelf are located in waters close to Scotland. It is estimated that thus far, 89% of the UK's oil and gas revenues have been derived from an area that could be classified as comprising Scotland's geographical share of the UK Continental Shelf; and that share is forecast to grow.

- Since 2001, oil and gas prices have typically followed an upward trend, reflecting rising demand and tight market conditions. Although prices fell sharply in the second half of 2008, leading industry forecasts suggest prices will continue to follow an upward trend over the medium to long-term.

- The volume of oil and gas reserves remaining in the North Sea is estimated at between 16bn and 25bn boe and could ultimately be as much as 37bn boe. The sector will thus remain an important part of the Scottish economy over the coming decades.

- Based on current projections for future North Sea oil and gas revenue, if Scotland were to establish an oil fund and commit to investing a significant proportion of projected future North Sea tax returns, the value of an oil fund for Scotland could be substantial.

- The Scottish Government believes that the creation of an oil fund for Scotland would be in the economic interests of this country. It could be established for Scotland as part of the UK, or as the separate fund of an independent or fiscally autonomous Scotland.

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1 Introduction

This discussion paper examines the oil and gas industry in the UK and Scotland, surveys oil funds internationally and identifies lessons relevant for the operation of a similar fund in Scotland.

Oil and gas revenues represent a significant economic windfall and create new opportunities for countries with substantial reserves. Their value is reflected in the numbers of jobs and investment directly in the oil and gas sector, and in the indirect creation of economic activity. UK 'extra regio' GDP (primarily made up of activity in the North Sea) at basic prices, i.e. Gross Value Added (GVA), was estimated at £30bn[1] in 2007. Scotland has benefited significantly from the oil and gas reserves located offshore. Oil and Gas UK report that over 100,000 highly skilled oil and gas jobs exist in Scotland. When total economic activity is included, Oil and Gas UK estimate that the industry provides employment for around 150,000 people in Scotland[2].

Scottish firms operating in the sector are also very active abroad, generating significant exports. The biennial "Offshore Europe" event in Aberdeen brings in more than 40,000 visitors per day, drawn from over 100 countries[3].

A large part of the direct benefits from North Sea oil and gas reserves flows to the UK Exchequer through taxation and royalties on oil and gas production. Under the current devolution settlement, responsibility for the oil and gas sector, including taxation and the regulatory framework, is reserved to the UK Government.

Since 1976-77, the UK Government has raised approximately £155bn in direct tax revenue from oil and gas production. Adjusted for inflation, this is equivalent to £269bn (2008 prices); or approximately eight times the annual Scottish Government Budget. These revenues have gone directly into the UK Exchequer, with successive governments using the windfall to fund public spending and to seek to reduce taxation across the UK.

Oil and gas output from the North Sea reached its peak in 1999. However, there remain significant resources for development, estimated at between 16.6bn and 25.5bn barrels of oil equivalent (boe). HM Treasury estimates that over the next six years alone, North Sea revenues will contribute approximately £55bn to the UK public finances[4].

Unlike other sources of a country's wealth and economic growth, oil and gas reserves are non-renewable and once a barrel of oil or cubic metre of gas has been produced, it cannot be re-produced. The lifespan of oil and gas reserves varies from country to country. This may be many decades, especially if returns are used to finance increased exploration for new fields and assist the development of previously uneconomic fields. Ultimately, a point will be reached when economic reserves have been exhausted.

[1] A small proportion of extra regio GDP (estimated at around 6 percent) is not related to the UK Continental Shelf (UKCS) but refers to activities outside the UK such as military installations abroad and the running of foreign embassies.
[2] Oil and Gas UK are the offshore oil and gas industry trade body
http://www.oilandgasuk.co.uk/issues/economic/econ07/main/contribution-5.cfm
[3] www.offshore-europe.co.uk
[4] Source: UK PBR 2008 and own calculations.

1 Introduction

Governments have therefore, important choices to make in the use of the oil and gas windfall. The one-off nature of this windfall has led many countries to consider innovative ways of using oil and gas revenues to ensure lasting returns. The main means of doing so is through the creation of an oil and gas fund, into which a share of the tax returns from oil and gas production is invested over the long term.

Both advanced and emerging economies have chosen to establish oil funds. Examples relevant to Scotland include the Norway Pension Fund – Global (valued at £208bn[5]), the Alaska Permanent Fund (valued at £20bn[6]) and the Alberta Heritage Savings Fund (valued at £9bn[7]).

The central stated purpose of such funds is sustainable resource management, ensuring that the returns from non-renewable oil and gas revenues can be converted into a renewable financial pool of wealth. This facility allows future generations to share the benefit of a country's oil and gas reserves, by access to the income stream from investments in the oil fund. Furthermore, the revenue from oil funds can be used to assist in any transition to renewable energy sources thus providing an additional source of sustainability and inter-generational fairness.

Creating and growing an oil fund presents important economic and political challenges which must be managed carefully to achieve maximum benefits. Clearly, a large fund would require a significant share of oil and gas revenues to be saved, rather than spent in the short term through the general government budget.

To ensure a stable and responsible pattern of investment in an oil fund over the long term a strong public finance framework is likely to be necessary. Such a framework could help to build public support for an oil fund and help manage short-term demands on spending and taxation. The financial framework for an oil fund could also be coordinated with macroeconomic policy to help maintain economic stability by ameliorating the effects of unpredictable flows of oil and gas revenues.

The report is structured as follows:

- Chapter 2 discusses the importance of the oil and gas sector and opportunities for the future;
- Chapter 3 considers the policy objectives for creating oil funds;
- Chapter 4 examines international evidence on the operation of oil funds;
- Chapter 5 outlines the main policy issues for a Scottish oil fund; and
- Chapter 6 presents conclusions and questions for discussion.

[5] NBIM Quarterly Report Q3, 2008 – Table 5.1

[6] Alaska Permanent Fund Corporation - Monthly Performance Report - November 30, 2008

[7] Alberta Heritage Savings Trust Fund 2008-09 Second Quarter Update www.finance.alberta.ca/business/ahstf/2008_1stq/report.pdf.

2 The UK Oil and Gas Sector

Since the discovery of oil and gas in the North Sea in the 1960s, the industry has become an important part of the UK economy. Today oil and gas is the largest single sector in the FTSE 100 Index of leading companies, and a sector where UK firms are leading global players. The UK oil and gas industry is highly profitable and therefore generates considerable tax revenue. The majority of UK oil and gas production is from areas that could be classified as comprising Scotland's geographical share of the UK Continental Shelf.

The development of the oil and gas industry is always subject to some major sources of uncertainty; for example future reserves and discoveries, future prices and costs, and political developments. Notwithstanding those uncertainties it can be said with some assurance that oil and gas will remain a vital part of the economy over the coming decades and will continue to make a large contribution to the public finances.

This chapter examines important aspects of the economics of the oil and gas sector specifically:

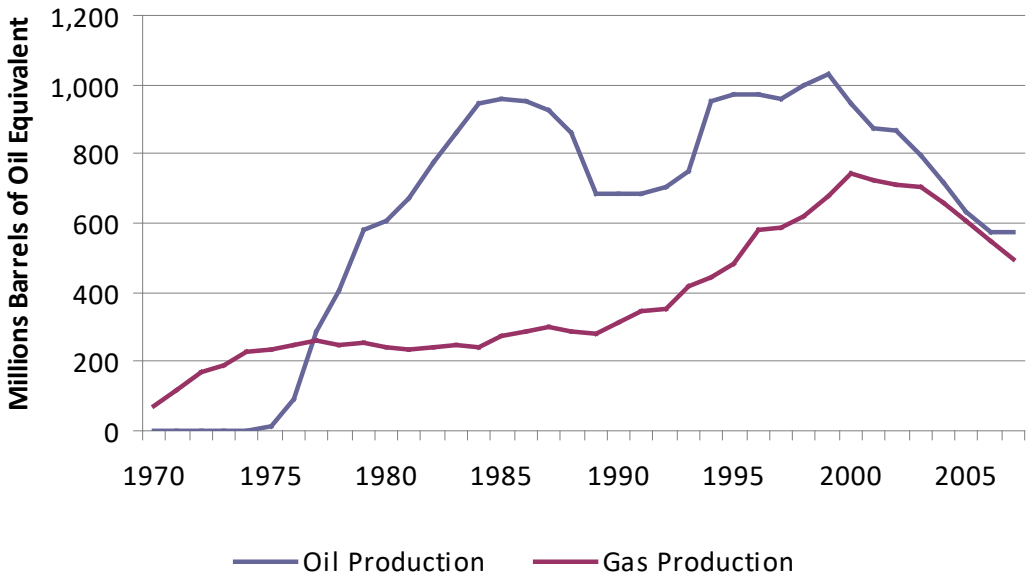
- oil and gas production in the North Sea, including Scotland's estimated share of UK production;
- estimated reserves of North Sea oil and gas;
- the development of world oil and gas prices;
- operating costs in the oil and gas industry; and
- government revenues from oil and gas.

2.1 Oil and Gas Production in the North Sea

Since 1970, it is estimated that approximately 39bn barrels of oil equivalent (boe) of oil and gas have been extracted from the UK Continental Shelf (UKCS)[8]. Figure 1 traces oil and gas production since 1970 on a calendar year basis. As illustrated, production grew steadily until 1985. Despite a short period of relative decline, oil production peaked at just over 1bn boe in 1999 with gas production peaking a year later at just under 750 million boe. In 2007, oil production was 576 million boe (44 per cent lower than in 1999) while gas production was 495 boe (33 per cent below the 2000 peak). The UK is currently the eighteenth largest oil producer and the eighth largest producer of natural gas in the world[9].

[8] BERR – Oil and Gas Production http://www.berr.gov.uk/whatwedo/energy/statistics/source/index.html
[9] Source: BP Statistical Review of World Energy 2008.

Figure 1: UK Oil and Gas Production 1970 to 2007



Source: BERR – Oil and Gas Production

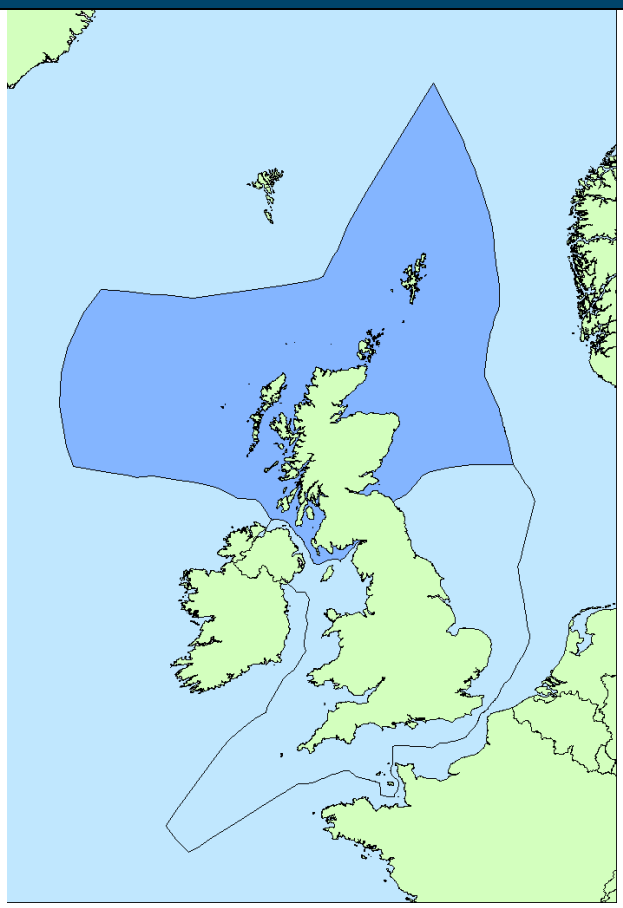
Determining Scotland's share of North Sea oil and gas

There has been considerable debate over the share of UK oil and gas production allocated to Scotland. In the UK national accounts, activities from the North Sea are allocated to a separate 'region' distinct from mainland UK referred to as 'extra-regio'.

It is important to note that a range of alternative methods of demarcation are possible. Professor Alex Kemp and Linda Stephen from the University of Aberdeen have estimated Scotland's geographical share of oil and gas production using the principle of the median line, that is, that all points on the dividing line are the same distance from the Scottish and rest of the UK (RUK) coastline – see Kemp and Stephen (1999 and 2008)[10]. This division is consistent with the approach taken in 1999 to determine the boundary between Scotland and the rest of the UK for fishery demarcation purposes. Using this principle Scotland's estimated geographical share of the North Sea sector is highlighted by the dark shaded area in Figure 2.

[10] Kemp and Stephen (2008a), 'The Hypothetical Scottish Shares of Revenues and Expenditures from the UK Continental Shelf 2000-2013', http://www.scotland.gov.uk/Publications/2008/06/UKContinentalShelfRevenue; and Kemp and Stephen (1999), 'Expenditures and Revenues from the UKCS – Estimating the Hypothetical Shares 1970 – 2003", North Sea Study Occasional Paper, Number 70, Department of Economics, University of Aberdeen.

Figure 2: UK Continental Shelf and Scottish boundary



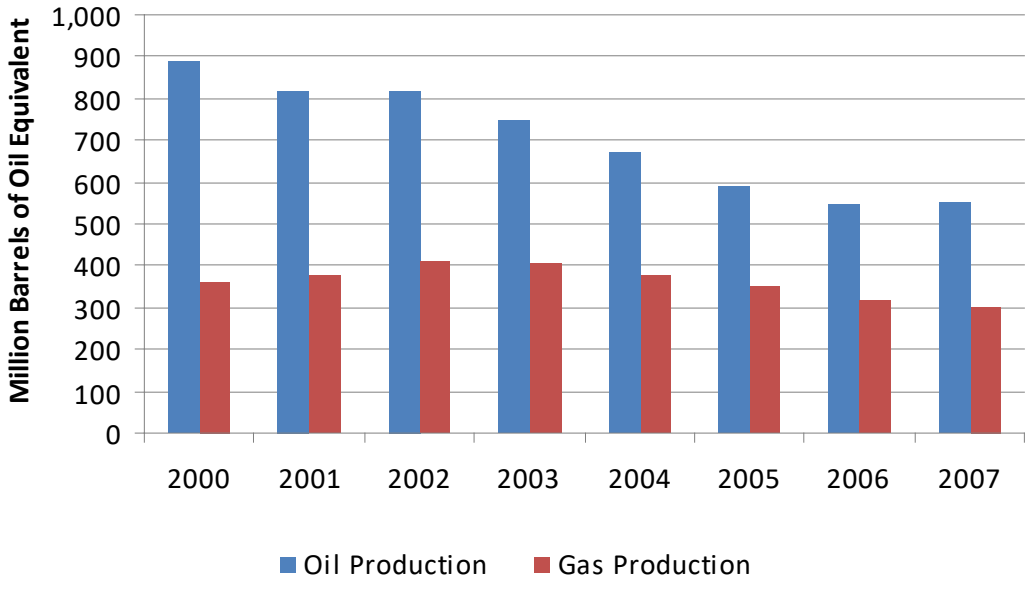
Source: Scottish Government Marine Directorate

Using this method of demarcation, Scotland's share of oil production has generally exceeded 90%. In the early 1980's, when oil prices peaked, the share is estimated to have exceeded 98%[11]. Gas production has typically been of lower relative importance in Scottish waters, and throughout the 1980-90s, the Scottish share of total gas production was estimated to be less than 50%. However, Scotland's share of total UKCS gas production has increased in recent years, rising from 49% in 2000 to 58% in 2006[12].

For 2006, the latest year for which estimates are available, Scotland's share of total UK oil and gas production was 95.3% and 58.2% respectively13. Figure 3 illustrates the level of production in 'Scottish' oil and gas fields as reported in Kemp and Stephen (2008). As illustrated, oil production in 'Scottish fields' fell from almost 900 million boe in 2000 to 550 million boe in 2007, a decline of almost 40%. Gas production has been more stable over this period with production falling from just under 370 million boe in 2000 to 300 boe in 2007, a fall of just under 20%.

[11] Kemp and Stephen (1999) op cit.
[12] Kemp and Stephen (2008) op cit.
[13] Kemp and Stephen (2008) op cit.

Figure 3: Scottish Geographical Share of Oil and Gas Production 2000 to 2007



Source: BERR – Oil and Gas Production and Kemp & Stephen (2008)

2.2. Estimated Reserves of North Sea Oil and Gas

As Figures 1 and 3 highlight, oil and gas production in the UKCS has declined in recent years from peak levels. It is estimated that significant reserves remain in the UKCS for continued development. The precise quantity of extractable reserves is subject to variation given difficulties in accurately measuring the amount of known recoverable reserves, forecasting future discoveries and in assessing future economic viability. Table 1 summarises the estimate of UKCS projected reserves made by Oil and Gas UK[14]. They estimate total remaining oil and gas reserves of between 16bn and 25.bn boe. Based on the average price of oil and gas forecasted by the US Energy Information Administration between 2009 and 2030 these remaining reserves may have a wholesale value of between £750 billion and £1.2 trillion although given the volatility in both commodity price and exchange rate markets there is significant uncertainty over the long term value of these reserves[15]. This suggests that between 30-40 per cent of total UKCS oil and gas reserves (by volume) have yet to be recovered

[14] Oil and Gas UK are the offshore oil and gas industry trade body.
[15] US EIA forecasts an average price of $110 per barrel of oil and $7.5 per million BTU of natural gas, assuming the average exchange rate in 2008

Table 1: UK Continental Shelf Projected Reserves (Billion boe)		
	Low Estimate	High Estimate
Existing Production/Sanctioned	7.1	7.1
Brownfields[16]	2.0	4.5
Undeveloped Resources	2.5	4.5
Exploration (Yet to Find)	5.0	9.4
Total Projected Reserves	**16.6**	**25.5**
Source: Oil and Gas UK 2008 Economic Report, August 2008		

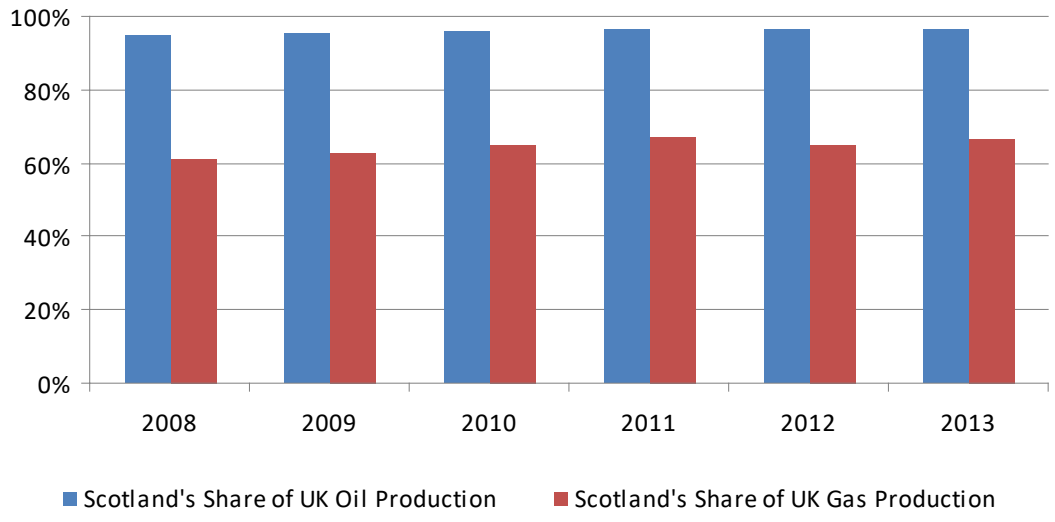
The UK Government Department for Business, Energy and Regulatory Reform (BERR) also estimate the level of oil and gas reserves remaining in the UKCS. Their most recent estimates were published in September 2008 and suggest that there could be 21bn boe remaining in UK waters with an upper estimate, assuming both the upper limit of discovered and undiscovered resources is attained, of 37bn boe[17]. The sector will thus remain an important part of the Scottish economy over the coming decades.

Estimating Scotland's share of future reserves

Figure 4 forecasts Scotland's estimated share of UK oil and gas production between 2008 and 2013 as estimated in Kemp and Stephen (2008) *op cit*. Over this period, Scotland's geographical share of oil production is estimated to remain relatively fixed at approximately 96% of the UKCS total, while the share of gas production is estimated to rise from 61% to 67%. This increase in relative gas production is a result of the fact that the largest declines in gas production in the immediate future on the UKCS are expected to occur in the southern portion (i.e. non-Scottish waters) of the North Sea.

[16] Brownfields refer to extended production beyond that originally anticipated in existing fields.
[17] BERR - UK Oil and Gas Reserves and Resources - September 2008

Figure 4: Scottish Estimated Geographical Share of Oil and Gas Production 2008 to 2013



Source: Kemp & Stephen (2008)

2.3 Operating Costs in the Oil and Gas Industry

In recent years, operating costs per barrel of oil equivalent in the North Sea have increased and most industry experts predict this trend to continue. This is in part due to production focussing on more marginal fields where exploration is technically more difficult. It also reflects cost inflation in the oil and gas industry more widely due to increased demand for exploration equipment and a shortage of skilled labour in key areas of the industry.

Oil and Gas UK estimate that unit operating costs rose 10-15% from the previous year to reach around $13.5 per barrel in 2008. The unit technical cost (i.e. the cost of developing and producing a single boe) for new developments in the North Sea stood at $29 per barrel in 2008, an increase of 12% on the previous year[18].

Furthermore, as the North Sea industry matures operators will also face increased costs from decommissioning existing platforms and operations in exhausted fields. Decommissioning is regulated under the 1998 Petroleum Act which makes operators and owners of North Sea facilities responsible for decommissioning disused installations. Such processes are highly complex and require significant investment. Research commissioned by Scottish Enterprise in 2008 suggests that expenditure on decommissioning in the North Sea will rise from $200 million USD in 2003-2007 to over $1.1 bn USD over the period 2008-2012[19]. Kemp and Stephen (2008b) estimate that decommissioning expenditures will rise to £2.2 billion in 2016 with cumulative decommissioning costs of £24.6bn and £26.5bn up to 2035 at 2008 prices under high and low price scenarios respectively[20].

[18] Oil and Gas UK – 2008 Activity Report
[19] Scottish Enterprise - The Decommissioning Market Report 2008 Update
[20] Kemp and Stephen (2008b), "The Prospects for Activity in the UKCS to 2035: The 2008 Perspective", North Sea Study Occasional Paper, Number 109, University of Aberdeen.

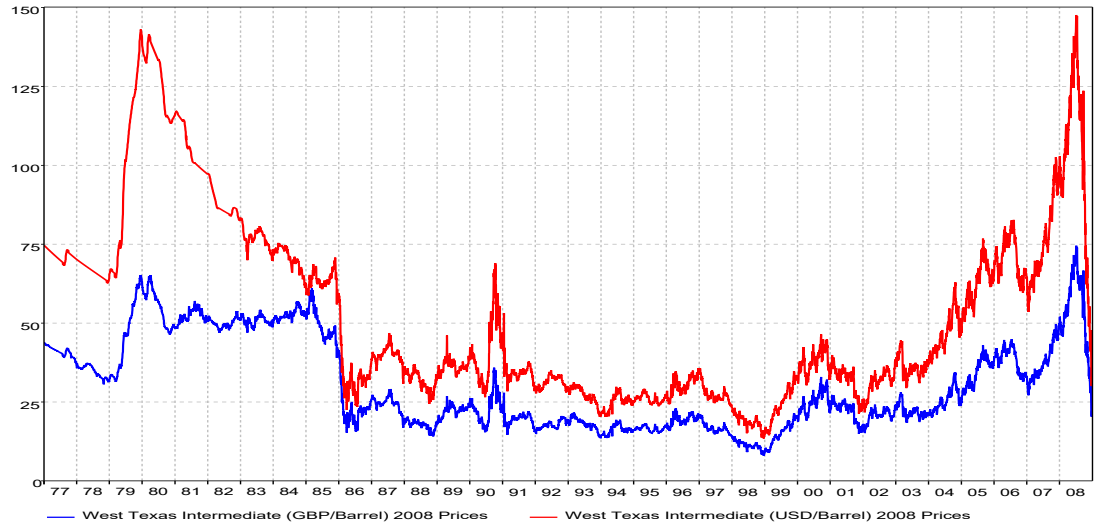
2.4 World Oil and Gas Prices

Whilst oil and gas production has declined over the past six years and costs have increased, this has been offset by an upward trend in oil and gas prices as outlined in Figures 5 and 6. Higher prices boost revenues by increasing the profitability of production.

The current profitability of the UKCS and forecasts for future profitability are reflected in the continued interest in oil and gas exploration in the North Sea. In May 2008, the UK Government announced record interest in the latest Offshore Licensing Round[21].

Figure 5 illustrates the price of oil since 1976 in constant 2008 prices in US dollars and sterling[22]. Between 2001 and mid 2008 the oil price in dollars was on a steep and sustained upward trend, peaking at over $140 a barrel in July 2008. This upward trend in prices has been ascribed to rising demand, particularly in Asia, declining surplus capacity and geopolitical uncertainty[23]. Following the onset of the global economic slowdown in the second half of 2008, oil and gas prices have since fallen back from these levels. By the 31st December 2008 oil was $39 per barrel and gas was $5.63 per MMBTU. The depreciation of Sterling against the US Dollar has meant that the Sterling denominated prices of oil and gas have not fallen as sharply and is closer to its long run average than the Dollar price. As the global economy recovers prices are expected to increase significantly again. The International Energy Authority forecast that prices will return to over $100 a barrel in real terms between 2008 and 2015[24].

Figure 5: Oil Prices 1977 – 2008 (GBP and USD Per Barrel) (2008 Prices)

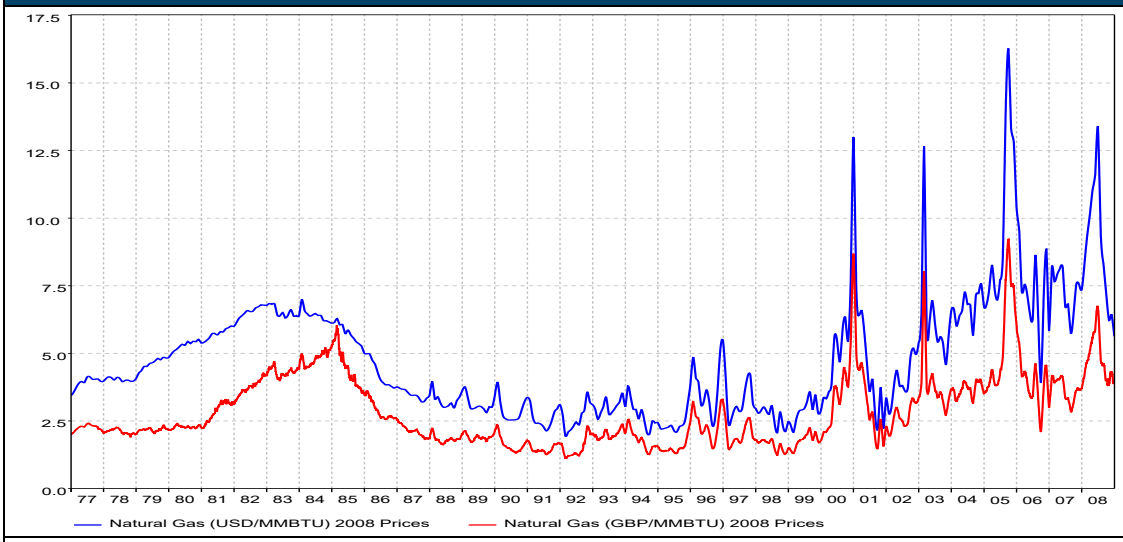


Source: Reuters Ecowin. Oil, Light Crude Spot (WTI), Nymex , deflated using the OECD UK GDP Deflator

Gas prices have followed a broadly similar trend to the price of oil – Figure 6. Gas prices remained relatively stable during the 1980s and 90s. However since 2000 they have exhibited significant volatility especially during winter months. In December 2005, prices reached a record high of £9.50 ($16.70) per MMBTU[25].

[21] See - http://nds.coi.gov.uk/environment/fullDetail.asp?ReleaseID=368724&NewsAreaID=2&NavigatedFromDepartment=True
[22] The real price of oil is the nominal oil price adjusted for inflation.
[23] International Energy Agency, Oil Market Report, September 2008. http://omrpublic.iea.org/currentissues/full.pdf
[24] Financial Times (6 November 2008) – Oil price forecast to bounce back with recovery
[25] MMBTU refers to Million British Thermal Units

Figure 6: Gas Prices 1977 –2008 (GBP and USD Per MMBTU) (2008 Prices)

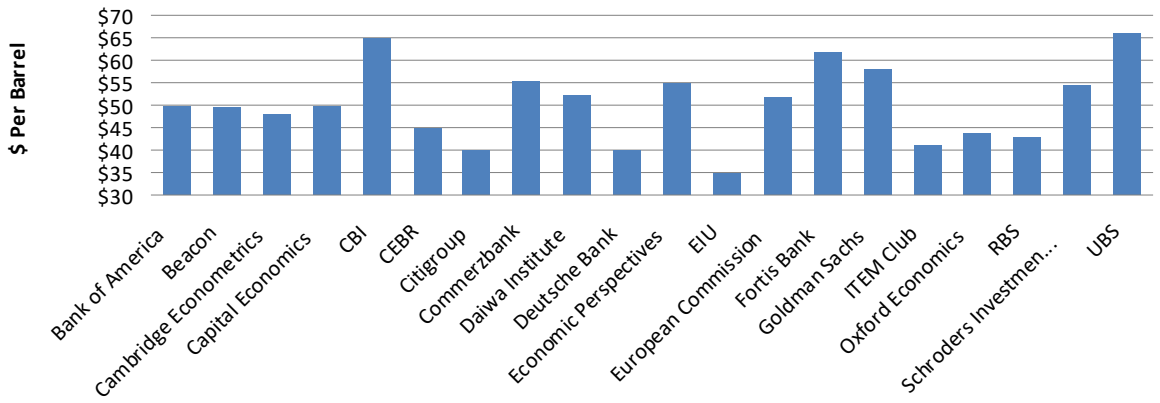


Source: Reuters Ecowin. Henry Hub, Spot, End of Period, deflated using the OECD UK GDP Deflator

Future oil and gas prices

Forecasting long term oil prices is difficult due to the uncertainty of future supplies, production capacity and potential demand. This leads to a wide range of competing forecasts. Figure 7 summarises forecasts for oil prices in 2009 by a number of independent forecasters, with estimates ranging from $35 to $65 a barrel.

Figure 7: Forecasts of Future Oil Prices 2009



Source: HM Treasury – Forecasts for the UK Economy January 2009

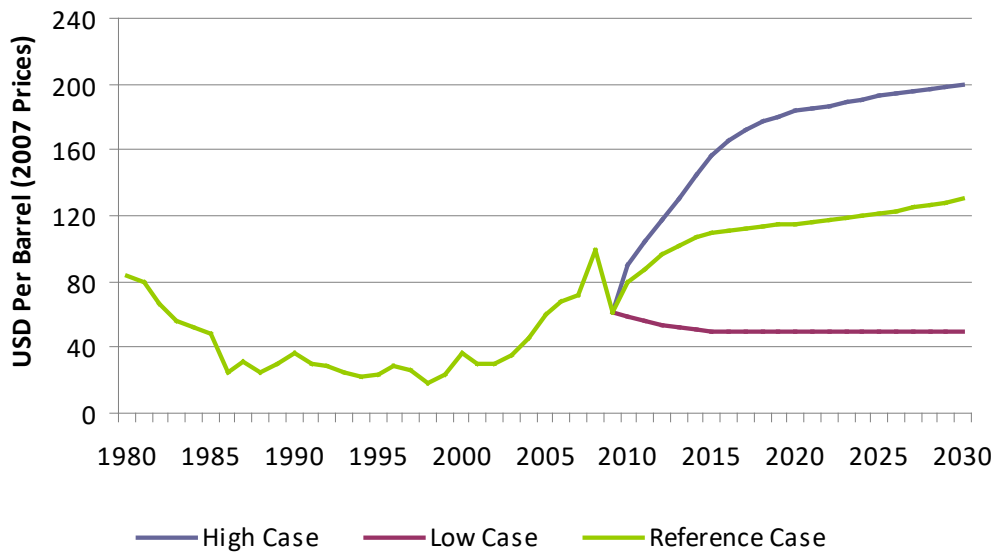
The variability in forecasts is even more pronounced when forecasting oil prices over the medium to long term. In the industry, a frequently cited forecast is produced by the US Government's Energy Information Administration (EIA). Their most recent forecasts, published December 2008, are shown in Figure 8[26].

[26] Source: EIA Annual Energy Outlook June 2008

The EIA reference case assumes that strong demand for oil in non OECD countries combined with constraints on the supply of low cost oil will result in prices remaining high over the long term. However, in recognition of how uncertain future oil prices are the high and low price scenarios encompass a very broad range of prices.

The UK Government's most recent forecasts were published in May 2008. The central BERR forecast is for an average price of approximately $70 a barrel over the next twenty years. Their 'high' and 'high high' cases are for an average price of approximately $95 and $140 a barrel respectively[27]. BERR's central forecast is for natural gas prices to average £4.60 per MMBTU between 2010 and 2030 with 'high' and 'high high' forecasts of £6 and £8.70 respectively.

Figure 8: World Oil Prices (1980 to 2030) (2007 dollars per barrel)



Source: EIA - Annual Energy Outlook 2009 Early Release

2.5 Government Revenues from Oil and Gas

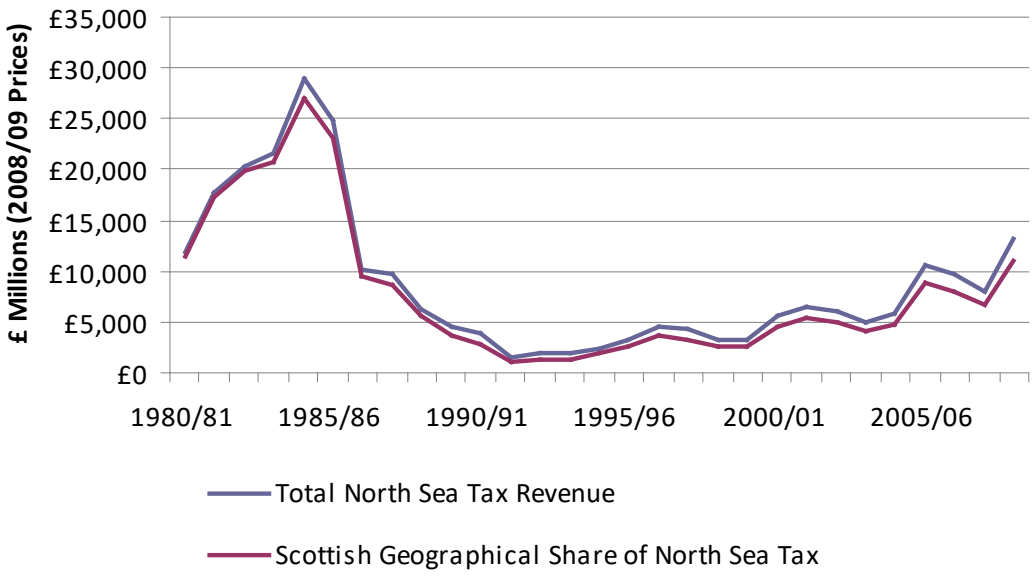
Under the current constitutional settlement, tax revenues from oil and gas production on the UKCS are reserved to the UK Government. The Oil Taxation Act 1975 established the basic framework of taxation, setting out three instruments: royalties, petroleum revenue tax (PRT), and corporation tax (CT). There have been numerous changes over the years to the tax system, including the introduction and subsequent abolition of a fourth instrument (Supplementary Petroleum Duty in 1981 and 1982). The marginal tax rate on fields approved prior to March 1993 is currently 75% whilst fields approved after this date have a marginal tax rate of 50%.

Since 1976-77, the UK Government has raised approximately £142bn in direct tax revenue from oil and gas production. Adjusted for inflation, this is equivalent to over £245bn (2007-08 prices). Such revenues have been used to fund UK Government expenditures and/or lower taxation. This has arguably allowed for greater public sector investment and more competitive tax environment than would otherwise have been the case.

[27] BERR - Communication on BERR Fossil Fuel Price Assumptions - May 2008

Figure 9 plots the level of revenue collected from the North Sea since 1980-81 in 2008-09 prices.

Figure 9: North Sea Revenues 1980-81 to 2008-09 (2008 Prices)



Source: HM Treasury & OECD UK GDP Deflators

UK Government revenue peaked in real terms at £29bn in 1984-85 before declining in the early 1990s – largely as a result of a substantial fall in world oil prices at that time. However in recent years, tax revenues have followed an upward trend. For 2008-09, HM Treasury forecast that North Sea revenues will be £13.2bn, 70% higher than in the previous year.

Going forward, at Pre Budget Budget 2008 HM Treasury estimated that North Sea revenues would amount to between 0.4% and 0.6% of GDP per annum between 2009/10 and 2013/14. This is equivalent to a tax take of approximately £55bn over the period.

Using the data provided in Kemp and Stephen (1999 and 2008) it is possible to obtain an estimate of the value of North Sea revenues raised from Scotland's estimated geographical share of the UKCS – highlighted by the red line in the above chart. It is estimated that since 1980, 89.3% of North Sea revenues have been raised from 'Scottish fields'[28].

Based on current trends for production, prices and profitability, it is clear that there remains significant revenue to be generated from further exploration and development of the North Sea. This would suggest that there remains scope for the establishment of an oil fund for Scotland.

[28] For a discussion of historical North Sea revenues and the implications for Scotland's fiscal position see "History repeats itself", June 26th 2008, The Economist (London).

3 The Purpose of an Oil Fund

Having large reserves of oil and gas presents an economy with considerable opportunities over the short and long term. These assets also create considerable challenges to a country's economy and its political system.

Unlike other sources of a nation's wealth, oil and gas reserves are non-renewable. By their very nature, once a barrel of oil or cubic metre of gas has been produced, it cannot be re-produced in the future. To a certain extent, current production levels can be maintained by exploring for, discovering and developing new reserves previously unknown or deemed un-profitable, but ultimately, with continued production, a point will be reached when all oil and gas reserves have been exhausted.

The general principle behind the creation of an oil fund is to transfer a share of the wealth generated from oil and gas production to a separate fiscal account where it can be saved and invested over the long term rather than consumed immediately. This requires a conscious decision by policymakers to forgo a proportion of possible current consumption in favour of long-term investment. This is not straightforward. Current needs and demands on the public finances are always more clearly defined than future needs.

This chapter discusses:

- first, the public policy rationale for creating an oil fund; and
- second, how an oil fund could generate future income.

3.1 Public Policy Rationale for an Oil Fund

There are a variety of public policy objectives which could be served by an oil fund. This Chapter discusses how an oil fund could help achieve these aims:

- long-term fiscal sustainability;
- inter-generational equity;
- macroeconomic stabilisation;
- efficient resource allocation within the economy;
- promoting industrial diversification;
- providing local benefits; and
- developing sustainable energy.

In practice, and with the correct design, an oil fund can be used to help achieve several of these policy objectives simultaneously.

Long-term financial sustainability

Oil funds can facilitate the creation of renewable wealth from a non-renewable and finite resource

In most cases, the key motivation behind the creation of an oil fund has been to provide a vehicle for sustainable resource management such that the returns from non-renewable oil and gas revenues can be converted into a renewable financial pool of wealth.

Oil and gas reserves represent an important element of a country's asset stock. Investing a share of the revenues produced from oil and gas production in financial assets such as equities and bonds, leads to the creation of a new asset – financial wealth. Unlike oil and gas reserves, returns from such assets can provide a permanent revenue source. Provided that the underlying principal of these financial assets is not eroded, equities, bonds and cash holdings would be able to generate income flows year on year, via interest payments, dividends and rising asset values. An oil fund, by converting the temporary wealth generated by oil and gas production into financial assets, could lead to the creation of a permanent source of revenue which would continue to generate income beyond the point when oil and gas reserves have been exhausted. The theoretical principle of Permanent Income Streams is discussed in more detail in Box 1.

Box 1: Permanent Income Streams[29]

The constant permanent income stream which could be provided from oil and gas production, after accounting for inflation, is determined by equation 1 below. *M* is the annual income received from oil production, *y* is the number of years of investment, *r* is the real return received on the investments and *X* is the real revenue stream raised.

$$X = M\left[1 - \frac{1}{(1+r)^{y}}\right] \qquad \text{[Equation 1]}$$

As a simple stylised example, suppose that £100 million in tax revenue (in real prices) is collected from oil and gas production for ten consecutive years and the real return received on investments (*r)* is 5%. Further, suppose that at the end of year 10, oil and gas reserves have been exhausted.

Using these figures it is possible to estimate how much would need to be invested to maintain a constant revenue stream from Day 1 and for all subsequent years, including the period after all reserves have been exhausted?

In this example, the permanent income stream (*X)* would be £39 million in real prices.

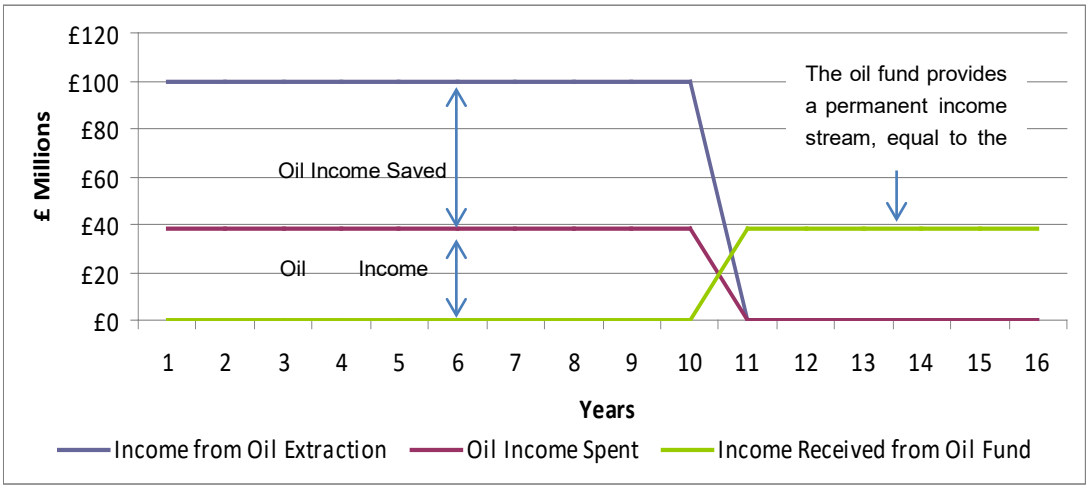
$$39 = 100\left[1 - \frac{1}{(1+5\%)^{10}}\right] \qquad \text{[Equation 2]}$$

To obtain this, a government would be required to invest £61 million of oil and gas

[29] See Hannesson (2001): Investing for Sustainability – The Management of Mineral Wealth

revenues into the fund (£100 million less £61 million = £39 million) each year for the ten years oil and gas is in production. By doing so, this would mean that from the first year when oil and gas tax revenue are received, and in each subsequent year, the value of the principal and the returns generated would be sufficient to return £39 million in revenue each and every year going forward in real terms.

After year 10, the income earned on the investments and the underlying principal would be sufficient to continue providing £39 million a year in revenue indefinitely. By year 26, the government could have raised more in total than the initial level of wealth collected in oil and gas revenues.



Inter-generational equity

Oil funds can provide a mechanism to save some of the temporary windfall from oil and gas revenues and allow the benefit of a country's natural resources to be shared across generations

The most obvious motivation behind the creation of an oil fund is to provide a transparent mechanism to save a proportion of the temporary financial windfall from oil and gas production for the future.

Oil and gas reserves are extremely lucrative with the potential to earn billions of pounds for countries fortunate enough to have them located in their jurisdiction. As with any one-off financial 'windfall', many countries have found it prudent to 'lock- away' a proportion of these returns in 'rainy day funds' or 'heritage funds'.

By saving an element of this windfall, this serves to ensure that future generations can share in the benefit from a country's natural resources. Of course, if this saving comes at the cost of increased borrowing in the general budget, future generations would inherit debt and savings simultaneously. Ensuring that the former does not dominate is critical to this benefit being achieved.

Macroeconomic stabilisation

Oil funds can help to stabilise the macro-economy, limiting any inflationary effect on demand when oil and gas prices rise sharply, and helping to cushion demand when oil and gas prices fall

In addition to assisting in the development of sustainable wealth creation and providing a mechanism for inter-generational saving, oil funds also have the opportunity to act as a short-term stabilisation mechanism. This can be especially important in small economies where oil and gas production contribute a significant amount to the government exchequer.

As illustrated in Figure 8, oil and gas tax revenues are typically subject to fluctuations as a result of swings in underlying commodity prices and hence in the profitability of the operating companies and the taxes that they pay.

Faced with such volatility spilling over into the general government budget, oil funds can act as a stabilising mechanism, transferring relatively higher levels of the fund's wealth to the government budget in lean years and relatively lower levels in good years. This could ensure predictability in the budget process and in the setting of policies and spending programmes. Thus while the funds do not stabilise commodity prices themselves they mitigate against commodity price volatilities from translating into wider macroeconomic (particularly fiscal) instability.

Furthermore, the funds can, in theory, be used to assist the wider economy during lean economic years, finance automatic stabilisers and facilitate growth. It is important however, to ensure that appropriate checks and balances are in place so that such transfers are made only in times of genuine difficulty and that they are re-paid during better times.

Efficient resource allocation within the economy

Oil funds can prevent negative spill-over effects from the oil and gas sector impacting upon other sectors of the economy

A common concern faced by many small economies with substantial natural resources, particularly developing countries, is the impact that the sector's success can have on the development of other aspects of the economy. In small countries with significant oil and gas reserves, academic evidence has shown that in certain cases, these economies have actually performed relatively poorly when compared to apparently similar countries who do not have oil and gas sectors; this is often referred to as the 'resource curse'[30]. There are a number of possible explanations for this phenomenon, including the overvaluation of exchange rates (often referred to as 'Dutch Disease'), high unit labour costs, lack of sufficient incentives to invest in human and physical capital stocks relevant for other sectors of the economy and general instability spilling over from fluctuations in oil and gas prices. These effects mean that the non-oil and gas producing sectors in the economy can be squeezed, resulting in a loss in competitiveness and long-term decline in economic growth.

By enhancing stability in the economy, encouraging diversification and providing a transparent mechanism for investment, oil funds can be used to mitigate the effects of any negative spill-overs from natural resource extraction.

[30] Auty, Richard M. (1993). Sustaining Development in Mineral Economies: The Resource Curse Thesis. London: Routledge

Promoting industrial diversification

Oil funds can be used as a mechanism to assist in economic diversification

Oil Funds can also be used as a transparent funding mechanism to assist in the diversification of a country's economy into areas of economic activity other than oil and gas production. This could ensure economic and social development continues at a pace once oil revenues have been exhausted. By having a diversified economy a country can avoid being overly exposed to sector specific shocks.

Furthermore, international evidence clearly demonstrates that investment in capital, both public and private, and research and development are essential drivers of productivity, competitiveness and long-term economic growth. Increased productivity - that is, more or higher quality output per unit of labour input – represents an efficiency gain that lowers average production costs.

The development of these assets can be assisted by allocating a proportion of not only the direct tax revenues from oil and gas production but also the returns from the fund's investments to finance additional investment. Such ring-fencing of withdrawals from the fund can lead to a higher level of investment than would otherwise have been the case and assist any transition in the economy toward an age where the importance of the oil and gas sector is more limited.

Once more, appropriate checks and balances are often desirable to ensure that this is undertaken in the best possible manner. In practice, designing rules that govern the magnitude and composition of spending have proved useful.

Providing local benefits

Oil funds can provide a mechanism to ensure that local communities benefit from the extraction of natural resources in their area

In practice, the majority of the financial benefits from oil and gas extraction are captured by residents outside the area in which the reserves are located (i.e. shareholders of oil and gas producing companies and general population). Establishing an oil fund can be used as a mechanism to ensure that local people benefit from the extraction of natural resources in their area by effectively ring-fencing a share of the revenue windfall for residents most directly affected. Many countries have found this desirable, especially if the extraction of the resource imposes an environmental or social cost on local residents. When oil and gas reserves are located offshore this motivation is likely to be of less relevance.

Developing sustainable energy

Oil funds can use some of the wealth generated from oil and gas production to facilitate the development of renewable energy sources

In addition to providing a source of revenue to both the private and public sectors, oil and gas currently meet the majority of most countries' energy demand. In the future however, energy demand will ultimately need to shift toward alternative and renewable energy sources.

However, relative to oil and gas processes, many alternative energy sources remain in development. An oil fund's income and capital can in theory be channelled to assist the advancement of new techniques and technologies in alternative sources of energy creation, providing benefits not only in terms of economic sustainability but also in the sustainability of a country's energy supply.

One area where this has significant potential is carbon capture. Carbon capture is especially relevant for the oil and gas sector as it can replace water and natural gas and other technologies for promoting enhanced oil recovery. There is therefore a double benefit - increased oil output plus reduced carbon emissions. Development of the relevant technology and expertise will take time and require financing, creating opportunities for an oil fund to invest in.

3.2 How an oil fund generates future income

Past opportunities

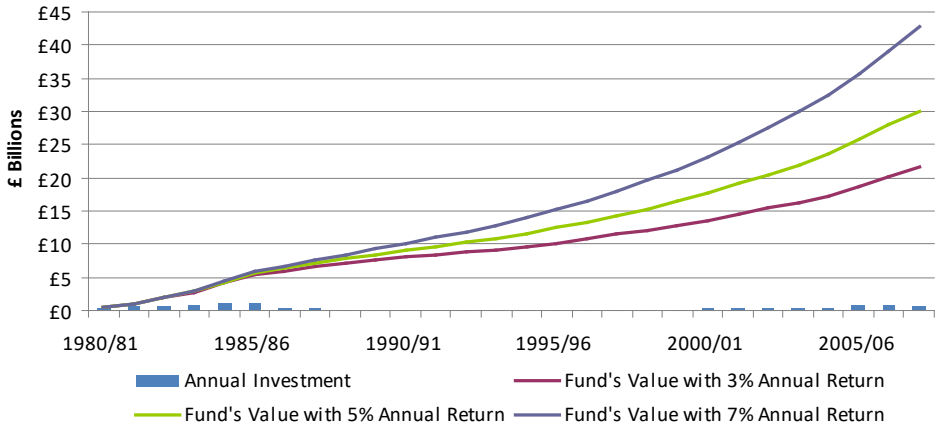
An interesting historical illustration is to estimate past opportunities based on the level of revenue raised from the North Sea over the last three decades.

Given the assumptions required, such analysis should be seen as illustrative but does give a useful indication of the potential value of a fund had the UK Government chosen to create one.

Figure 10 highlights the potential value of a UK oil fund had 10% of North Sea revenues been allocated to an oil fund from 1980 onwards. Note that to best capture the level of investment each year, the analysis assumes a transfer of 10% of nominal revenues. As discussed above, the value of such a fund would depend on both the returns achieved on the investments and the proportion of the fund withdrawn in a given year. Assuming that no revenue was withdrawn from the fund, annual nominal returns of 3% would have meant that such a fund could have been worth £22bn in 2007-08. If nominal rates of return of 5% and 7% had been achieved, the value in 2007-08 would be worth approximately £30bn and £43bn respectively[31]. This would mean that the value of the fund could be at least twice as large as the total amount of revenue raised in 2007-08 from the North Sea.

[31] Of course, this would have implied that less money would have been available for funding government expenditures without an increase in net borrowing or taxation for such years.

Figure 10: Hypothetical Value of a UK Oil Fund - Investing 10% of Nominal North Sea Revenue Annually (1980-81 to 2007-08)



Source: HMT and Scottish Government calculations

Table 2 highlights the hypothetical value of the fund in 2008 if transfers of 10%, 20% and 30% of North Sea revenues had been invested each year into the fund.

Table 2: Value of Oil Fund in 2008 with an Annual Nominal Return of 3%, 5% and 7% (£bn)

	Annual Return (£bn)		
Annual Investment (% of total revenues)	3%	5%	7%
10%	£22	£30	£43
20%	£43	£60	£85
30%	£65	£90	£128

Future opportunities

This section sets out the potential value of an oil fund for Scotland under various hypothetical scenarios. Forecasting the potential value of an oil fund is subject to a wide variety of factors. Some factors are determined by policy choices, such as how much is invested into the fund each year and for how long, while other factors, such as the rate of return received on the fund's investments each year, depend upon general economic conditions in the future. The analysis conducted here is illustrative and simply attempts to highlight the potential gains from establishing an oil fund.

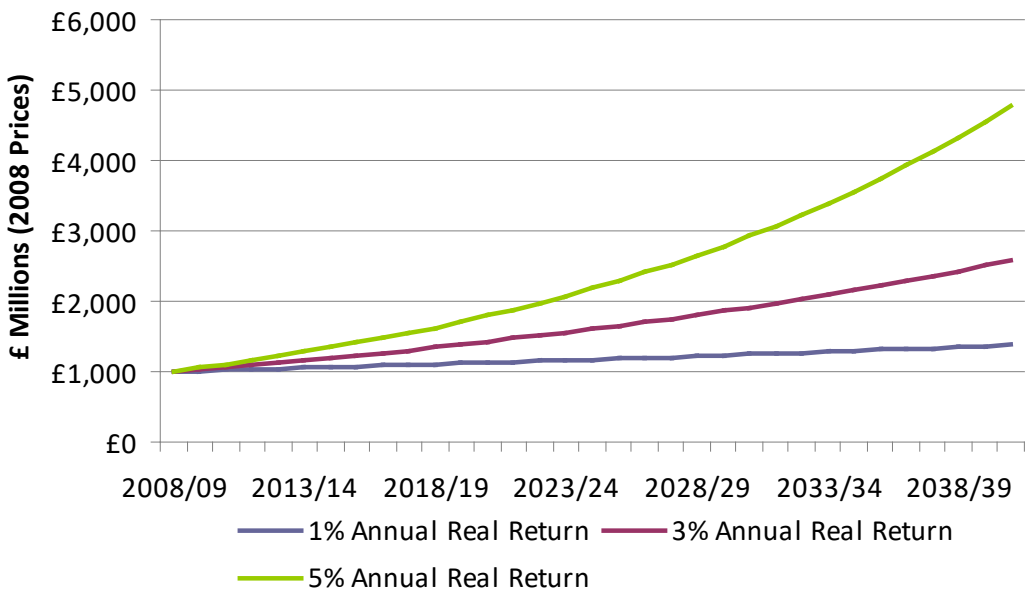
Two illustrative examples are given below –

- one-off investment of a fixed amount; and
- repeated investment over time of a fixed amount

One-off investment

Figure 11 demonstrates the future value of a one off investment of £1bn in 2008/09, if this money was invested in an oil fund over the long term. Assuming that an annual real return of 3% a year could be achieved and that the annual returns were re-invested year on year, this initial investment would be valued at approximately £1.4bn by 2020/21, rising to £2.6bn in 2040/41 in real terms. If the fund was able to achieve a real return of 5%, it would be valued at nearly £1.8bn in real terms by 2020/21 and £4.8bn in 2040/41.

Figure 11: Hypothetical Oil Fund Value – One Off Investment of £1bn

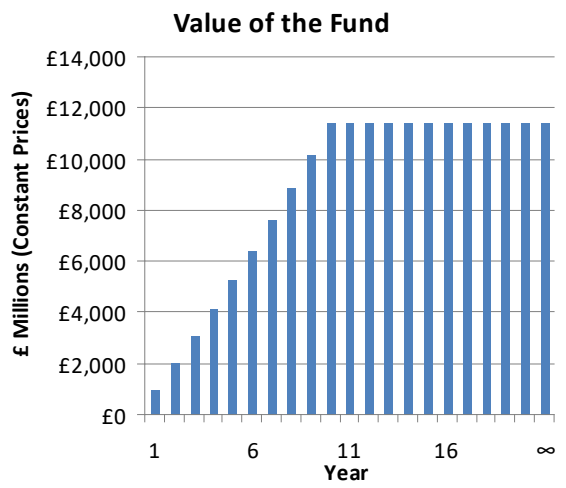


Source: Scottish Government calculations

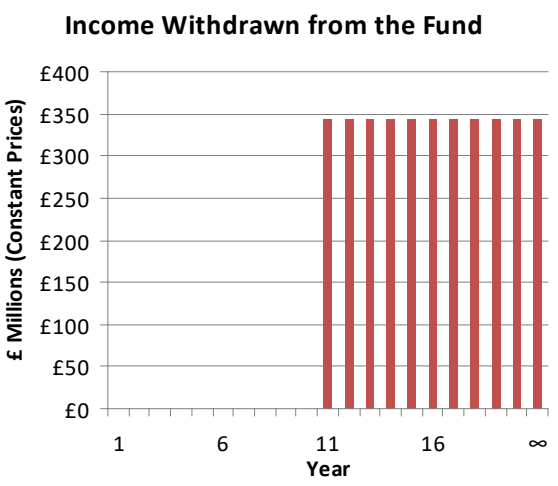
Repeated investment

As to be discussed in Chapters 4 and 5, in practice most funds receive repeated investment each year as oil and gas reserves are depleted. By adding to the fund on a regular basis, this can allow a fund's value to grow even more rapidly. For example, if £1bn (in real terms) was invested annually for 10 years, a real annual return of 3% was achieved and no withdrawals were made from the fund, panel 1 in Figure 12 illustrates that the fund would be worth £11.5bn in real terms at the end of the 10 year period. This could allow a consistent real income stream of £344 million in real terms from year eleven onwards as illustrated in panel 2.

Figure 12: Hypothetical Oil Fund Value – Investing £1bn a year for 10 years with no Withdrawals



£1 billion invested annual for 10 years.
Investments are assumed to achieve an annual real return of 3%



Withdrawals start in year 11
Only the real return is withdrawn so that the fund's value is maintained in real terms

Source: Scottish Government calculations

The amount of income which an oil fund could generate depends on the amount invested, the returns achieved and the number of years for which the investments are made. The tables below illustrate how much a fund would be worth over different time periods and different levels of returns if £1bn, £2bn or £5bn was invested annually. For example, if £2bn was invested annually and achieved an annual real return of 3%, it would be worth £22.9bn after 10 years and £53.7bn after 20 years.

Table 3: Value of Investments with an Annual Real Return of 1% (£bn – 2008 Prices)

	Annual Investment		
Number of Years Invested	£1bn	£2bn	£5bn
5 years	£5.1 bn	£10.2 bn	£25.5 bn
10 years	£10.5 bn	£20.9 bn	£52.3 bn
20 years	£22.0 bn	£44.0 bn	£110.1 bn

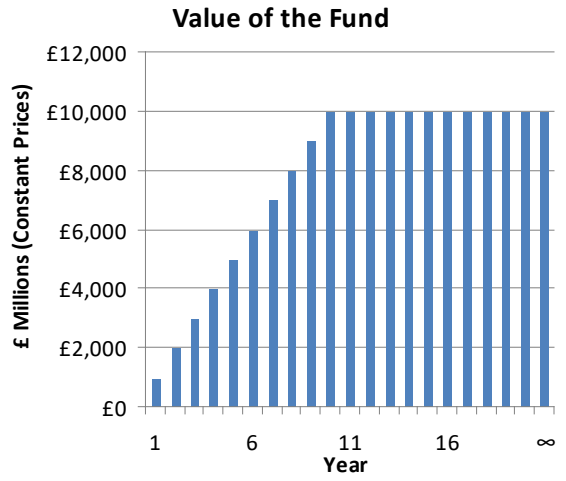
Table 4: Value of Investments with an Annual Real Return of 3% (£bn – 2008 Prices)

	Annual Investment		
Number of Years Invested	£1bn	£2bn	£5bn
5 years	£5.3 bn	£10.6 bn	£26.5 bn
10 years	£11.5 bn	£22.9 bn	£57.3 bn
20 years	£26.9 bn	£53.7 bn	£134.4 bn

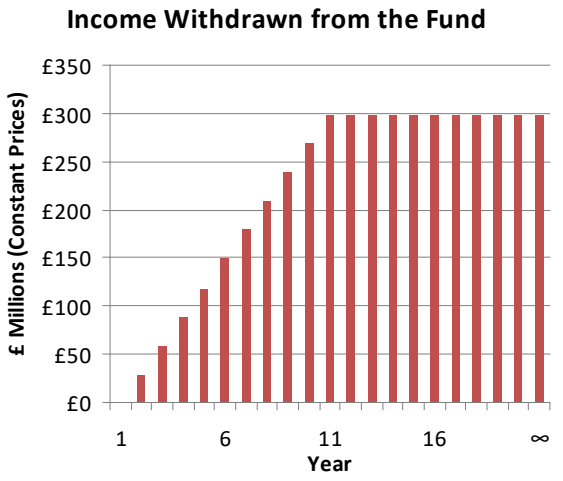
Table 5: Value of Investments with an Annual Real Return of 5% (£bn – 2008 Prices)			
	Annual Investment		
Number of Years Invested	£1bn	£2bn	£5bn
5 years	£5.5 bn	£11.1 bn	£27.6 bn
10 years	£12.6 bn	£25.2 bn	£62.9 bn
20 years	£33.1 bn	£66.1 bn	£165.3 bn

The above examples assume that no income is withdrawn from the fund during the initial period of investment. Alternatively, while preserving the real value of the fund, a proportion of the income received from the fund's investments may be withdrawn from year 2 onwards. This would serve to reduce the value of the fund and ultimately the level of future income that the fund would be able to generate. This is illustrated in Figure 13. In this example, the real return generated each year is withdrawn from the fund (i.e. the principal is adjusted for inflation). Under this scenario, the fund would be worth £10bn after 10 years leading to a permanent income of £300 million from year 11 onwards.

Figure 13: Hypothetical Oil Fund Value – Investing £1bn a year for 10 years with Withdrawals



£1 billions invested annually for 10 years.
Investments assumed to achieve an annual real return of 3%



The real return is withdrawn from the fund from year 1 onwards.
The fund's value is maintained in real terms

Source: Scottish Government calculations

The tables below provide a range of examples to illustrate how much a fund could be worth, and the cumulative amount which would be available for spending, over different time periods and with different levels of return. For example, if £5bn was invested annually with a real return of 3%, and the real returns withdrawn each year, then after 10 years the fund would be worth £50bn and £6.8bn would have been available over the period to fund government programmes.

Table 6: Value of Investments & Total Income Withdrawn with an Annual Real Return of 1% (£bn – 2008 Prices)						
	Annual Investment					
Number of Years Invested	£1bn		£2bn		£5bn	
	Value of Fund	Total Income withdrawn	Value of Fund	Total Income withdrawn	Value of Fund	Total Income withdrawn
5 Years	£5.0bn	£0.1bn	£10.0bn	£0.2bn	£25.0bn	£0.5bn
10 Years	£10.0bn	£0.5bn	£20.0bn	£0.9bn	£50.0bn	£2.3bn
20 Years	£20.0bn	£1.9bn	£40.0bn	£3.8bn	£100.0bn	£9.5bn

Table 7: Value of Investments & Total Income Withdrawn with an Annual Real Return of 3% (£bn – 2008 Prices)						
	Annual Investment					
Number of Years Invested	£1bn		£2bn		£5bn	
	Value of Fund	Total Income withdrawn	Value of Fund	Total Income withdrawn	Value of Fund	Total Income withdrawn
5 Years	£5.0 bn	£0.3 bn	£10.0 bn	£0.6 bn	£25.0 bn	£1.5 bn
10 Years	£10.0 bn	£1.4 bn	£20.0 bn	£2.7 bn	£50.0 bn	£6.8 bn
20 Years	£20.0 bn	£5.7 bn	£40.0 bn	£11.4 bn	£100.0 bn	£28.5 bn

Table 8: Value of Investments & Total Income Withdrawn with an Annual Real Return of 5% (£bn – 2008 Prices)						
	Annual Investment					
Number of Years Invested	£1bn		£2bn		£5bn	
	Value of Fund	Total Income withdrawn	Value of Fund	Total Income withdrawn	Value of Fund	Total Income withdrawn
5 Years	£5.0 bn	£0.5 bn	£10.0 bn	£1.0 bn	£25.0 bn	£2.5 bn
10 Years	£10.0 bn	£2.3 bn	£20.0 bn	£4.5 bn	£50.0 bn	£11.3 bn
20 Years	£20.0 bn	£9.5 bn	£40.0 bn	£19.0 bn	£100.0 bn	£47.5 bn

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4 International Evidence on Oil Funds

A number of resource rich countries and regions have established investment funds to manage the wealth generated from their natural resources. For example, Chile has run a stabilisation and pension fund for copper, the US States of New Mexico, Wyoming and Montana all have resource funds of some form, while oil funds exist in most Asian and African oil producing countries. The UK is relatively unusual among mineral rich countries in that it has yet to establish such a fund.

Table 9 lists some of the largest oil funds in the world today.

Table 9: Oil Funds International Evidence

Country	Fund Name	Assets ($ Million)	Inception Year
UAE	Abu Dhabi Investment Authority[a]	875,000	1976
Norway	**Norway Government Pension Fund**	**373,000**	**1996**
Saudi Arabia	Saudi Arabian funds of various types	300,000	/
Kuwait	Reserve Fund for Future Generations	250,000	1953
Russia	Stabilisation Fund[b]	133,000	2003
Libya	Oil Reserve Fund	50,000	2005
Algeria	Fonds de régulations des recettes	42,600	2000
Qatar	Qatar Investment Authority	40,000	/
United States	**Permanent Fund (Alaska)**	**38,000**	**1976**
Brunei	Brunei Investment Authority	30,000	1983
Kazakhstan	Kazakhstan National Fund	17,600	2000
Canada	**Alberta Heritage Savings Fund**	**15,500**	**1976**
Iran	Oil Stabilisation Fund	15,000	1999
Nigeria	Excess Crude Account	11,000	2003

Source: Stephen Jen (2007), "How Big Could Sovereign Wealth Funds be by 2015?" and Morgan Stanley Research
a: Estimate, September 2007
b: Split in February 2008 into Reserve Fund and National Welfare Fund

The number of oil funds has proliferated in recent years and as they have increased in size, concern has grown over the apparent lack of transparency and the purpose of such funds in practice.

The remainder of this chapter discusses three international examples of relevance to Scotland:

- the Government Pension Fund – Global in Norway:
- the Permanent Fund in the U.S. State of Alaska; and
- the Heritage Savings Fund in the Canadian Province of Alberta.

These funds are well established and operate in political and economic systems where any lessons are best transferable to the case of Scotland.

4.1 Norway: The Government Pension Fund - Global

Petroleum was discovered in the Norwegian North Sea sector in 1969, with production beginning in 1971. The effective use of these resources has helped transform the Norwegian economy and made it one of the richest countries in the world, with GDP per capita 50% higher than in the UK[32].

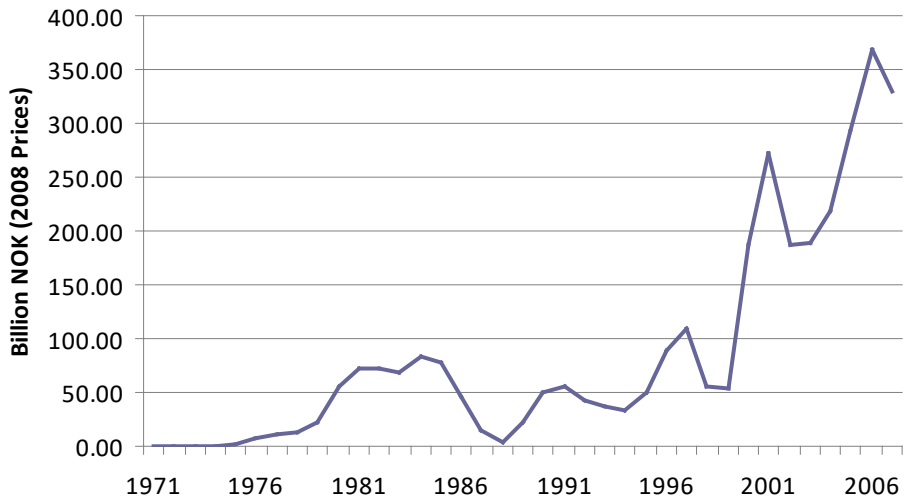
Norway is currently the world's eleventh largest oil producer (and the fifth largest exporter[33]) and fifth largest gas producer (and the third largest exporter)[34] . Despite this, it is estimated that approximately 40 percent of the discovered marketable oil and gas resources on the Norwegian continental shelf have yet to be extracted[35].

Fiscal revenues

Revenues from the oil and gas sector contribute a significant amount to the annual budget. In 2007, 31 percent of total government revenues in Norway stemmed directly from the oil and gas sector[36].

Figure 14 illustrates the total tax revenue received by the Norwegian Government from the petroleum industry since 1971. In 2007 the government received 328bn NOK in revenue from the industry in 2008 prices. The value of the remaining revenues has been estimated at 3,790bn NOK[37].

Figure 14: Norwegian Government Revenue from the Petroleum Industry, NOKbn (2008 Prices)



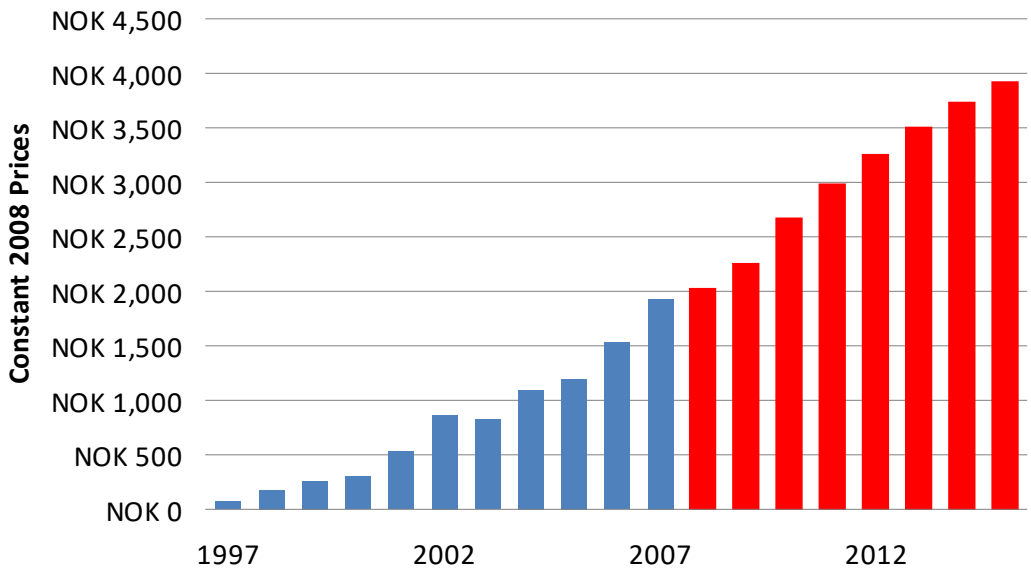
Source: Norwegian Public Accounts and National Budget

[32] IMF - World Economic Outlook Database, October 2008 Gross domestic product based on purchasing-power-parity (PPP) per capita GDP http://imf.org/external/pubs/ft/weo/2008/02/weodata/index.aspx
[33] Source: http://www.npd.no/NR/rdonlyres/24468CE3-30DC-497F-9E43-501FBC48A131/17867/Facts_2008.pdf
[34] Source: BP Statistical Review of World Energy 2008.
[35] Source: Norway petroleum resource account 2007 - Updated April 2008 - http://www.npd.no/English/Emner/Ressursforvaltning/Ressursregnskap_og_-analyse/Ressursregnskapet+per+31.12.2007.htmf
[36] Source: Facts 2008 - The Norwegian Petroleum Sector, http://www.npd.no/English/Produkter+og+tjenester/Publikasjoner/Faktaheftet/Faktaheftet+2008/fakta2008.htm
[37]Source: Facts 2008 - The Norwegian Petroleum Sector, http://www.npd.no/English/Produkter+og+tjenester/Publikasjoner/Faktaheftet/Faktaheftet+2008/fakta2008.htm

Norwegian oil fund

Norway's oil fund is officially known as 'The Government Pension Fund – Global'[38]. The fund was established in 1990 however, the first net transfer to the fund was not made until 1996. Although the name of the fund captures its role in meeting future pension obligations, the fund's revenue is not specifically earmarked for pension expenditures.

Figure 15: Value of Norwegian Oil Fund (At Start of Year) NOKbn 1997 – 2015 (2008 Prices)



Figures for 2009 onwards are from the National Budget 2009

Source: Norges Bank - Government Pension Fund - Key Figures

Note: Figures were deflated using OECD GDP Deflators, OECD Economic Outlook and Scottish Government calculations

The Norwegian oil fund is the second largest wealth fund in the world. As at September 2008 it was valued at NOK 2,120bn[39], with a population of close to 5 million, this equates to approximately £40,000 per capita. The Norwegian Central Bank forecast that it will reach nearly NOK 4 trillion by 2015 (in 2008 prices).

Since 1998, measured in international currency the fund has achieved an average gross annual return of 4.06 per cent. Over this period annual inflation was 2.01 per cent and annual management costs were 0.09 per cent, as such the funds annual net real return has been 1.91 per cent[40].

[38] The Government Pension Fund of Norway is made up of two elements: The Government Pension Fund – Global (the oil fund) and The Government Pension Fund – Norway. The latter is a general National Insurance scheme. For more information on the pension fund see http://www.government.no/gpf

[39] NBIM Quarterly Report Q3, 2008 – Table 5.1

[40] NBIM Quarterly Report Q3, 2008 - Table 5.2

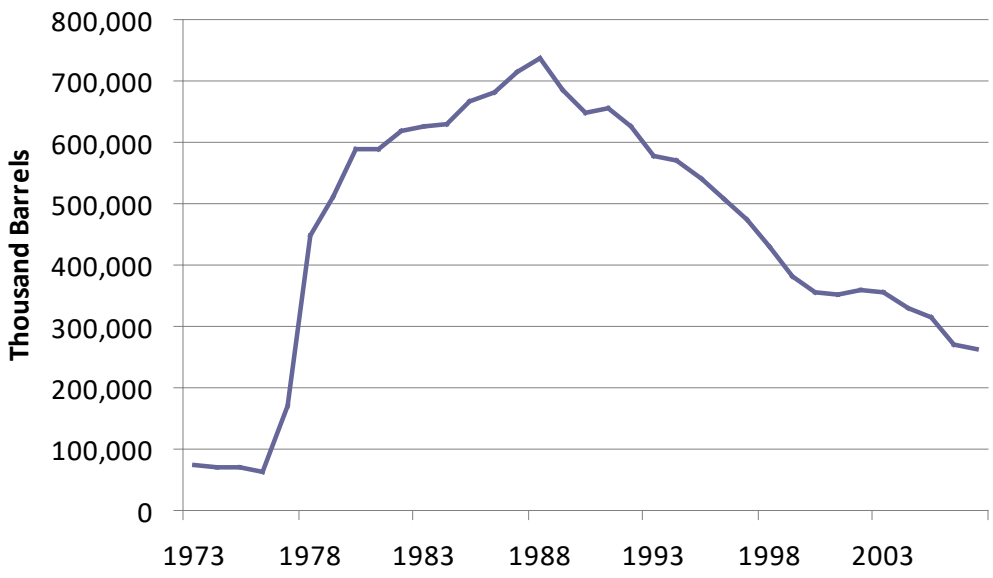
4.2 Alaska: The Permanent Fund[41]

Oil was discovered along the North coast of Alaska in the late 1960s and has made a significant contribution to the state's economy. In 2007, Alaskan GDP per capita was $44,000, 18% higher than the national average[42].

Alaska's oil fields are estimated to be large, with the Prudhoe Bay field the largest field ever discovered in North America with estimated original reserves in place of approximately 25bn barrels of oil[43].

Oil production peaked in 1988-89 at 736 million barrels. Since then production has declined by two thirds with output of 264 million barrels in 2007 – Figure 16.

Figure 16: Alaska Crude Oil Production (Thousand Barrels): 1973 to 2007



Source: US Energy Information Administration

Fiscal revenues

Control of natural resource taxation is the responsibility of individual States in the USA.

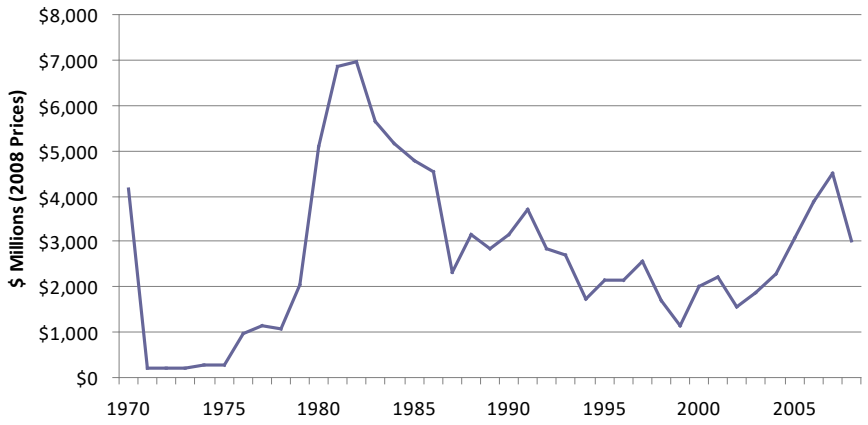
The Alaskan Government receives revenues from oil production from two main sources – licences and royalties from oil fields located in state owned land and a severance tax on oil returns. As Figure 17 illustrates, Petroleum revenue peaked in real terms in 1982 at $6.9bn before declining. Revenue has recovered again in recent years following the rise in oil prices.

[41] For more information see http://www.pfd.state.ak.us/forms/AnnualReports/2007AnnualReport.pdf and http://www.apfc.org/_amiReportsArchive/2005_GUIDE_nocov.pdf

[42] Bureau of Economic Analysis - Regional Economic Accounts (Table 3) http://www.bea.gov/newsreleases/regional/gdp_state/gsp_newsrelease.htm

[43] Source: BP Prudhoe Bay Factsheet.

Figure 17: Alaska Petroleum Revenue (1970 to 2008) (2008 Prices)



Source: Alaska Department of Revenue Tax Division

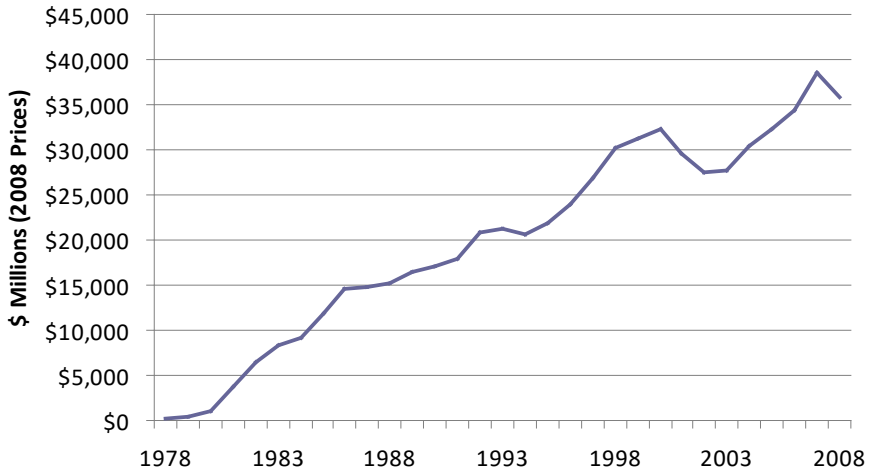
Note: Petroleum Revenue is net of transfers into the permanent fund.

Figures were deflated using OECD GDP Deflators, OECD Economic Outlook

Alaskan oil fund

Alaska's oil fund, established in 1976, is officially known as 'The Alaska Permanent Fund'[44]. It is a dedicated investment fund owned by the State and is enshrined in the Alaskan constitution[45,46]. The fund attracts widespread public support and the relevant constitutional amendment to establish the fund was passed by an almost two to one majority. From an initial deposit of $734,000 in 1977, the fund is now worth over $29bn[47].

Figure 18: Alaska Permanent Fund Value (1978 to 2008) (2008 Prices)



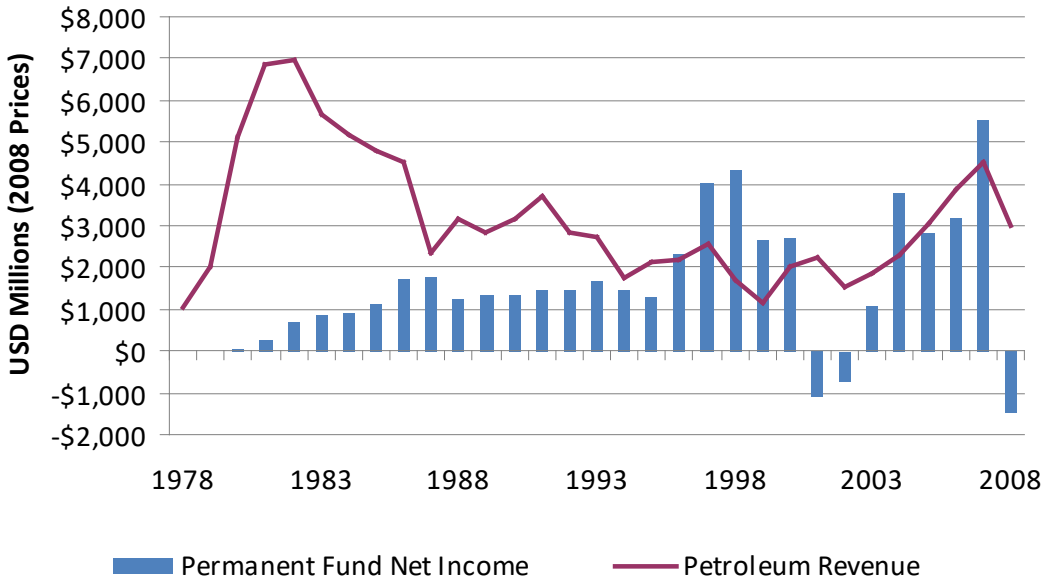
Source: Alaska Permanent Fund Corporation

Note: Figures were deflated using OECD GDP Deflators, OECD Economic Outlook

[44] http://www.apfc.org/_amiReportsArchive/2005_GUIDE_nocov.pdf
[45] Alaska Constitution Article IX, Section 15
[46] Support for the creation of the fund at the time of the constitutional amendment was 75,588 to 38,518.
[47] Alaska Permanent Fund Corporation - Monthly Performance Report - November 30, 2008

In 1996 realized net income from the Permanent Fund surpassed state oil revenues for the first time – see Figure 19; meaning that the renewable wealth created by the fund exceeded the returns from the non-renewable source of wealth. This is therefore a good example of a successful sustainable investment programme. As discussed below, the Alaskan Government does not have access to the revenues from the fund for normal budget purposes.

Figure 19: Alaska Petroleum Revenue and Permanent Fund Income (1978 to 2008) (2008 Prices)



Source: Alaska Permanent Fund Corporation

Note: Petroleum Revenue is net of transfers into the permanent fund. Fund net income is statutory net income plus the net change in unrealized gains (losses) and settlement earnings.

Figures were deflated using OECD GDP Deflators, OECD Economic Outlook

The aim is for the fund to return a real return of 5%. Over the past 25 years the fund has achieved a real annual return of 6.7%. In recent years returns have fallen with a real annual return of just under 4% achieved between 1998 and 2008[48].

[48] Alaska Permanent Fund Corporation – Annual Report 2008

4.3 Alberta: The Heritage Savings Fund

Alberta is also the largest oil and gas producer in Canada[49]. In fact, it is estimated that Alberta contains the second largest proven concentration of oil in the world, approximately 180bn barrels. This has helped make the Province of Alberta one of the richest provinces in Canada with GDP per capita of $75,000 in 2007, 61% higher than the Canadian average[50].

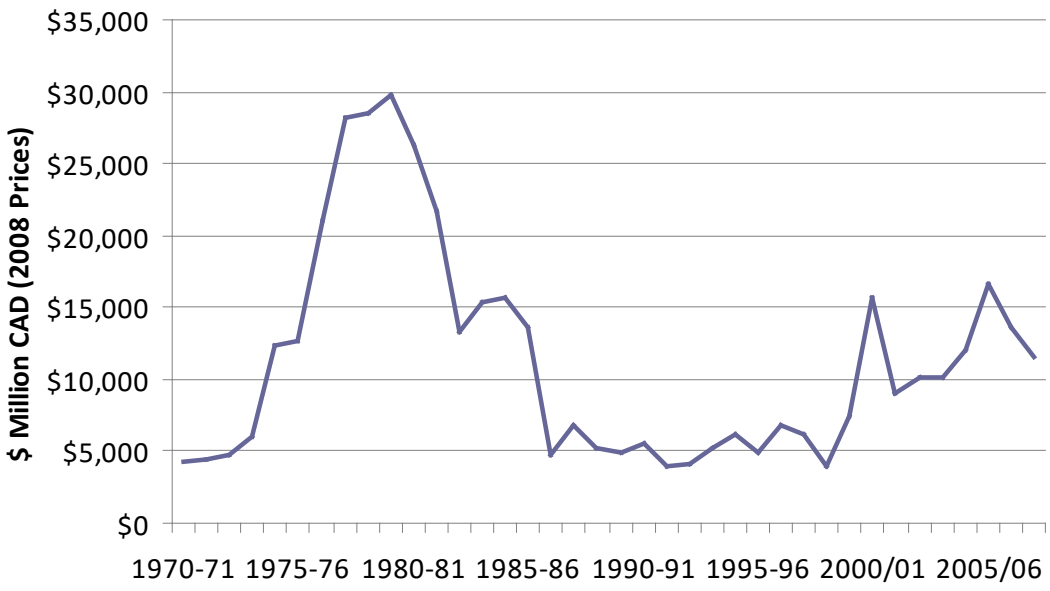
While Alberta has some traditional deposits of oil, they are relatively modest in size. The main source is tar-sand deposits. Tar-sands are deposits of relatively low quality hydrocarbons located in a mixture of sand, water and clay that require extensive treatment before use. It is estimated that 173bn barrels of oil in Alberta's tar-sand deposits are recoverable with current technology[51].

Fiscal revenues

Natural resource taxation is devolved to the Provinces in Canada.

The vast majority of oil production in Alberta takes place on land owned by the state. Therefore, in addition to tax revenues collected from the production of oil and the profits earned, the Albertan government also collects royalties from the granting of licences to operate on state land. The revenue received from the petroleum industry since 1970/71 is summarised in Figure 20.

Figure 20: Alberta Non Renewable Resource Revenue (1970-71 to 2007-08) (2008 Prices)



Source: Alberta Finance.

Note: Figures were deflated using OECD GDP Deflators, OECD Economic Outlook

[49] For more information see http://www.finance.alberta.ca/business/ahstf/annrep08/report.pdf and http://www.finance.alberta.ca/publications/budget/budget2008/heritage.pdf

[50] Statistics Canada - http://cansim2.statcan.ca/cgi-win/cnsmcgi.pgm

[51] http://oilsands.alberta.ca

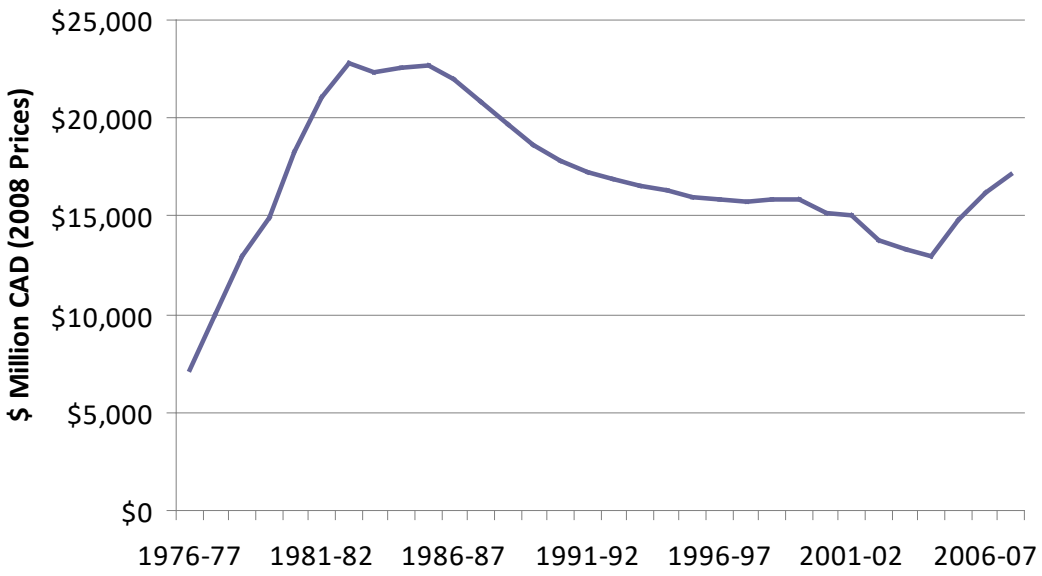
Alberta oil fund

Alberta's oil fund is officially known as the 'Alberta Heritage Savings Trust Fund'[52]. The fund was established in 1976 and is currently valued at $15.8bn (September 30, 2008[53]). It is the only Province in Canada to have established an oil fund.

The Government has full access to the revenues in the fund and can decide how much to put into the fund each year.

The Fund was started with a special contribution of $1.5bn CAD. Payments were made on an annual basis into the fund until 1987. From 1987 – 2006, no new payments were made into the fund. As a result of the lack of additional investment and continued withdrawals, the fund's real value declined over time – see Figure 21. Since 2006, investments have recommenced with approximately $3bn CAD invested[54].

Figure 21: Alberta Heritage Savings Fund Value (1976-77 to 2007-08) (2008 Prices)



Source: Alberta Heritage Savings Trust Fund - 2007-08 Annual Report.
Note: Figures were deflated using OECD GDP Deflators, OECD Economic Outlook

[52] http://www.apfc.org/_amiReportsArchive/2005_GUIDE_nocov.pdf
[53] Alberta Heritage Savings Trust Fund 2008-09 Second Quarter Update
[54] Alberta Heritage Savings Trust Fund - Annual Report 2007-2008

5 Policy Issues for a Scottish Oil Fund

Having established the basic motivation behind the creation of an oil fund for Scotland and the potential value of such a fund, this chapter reviews in more detail the structure of the Norwegian, Alaskan and Albertan oil funds and sets out various options for how a Scottish oil fund might operate.

Studies have shown that successful oil funds tend to share key characteristics: the rules for the funds are generally simple and transparent, there is a commitment to invest in the fund on a regular basis, the fund managers operate a diverse investment strategy with a focus on long term wealth creation and all those involved in the operation of the fund, from managers to politicians, are accountable to the relevant legislature and the general public. Public support for the fund is viewed as critical to its success.

This chapter discusses seven important policy issues for a Scottish oil fund:

- establishing the fund
- aims and objectives;
- basic framework and management;
- investment strategy;
- investment portfolio;
- transfers from the fund; and
- using the fund income.

5.1 Establishing the Fund

The creation of an oil fund for Scotland would require appropriate legislative and legal authority. Currently, fiscal, economic and monetary policy, including oil and gas taxation, is reserved to Westminster. Creation of an oil fund for Scotland would, under the current devolution settlement, require legislation by the UK Parliament. Independence would enable the Scottish Parliament to set up an oil fund for Scotland. This would also be possible under some forms of greater fiscal autonomy. As oil and gas revenues contribute to the total pot of UK fiscal resources, which in turn fund public services in Scotland both directly and via the block grant to the Scottish Government, it is likely that establishing an oil fund would require a change in the fiscal framework for Scotland.

The experience of other countries suggests that financial and/or political independence is not necessarily a pre-requisite for the creation of an oil fund. In the USA and Canada, responsibility for natural resource taxation is devolved to the states and provinces, enabling Alaska and Alberta to establish their own oil funds within the context of a larger political and fiscal entity.

5.2 Aims and Objectives

Once agreement has been taken in principle to establish an oil fund for Scotland, basic parameters would be required setting out the overall aims and objectives of the fund. For example, should the fund be used as a long term investment fund or as a short to medium term funding source to assist economic development?

The Norwegian and Alaskan funds are good examples of the primary focus being on the establishment of long term investment funds so as to maximise the stock of financial wealth held in the fund. The constitution in Alaska explicitly prevents the running down of the Permanent Fund's asset base (i.e. the principal) while in Norway, the long-term motivation of the fund is to create a pot of sustainable wealth that can be used to finance the country's future social security obligations. In both cases, growing the underlying asset value of the fund and ensuring that it continues to exist on a permanent basis are widely seen as the central objectives.

In contrast, the State of Alberta initially put a greater emphasis on using the fund to assist economic development. Over the 30 year life of the Alberta Heritage Savings Fund, nearly $30bn has been transferred from the fund to the Government's general purpose budget for spending on government programmes and in particular to pay for investment in infrastructure and in human and physical capital formation. No restrictions were placed on withdrawals from the fund, and in fact the opportunity to take revenues directly from the fund's asset base was a clear objective of the fund from the outset.

However, following a major restructuring of the fund in 1997, the fund has adopted a strategy more comparable with that of Norway and Alaska. The objective of the fund is now "to provide prudent stewardship of the savings from Alberta's non-renewable resources by providing the greatest financial returns for current and future generations of Albertans"[55].

Using oil funds as development mechanisms remains popular in emerging countries where the goal of short term economic growth and development lies above, for the moment, that of creating long term financial wealth.

Summary

International experience offers two main alternatives for the aims and objectives for a Scottish oil fund. The approaches are not mutually exclusive and indeed a hybrid approach, short and long term priorities, could be adopted.

Should control of North Sea Oil revenue be devolved to the Scottish Parliament to enable the creation of a Scottish Oil Fund?

What should be the principle aims and objectives of a Scottish Oil Fund?

5.3 Basic Framework and Management

Having established the broad aims and objectives of the fund, the basic framework setting out the fund's operation and governance would need to be agreed. The IMF have concluded that the 'quality of institutions in the creation of an oil fund are important determinants of successful outcomes'[56].

One option would be for the government of the day to set out the fund's objectives and overall investment strategy, but to delegate operational management to an institution

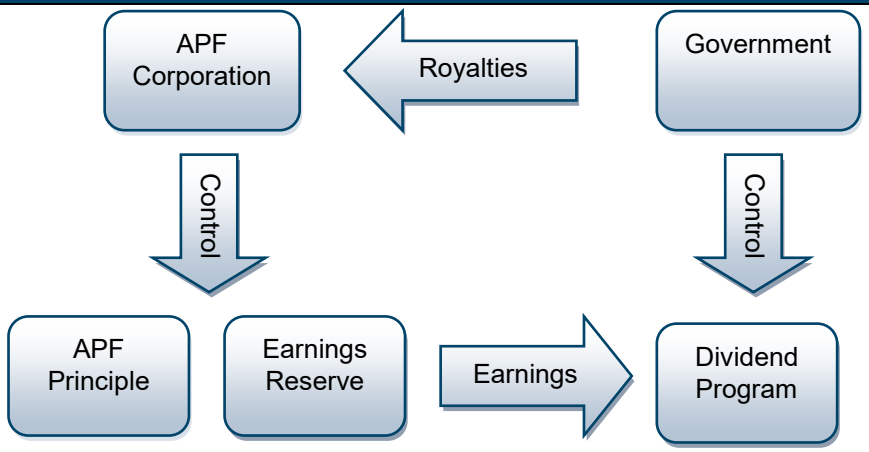
[55] Alberta Heritage Saving Trust Fund - http://www.finance.alberta.ca/business/ahstf/index.html
[56] See 'The Role of Fiscal Institutions in Managing Oil Revenue Booms', International Monetary Fund, 2007.

independent or quasi-independent of government. A key challenge with this approach would be to maintain a balance between independence and accountability. A system of checks and balances, including independent audit and detailed reports could be created to maintain transparency and political accountability.

The Alaskan Permanent Fund is managed by a quasi-independent state entity, the Alaska Permanent Fund Corporation (APFC). A six-member, governor-appointed Board of Trustees oversees and is ultimately responsible for the performance of the APFC. While two of the Board's members are incumbent government Ministers, the remainder are appointees from the private sector selected for their competence and expertise in finance and investment management[57]. To maintain independence, appointments are staggered over four year terms.

The structure of the Alaskan Permanent Fund is outlined in Figure 22 below.

Figure 22: Structure of Alaskan Permanent Fund



Source: Warrack & Keddie (2000), "Alberta Heritage Fund vs. Alaska Permanent Fund: A Comparative Analysis," and 'An Alaskan's Guide to the Permanent Fund'

The balance of independence and accountability is maintained through a number of channels including the requirement that the APFC report to various audit and financial committees of the Alaskan legislature and the fact that the entire State legislature is required to approve the APFC's budget each year. Furthermore, as the APFC is effectively an investment company operating on behalf of all Alaskans, it is a requirement that the fund should present detailed reports setting out its operations, costs and performances in a manner that is readily accessible to the general public.

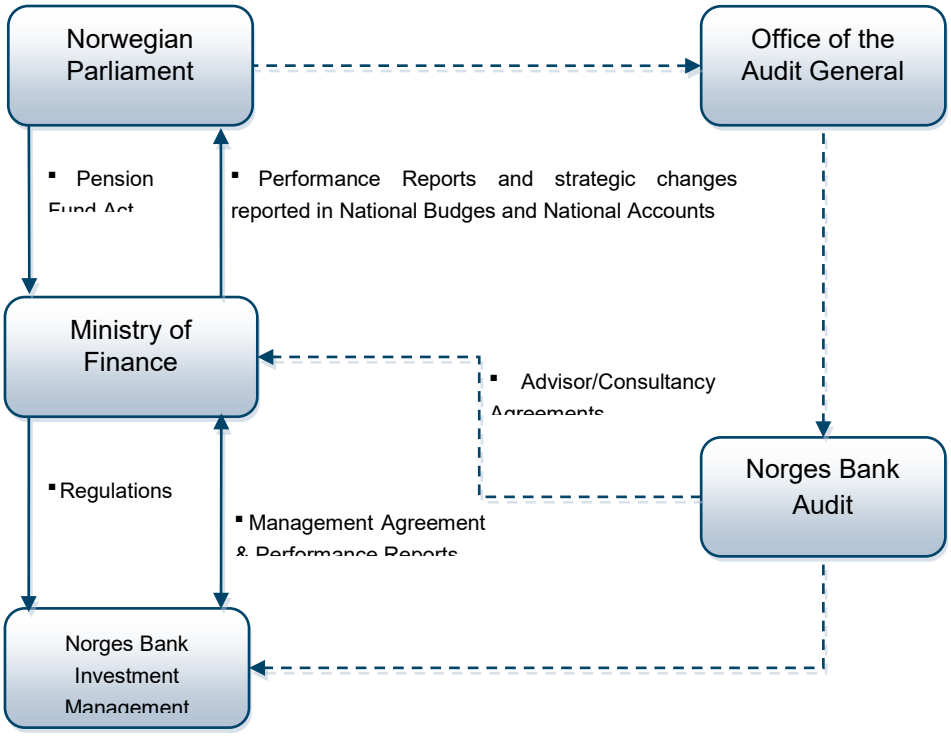
A slightly different structure exists in Norway. The basic framework for the Fund's operation is set out by the Norwegian Parliament. The Fund's auditors also report directly to the Parliament, ensuring Parliamentary oversight of the Fund's operations. The Fund's guidelines, benchmark performance and risk limits are set by the Finance Ministry with operational management devolved to Norges Bank Investment Management (NBIM), a division of the Norwegian Central Bank[58]. The degree of independence of the fund is however, less than that in Alaska as the fund is fully integrated into the government budget. Accountability is achieved through a combination of transparency and formal rules of monitoring. Under the general rules setting out the operation of the fund, Norges Bank is

[57] See 'An Alaskan's Guide to the Permanent Fund' for further details.
[58] Norges Bank was chosen for several reasons including the bank's knowledge of the constitutional set up and background of the Fund; the close relationship between the fund mechanism and monetary policy; and the Bank's experience in managing exchange reserves.

required to submit quarterly reports on the fund's performance to the Ministry of Finance, and reports to a private sector company hired by the Ministry which monitors in detail the financial transactions of the fund's managers.

The structure of the Norwegian oil fund is outlined in Figure 23 below.

Figure 23: Structure of Norwegian Oil Fund



Source: http://www.cepii.fr/francgraph/communications/pdf/2008/250908/eriksen.pdf

It is generally accepted that the establishment of independent institutions to manage the oil funds of Norway and Alaska has been a success – see Hannesson (2001)[59].

An alternative option would be for the fund to be managed and operated by officials and Ministers within the Scottish Government. Such funds are known as informal funds.

This management approach has been adopted in Alberta. The Alberta Heritage Savings Fund is run by the Ministry of Finance and at the discretion of the provincial government. While the investment portfolio of the fund is managed by professionals in the Investment Management Division (IMD) and external managers are employed to manage specific investment mandates, the Ministry of Finance has ultimate management responsibility for the operation of the fund including its investment policies and overall structure.

In this model, accountability would be more directly linked to the political process and the various checks and balances of the Parliamentary system.

Transparency can be achieved through a number of avenues. Both the Norges Bank and the APFC publish detailed reports on the management of their respective funds. The reports

[59] R. Hannesson (2001), 'Investing for Sustainability: The Management of Mineral Wealth', Kluwer Academic Publishers.

provide figures on investment dealings, annual returns as well as detailed breakdowns of the running costs of the fund such as management fees, salaries and bonuses. In this regard, the funds operate as a normal private sector investment fund reporting to shareholders.

The Alberta Heritage Savings Fund differs from the other two funds and transparency, like accountability, is maintained primarily through the political process. For example, the Albertan Minister of Finance is required to report on the performance of the Fund on a quarterly basis and to provide a detailed annual report at the end of each fiscal year. The Standing Committee on the Alberta Heritage Savings Trust Fund conducts public meetings to inform the general public of the operation of the fund.

Summary

The key advantage in setting up an oil fund as an independent institution is that it can help insulate the fund from short term political pressure and allow the day to day management of the fund to be conducted by experts in the field.

Furthermore, creating a separate institution challenged to meet specific long term goals can provide a clear focus for the operation of the fund and facilitate maximum public support. The key advantage of an internal management model is the direct element of accountability in the operation of the fund via the political process.

The degree of transparency in the operation of oil funds is thought to play a vital role in their long term success and it is claimed that one of the main reasons for the success of the Norwegian oil fund is its high level of transparency[60]. The fund scored 100 percent for governance, accountability and transparency in a recent study by the U.S.-based Peterson Institute for International Economics[61] .

What do you believe would be the most appropriate institutional and managerial framework for a Scottish Oil Fund?

5.4 Investment Strategy

Once established, a key decision in the operation of an oil fund for Scotland would concern when and how transfers would be made into the fund. Once again, the experiences of Norway, Alaska and Alberta offer some important insights –

Ad hoc transfers

Under this approach, payments would be made to the fund on an informal basis. For example, if there was an unexpected 'windfall' in any given year, perhaps due to an unexpected increase in the price of oil and gas, this money could be transferred into the fund.

This approach is currently adopted in Alberta. Initially the Alberta Heritage Savings Fund was allocated 30 per cent of the non-renewable resource revenue received by the Government of Alberta. This continued until 1982-83, when this figure was reduced to 15 per

[60] IMF 2008 - Norway's Oil Fund Shows the Way for Wealth Funds
[61] Peterson Institute for International Economics - A Blueprint for Sovereign Wealth Fund Best Practices - April 2008

cent. From 1986-87 onwards a formal annual transfer was stopped and the government committed to make payments to the fund whenever possible. However, for a number of years, no payments were made. It is only within the last three years that additional money has been transferred to the fund.

Invest when budget is in surplus

An alternative would be to commit to invest any proceeds from a budget surplus directly into the fund.

This is the model adopted in Norway. This ensures that revenues are not invested into a fund at the expense of reduced spending on other government programmes or the creation of government debt. It also means that investment in the fund responds to changes in the business cycle, with greater revenues invested when the economy is performing strongly and less being invested during periods of economic downturn.

By explicitly setting up a fund, an alternative is offered each year with regard to spending levels; either to spend more or invest in the fund. Such a choice does not exist or is not offered to the public in a country without an oil fund.

The UK fiscal position, including North Sea revenues, is currently in deficit. Only 8 occasions since 1963-64 has the UK fiscal position, including North Sea revenues, been in surplus[62]. This suggests that the relationship between public sector expenditure and revenues has been such that, under this investment model, transfers could only have been made with increased borrowing and/or higher (lower) taxation (expenditure).

A possible downside with this investment strategy is that through time, the level of oil and gas reserves may themselves become a driver of the overall size of the public sector budget, which may well be undesirable.

Invest fixed proportion

A different approach would be to allocate a fixed proportion of oil and gas revenues to the oil fund each year, irrespective of the government's wider fiscal position.

In Alaska, 25% of the auctions for new leases and state mineral royalties are automatically transferred into the Alaska Permanent Fund. The automatic transfers exclude severance taxes, so the transfer as a share of total oil revenues is approximately 10-15%. In addition, while the mandatory amount must be transferred each year, in practice the government has elected to make extraordinary payments into the fund on a number of occasions.

Summary

These options each have their advantages and disadvantages. Committing to invest a certain proportion of total revenues each year guarantees a consistent transfer of resources to the fund. However, this rigidity can be a disadvantage in that it does not account for short term fluctuations in oil and gas prices and/or the economic cycle.

In contrast, undertaking ad hoc payments and/or only investing when in surplus ensures that payments are made only when it is economically and financially prudent to do so. However,

[62] http://www.hm-treasury.gov.uk/public_finances_databank.htm

pressures may result in less money being allocated to the fund than is optimal, while the level of oil and gas reserves may themselves become a driver of the overall size of the public sector budget.

A possible variant on these approaches would be to combine a rigorous commitment to investing a certain share of oil and gas revenues while allowing for short term flexibility in the amount actually transferred each year. For example, a framework could be adopted whereby the government was required to invest a fixed proportion of oil and gas revenue over the economic cycle (or a specified fixed time period) but annual payments could vary depending upon the economic and fiscal climate (a form of 'golden rule').

What form of investment strategy should be adopted for transferring revenue into a Scottish Oil Fund?

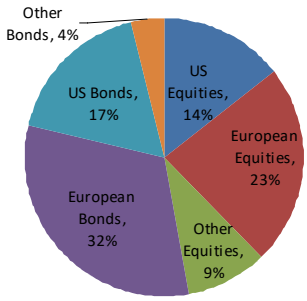
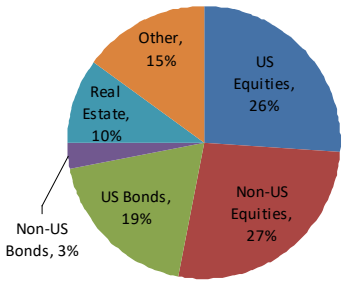
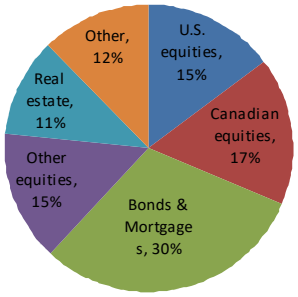
5.5 Investment Portfolio

Having decided upon how much to invest in the fund in any given year, the fund's managers would be required to set out a strategy for investing the fund's wealth.

The over-arching investment strategy of the Norwegian, Alaskan and Albertan oil funds is to achieve high financial returns subject to moderate risk. Clearly there are a number of ways that this can be achieved.

The pie charts below highlight the investment portfolios of the three funds.

Figure 24: Portfolio Allocations of Selected Oil Fund

Norway Pension Fund Portfolio 2007-08	Alaska Permanent Fund Corporation Portfolio 2008	Alberta Heritage Savings Fund 2008
		

Sources: Norges Bank Investment Management. Annual Report 2007 - Section 3
Alaska Permanent Fund Investment Portfolio 2008
Alberta Heritage Savings Trust Fund – First Quarter Update 2008

The Norwegian model is relatively unique in that that the fund is invested only in financial assets outside Norway. The aim of this strategy is to ensure that the fund's operations do not feed through to the Norwegian economy and create fluctuations in the exchange rate and interest rate. As the Albertan and Alaskan Funds operate within wider currency unions, this issue is of less importance.

Ethical investments

An interesting feature of the Norwegian model is the establishment of 'ethical guidelines'. Under this commitment, all investments made by the Norwegian oil fund are subject to strict guidelines governing the companies into which the fund can invest[63].

The guidelines stipulate that the Fund should be used to encourage companies to reduce ethical infringements. The Norwegian Parliament generally hopes to achieve this through normal shareholder practices such as the application of voting rights. In addition however, the Parliament also reserves the right to exclude certain companies from the fund's available investment portfolio if they deem them to be in significant breach of their guidelines. The 2007 NBIM Annual Report lists 27 companies which have been excluded from the fund since 2002[64].

Summary

Ultimate responsibility for the investment portfolio of the fund would lie with the fund's managers. However, from the experience of other countries it is likely that the government/parliament would determine the benchmark performance and target asset allocation of the fund. As with any investment strategy, a balance would be required to be struck between risk and return. All three of the funds studied adopt similar approaches with the relative weight of investment balanced in favour of reducing risk to the underlying asset base. Despite this, the funds have managed to obtain healthy annual returns. The operation of ethical guidelines offers an additional policy choice.

What investment strategy and portfolio allocation should be implemented by a Scottish Oil Fund?

Should a Scottish Oil Fund adopt ethical guidelines to govern the types of investment undertaken?

5.6 Transfers from the Fund

Once established and investments have been made into the fund, a decision would be required on how much to withdraw from the fund each year.

No withdrawals

One option would be to prevent any withdrawals from the fund unless under exceptional circumstances. This would allow the value of the fund to increase significantly.

[63] Norwegian Ministry of Finance - Ethical Guidelines for the Government Pension Fund - Global
[64] Norges Bank Investment Management Annual Report 2007

Variable transfers

An alternative would simply be to allow the transfer of money from the fund as and when the trust, government or parliament deemed appropriate. In Alberta, revenue can be raised either through income from the fund or from the fund itself.

Nominal returns

In most years, the fund would be expected to make returns on its investments. These returns could be transferred from the fund for spending on government programmes. Until 1997, the Alberta Heritage Savings Fund automatically transferred all income, including income from capital gains, to the government budget[65].

Real returns

A downside with transferring the nominal returns is that without 'inflation proofing' the real value of the fund would decline. Indeed this has been the case in Alberta where the real value of the fund has fallen – see Figure 21.

To maintain the real value of the fund, one option would be to draw down no more than the real returns from the fund each year and reinvest the remaining returns in the fund to ensure the purchasing power of the fund remains constant.

This is the approach adopted in Alaska. The Constitutional Amendment establishing the Alaska Permanent Fund separates the fund into two elements: the principal (i.e. the underlying asset value of the fund) and income (i.e. the wealth generated from the fund's investments). The Constitutional Amendment requires that the principal of the fund is protected. Additional legislation ensures that a share of the fund's income is re-invested into the fund for 'inflation proofing', while a further amount is kept in a reserve account to cover periods when the fund's returns are smaller than anticipated. The remainder is then left to be transferred from the fund[66].

Since 1997, the Albertan Fund has placed increased importance on inflation proofing and provision has been made to re-invest a share of the nominal returns from the fund's investments each year.

Expected real returns

Transferring only the real returns from the fund can lead to fluctuations in the annual payments out of the fund each year with higher revenues being transferred during successful years and lower revenues during economic downturns. Unfortunately, this mechanism works in exactly the opposite direction to when the income could be used most effectively.

To ensure a degree of predictability, one option would be to transfer from the fund the annual expected real returns from the fund – i.e. a fixed proportion each year.

This is the approach adopted by the Norwegian oil fund. The NBIM estimate an expected real return of 4 per cent on the fund's investments and in theory, withdrawals from the fund are not meant to exceed this level. However, as the fund is fully integrated with the Norwegian Government Budget, in practice the value of the fund is determined by the

[65] Warrack, A. (2005) – Alberta Heritage Fund: Blessing Becoming Curse?"
[66] Unlike other funds, only realised earnings can be removed from the Alaska Permanent Fund. Unrealised gains - generated when the market value of an asset increases - are considered part of the principal and cannot be withdrawn.

government and legislature of the day. In theory, if a sufficiently large deficit is run over a long enough period, this can deplete the value of the fund. Indeed there have been a number of years where withdrawals have exceeded the expected real return in response to budgetary pressures[67] [68].

Summary

There may be an advantage in limiting transfers from the fund in the period immediately following the establishment of the fund, to ensure maximum growth in its value prior to oil and gas reserves being exhausted.

In practice withdrawals are made from all funds. Given this, there are clear advantages in transferring out from the fund no more than the real returns, whether this is conducted on an ad hoc basis or part of a formal commitment. This would ensure that the underlying asset value of the fund is maintained. As the real return will vary year to year depending on the performance of the fund's investment portfolio, both the Alaskan Permanent Fund and the Norwegian Pension Fund have attempted to ensure stability by focussing either on the expected real return or the average return over a number of years. The potential risk is that if the actual returns are persistently below the expected return then the real value of the fund could be diminished.

5.7 Using the Fund Income

Finally, having decided how much income to transfer from the fund an obvious question would concern how best to spend the income generated.

General expenditure

One option would be to transfer the income from the fund to the general government budget for non-ring fenced expenditures. This is the approach taken in Norway.

Ring-fenced expenditure

An alternative would be to ring fence the revenues for particular expenditures, such as the development of infrastructure or the expansion of human and physical capital stocks.

This is the approach adopted in Alberta. Revenue from the fund is used to help pay for priority programmes in areas such as health care, education and public infrastructure. The fund is also the main source of funding for endowment funds such as the Alberta Heritage Scholarship Fund and Alberta Heritage Foundation for Medical Research Endowment Fund[69].

In practice, the division between general and ring-fenced expenditures may be more apparent than real.

[67] Ministry of Finance (2006), The Norwegian Petroleum Sector and the Government Pension Fund – Global.

[68] A variant on this approach is adopted in Alaska, where transfers from the fund are made on the basis of the average real return over the previous five years.

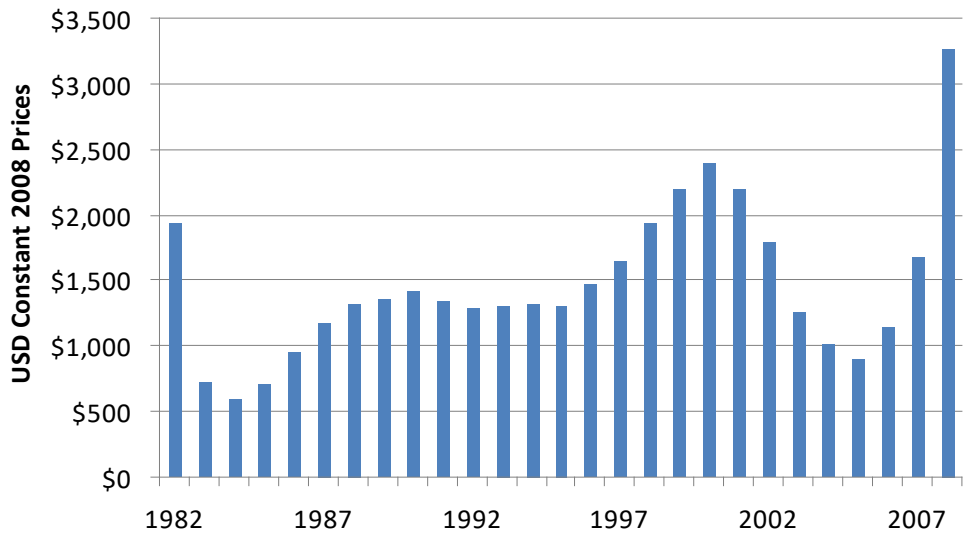
[69] Alberta Heritage Savings Trust Fund – Annual Report 2007-08.

Dividends

A completely different approach would be to follow that taken by Alaska. Income from the Alaskan Permanent Fund is paid directly to qualified Alaskan residents in the form of an annual dividend payment.

Between 2000 and 2008 the dividend averaged $1,700 a year in real terms. Since its inception, over $17bn (in nominal terms) has been dispersed through the programme – see Figure 25[70]. Such a scheme has proved to be extremely popular amongst Alaskans.

Figure 25: Alaska Permanent Fund Dividend Per Resident (1982 to 2008) (2008 Prices)



Source: Alaska Permanent Fund Corporation
Note: 2008 figure includes an additional $1,200 Alaska Resource Rebate
Figures were deflated using OECD GDP Deflators, OECD Economic Outlook

In 2005, the Albertan Government paid out $400 CAD per person in a move seen as the first formal 'dividend' payment from oil and gas revenues. The money did not come directly from the Alberta Heritage Savings Fund and the payment has yet to be repeated.

Endowment Fund

In addition to ring fencing expenditure from its oil fund, Alberta has created a number of subsidiary funds for specific purposes. These include the Alberta Heritage Scholarship Fund and Alberta Heritage Foundation for Medical Research Endowment Fund.

The Alberta Heritage Scholarship Fund was created using income from the Alberta Heritage Savings Trust Fund and other sources. The income generated by the fund is used to sponsor a range of academic scholarships and bursaries. Alberta Heritage Foundation for Medical Research, which was created in 1980 using revenue from the Heritage Trust Fund. The fund is used specifically to support biomedical and health research at Alberta

[70] Alaska Permanent Fund Corporation – Annual Report 2008

universities and related institutions. The fund is now worth $1.5 billion and was able to support 250 researchers in Alberta during 2008[71].

Summary

The experience of Norway, Alberta and Alaska offers a clear philosophical difference regarding how the wealth generated from an oil fund should be spent. In Norway and Alberta, the returns from the fund are transferred to the government budget and the government of the day decides how best to spend the money. In contrast, through its public dividend policy, individual citizens in Alaska decide how best to spend the fund's returns.

The operation of oil funds in Norway, Alaska and Alberta offer a number of different options for the potential operation of an oil fund for Scotland. The most important decisions to be undertaken would include the fund's management structure, financing programme and transfers of resources.

How could the income generated by a Scottish Oil Fund be used most effectively?

Should a proportion of the income accruing from the Fund be used to create a specific endowment fund to provide support for areas such as education or the voluntary sector?

[71] Alberta Heritage Foundation for Medical Research - Annual Report 2008

6 Conclusions

This discussion paper has examined the oil and gas industry in the UK and Scotland and surveyed oil funds internationally to identify issues relevant to the operation of a similar fund for Scotland. This chapter outlines the main preliminary conclusions.

Preliminary conclusions

A number of preliminary conclusions can be drawn from this discussion on the potential scope for an oil fund for Scotland.

Firstly, significant revenues have been extracted by the UK Exchequer from the North Sea oil and gas reserves. Unlike most other countries with substantial reserves of finite natural resources, the UK Government has yet to establish a fund where a proportion of these proceeds are invested over the long term. While reserves of oil and gas in the North Sea are in decline, it is estimated that there remain significant assets which have yet to be fully developed. This offers the potential for significant revenue and income generation from the North Sea in the years ahead.

Secondly, economic theory suggests that there are a number of advantages arising from the establishment of an oil fund. These include the opportunity to create sustainable wealth, facilitate economic development over the long term, enhance economic stability and ensure that the benefits of a country's natural resources are shared between current and future generations. However, the establishment of an oil fund necessarily implies a commitment to limit current consumption in favour of investment over the longer term which would need to be addressed.

Thirdly, under the current constitutional settlement, fiscal, economic and monetary policy, including oil and gas taxation, is reserved to Westminster. However, the experience of Alberta and Alaska suggests that there are precedents of sub-national governments having the autonomy to establish such funds.

Fourthly, the potential value of an oil fund for Scotland could be substantial. The actual value of such a fund would depend upon a number of factors, including the level of initial investment, the number of years of investment, the returns received on the fund's investments, and the extent of any withdrawals from the fund. The operation of oil funds in other countries offers a number of important insights for the possible establishment of a similar fund for Scotland. International evidence shows that most funds attempt to preserve the real value of the principal by imposing guidelines on how much can be withdrawn from the fund. More widely, key options include whether to set-up the fund independently or as part of the government of the day and how transfers both in and out of the fund should be arranged.

The scope to invest a proportion of oil and gas revenues into an oil fund for Scotland is open to debate. However, the experience of other countries and their ability to create and maintain a successfully operated fund is perhaps the greatest lesson and motivation for Scotland.