HM Government

Scotland analysis:
Fiscal policy and sustainability

May 2014

Scotland analysis: Fiscal policy and sustainability

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Executive summary

The United Kingdom is one of the most successful fiscal, monetary and political unions in history. It is a union that has brought benefits to all parts of the UK. The UK's fiscal union enables all nations and regions of the UK to pool financial resources, benefit from shared public spending, manage financial risks and borrow as a single and credible participant in international financial markets.

Since the Scotland Act 1998, the UK Government has devolved responsibility for some 60 per cent of Scotland's public spending to the Scottish Parliament. And following the Scotland Act 2012, the Scottish Parliament will be responsible for funding around one-third of its spending. Fiscal devolution is taking place while retaining the overall coherence and integration of the UK's tax and spending system. Independence would mean the end of devolution and the UK's fiscal union.

This paper examines the outlook for Scotland's public finances and sets out the financial implications of independence for Scottish households and businesses. It finds that Scotland's future public finances would be substantially stronger were Scotland to remain part of the UK. This conclusion is consistent with findings from independent experts such as the Institute for Fiscal Studies (IFS) and the National Institute of Economic and Social Research (NIESR).

The analysis shows that the benefit for people in Scotland of remaining part of the UK – the "UK Dividend" – is worth around £1,400 per person[1] every year over the 20 years from 2016-17. This is the amount that each person in Scotland would be better off by every year, from lower taxes and sustained public services as part of the UK.

Scotland's current public finances

Scotland's onshore economic output per person (i.e. excluding the offshore oil and gas sector) is the third highest of any part of the UK and is only slightly smaller than the UK average. As a result, it has generated slightly lower tax revenues per person, excluding oil, than the UK average since devolution in 1998. Over the same time period public spending per person in Scotland has been around 10 per cent higher than the UK average. This means that Scotland's budget deficit excluding oil has been significantly higher than the UK average.

In the event of independence, the allocation of North Sea oil and gas revenues would be subject to negotiation. On the basis of a geographic apportionment, the additional tax revenue from the North Sea had been, on average, broadly equivalent to the additional spending in Scotland.

[1] In 2016-17 prices. Summed across the Scottish population, this equates to 4.4% of Scottish GDP, which is the permanent adjustment required to borrowing (excluding net interest payments).

Therefore, until recently, Scotland's fiscal position had been broadly the same, on average, as the UK's since devolution in 1998.

In other words, Scotland's fiscal position already relies on spending all of the revenues from a geographic share of the North Sea. So there would be no fiscal benefit from independence: the revenues can't be spent twice. Instead, because the revenues from the North Sea have fallen sharply, but public spending has not, Scotland benefits from being part of the UK. Within the Union, that benefit will continue to increase, as declining North Sea revenues are smoothed across the whole of the UK, without Scottish public spending having to fall.

As part of the UK, the UK's fiscal union also shields Scotland from the volatile nature of oil and gas revenues. Scotland's fiscal position has been much more volatile on a year-by-year basis due to its greater exposure to large fluctuations in North Sea revenues. As part of the UK, the Scottish Government receives stable and secure levels of funding, and is able to pursue its own policies in relation to key public services such as health, education, housing, policing and transport.

Scottish Government estimates show the effect of volatile and declining oil receipts on Scotland's fiscal position. Largely as a result of a 40 per cent annual fall in oil receipts, Scotland's budget deficit in 2012-13 was around one percentage point of GDP larger than for the UK as a whole.[2] And oil receipts fell by a further 25 per cent in 2013-14. As tax revenues from oil and gas continue to decline, this gap is expected to widen. Independent experts[3] forecast Scotland's fiscal position in 2016-17 to be over 5 per cent of GDP in deficit in 2016-17, while the UK's deficit is forecast to be less than half this level and falling. This is equivalent to a gap of £1,000 per person in Scotland, on day one of independence. As is discussed later, policy action of more than this amount would be required to deal with the subsequent fiscal challenges an independent Scotland would face, and to fund the additional direct costs of independence.

A noteworthy lesson from history, not least the eurozone crisis, is that governments who are not open, transparent and credible about their fiscal positions will not win the trust of investors. In the absence of up-to-date tax and spending projections from the Scottish Government, HM Treasury has used this £1,000 per person 'starting gap' in its projections, based on the consensus view from independent experts. HM Treasury projections over the next 20 years are constrained by the absence of any long-term fiscal analysis from the Scottish Government. Instead, the underlying data, methodology and assumptions are underpinned by analysis from a range of independent experts.

The outlook for Scotland's public finances

The public finance projections in this paper follow the same approach taken by the Office for Budget Responsibility (OBR) in its Fiscal Sustainability Report (FSR) for the UK. The projections show that, in the years ahead, an independent Scottish state would face a substantially greater fiscal challenge than if Scotland remains part of the UK. This conclusion is consistent with analysis from the IFS,[4] NIESR[5] and other independent experts. These greater fiscal challenges are driven primarily by:

- the continued decline in North Sea oil and gas tax revenues; and
- a more rapidly ageing population than the rest of the UK, driven by a shrinking working age population. The effect will be to place increasing pressures on pensions and other age-related spending, and reduce economic growth and tax revenues.

[2] Scottish Government, GERS 2012-13, and historical series, March 2014

[3] Including the Institute for Fiscal Studies and the Centre for Public Policy for Regions.

[4] IFS (2013), "Fiscal sustainability of an independent Scotland"

[5] NIESR (2014), "Assets and liabilities and Scottish independence"

Managing the fiscal effects of the benefits of natural resources and an ageing population are exactly the sorts of challenges that fiscal unions, such as the UK's, are able to smooth over long periods of time. For example: differences in regional demographics; the benefits of windfalls in coal and oil revenues; and lower debt interest costs from low borrowing rates, have and continue to be shared across the UK. At various times in the history of the Union, different nations will have 'paid in' or 'drawn out'. But over time, everyone is stronger for having the insurance and economies of scale that the UK's fiscal union, large economy and credible institutions provide. Resources and risks are more easily pooled and shared across the UK's 31 million taxpayers and 4.8 million businesses[6] than they would be by Scotland's 2.6 million taxpayers and 320,000 businesses.[7] Sharing these future fiscal challenges together is part of the UK Dividend for people in Scotland.

The effects of independence on Scotland's public finances

In the event of independence, Scotland would need to establish its own tax system and fund all public spending commitments, including through borrowing from investors in international financial markets when necessary. Transition costs and (as estimated by independent experts) higher interest rates for government borrowing have been included in the public finance projections in this paper. Transition costs are estimated to be 1 per cent of GDP although the costs of setting up new institutions may well be more, and the premium on government borrowing costs of 1.2 per cent is in the middle of the range estimated by NIESR.

However, the NIESR analysis assumed that an independent Scotland was within a formal sterling currency union with the continuing UK. Since NIESR published its estimates the UK Government has received published HM Treasury advice stating that, "On the basis of the scale of the challenges, and the Scottish Government's proposals for addressing them, HM Treasury would advise the UK Government against entering into a currency union".[8] As a result, the Chancellor of the Exchequer set out that, "I could not as Chancellor recommend that we could share the pound with an independent Scotland."[9] The Chief Secretary to the Treasury and the Shadow Chancellor have both taken the same view.

The fiscal analysis in this paper reinforces that conclusion. As set out in *Scotland analysis: Assessment of a sterling currency union*, the position of the public finances matters for the stability of a currency union because it reflects governments' fiscal capacity to respond to an economic shock. The projections in this paper for persistent and substantial deficits and elevated debt levels in an independent Scotland are one of several key factors that weigh strongly against agreeing to a currency union. This is because it would raise serious questions about the ability of the governments to sustain the currency union under stress.

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6 Taxpayer data for 2011-12 from HMRC's Personal Incomes Statistics. Business data from BIS (2013), "Business population estimates for the UK and regions"

7 Taxpayer data for 2011-12 available on request from HMRC's Personal Incomes Statistics. Business data from BIS (2013), "Business population estimates for the UK and regions"

8 Scotland analysis: Assessment of a sterling currency union

9 Chancellor on the prospect of a currency union with an independent Scotland

The effects of the current Scottish Government's proposed policies

For an independent Scottish state, HM Treasury public finance projections also include the firm policy commitments set out by the current Scottish Government in its recent White Paper. The projections therefore go further than the IFS report on Scotland's fiscal sustainability, which did not incorporate the impact of the current Scottish Government's policy commitments or all the additional direct costs of independence.

Where possible, estimates of the direct fiscal costs of the policies proposed by the Scottish Government in *Scotland's Future*[10] are included in the public finance calculations. Estimates of the possible economic effects of these policies, which may reduce their fiscal cost, are also included. The policies accounted for in the fiscal calculations include:

- a lower defence spending budget of £2.5 billion, including the savings from not contributing to the costs of Trident replacement;
- a reduction in the headline rate of Corporation Tax to 3 per cent below the UK rate (with no continuing UK Government response);
- additional childcare provision;
- a 50 per cent reduction in Air Passenger Duty; and
- higher net migration.[11]

The total direct fiscal cost of the Scottish Government's first and second term policy firm commitments is estimated to be £1.6 billion a year (in 2011-12 prices), with a small offsetting increase in revenue, attributable to the cut in corporation tax and an impact on employment from the childcare policy. Incorporating these effects, the sum total effect of the Scottish government's policies would be to widen further the gap between an independent Scotland's public finances relative to the UK if Scotland remains part of the Union.

The 'UK Dividend': Lower taxes and higher public spending for people of Scotland as part of the UK

As such, a part of the UK, Scotland is projected to be able to have lower tax or higher spending than under independence. This UK Dividend is estimated to be worth £1,400 per person in Scotland[12] in each year from 2016-17 onwards. Under independence, the loss of the UK Dividend would mean £1,400 per year for each Scottish person in higher taxes and lower public spending (over and above the current UK Government's fiscal consolidation plans).

The UK Dividend comes from a number of different components, as shown in the chart below. The majority of the dividend comes from higher public spending in Scotland and lower onshore tax revenues at present and by 2016-17, that are not covered by higher oil revenues. Over the following 20 years, remaining part of the UK would insure people in Scotland against the fiscal costs of an ageing population and declining oil revenues. The UK Dividend also includes people in Scotland avoiding the direct costs that would come with independence. These include the costs of higher interest rates for an independent Scottish state to borrow, the net costs of setting up new institutions, and the net costs of funding the Scottish Government's White Paper policies (including the potential economic benefits).

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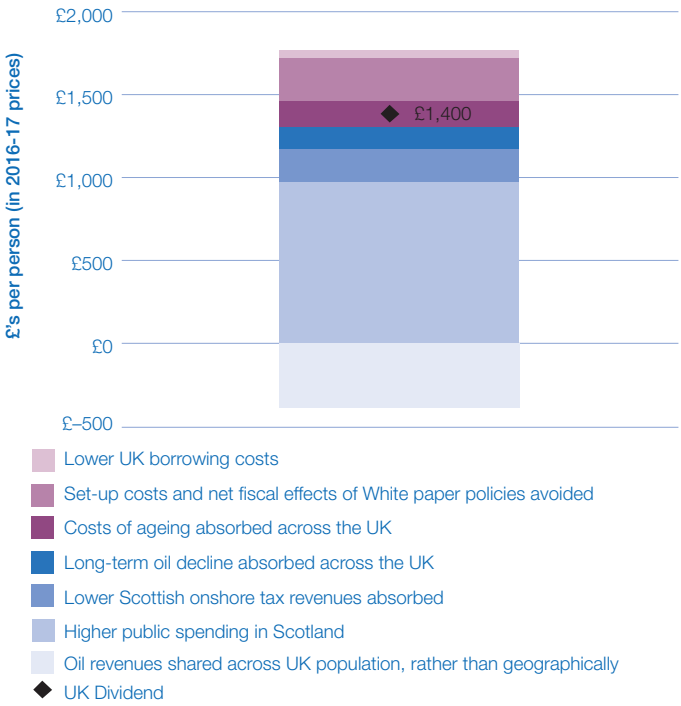
[10] Scottish Government (2013), "Scotland's Future: Your guide to an independent Scotland"

[11] The projections for an independent Scotland use the ONS 2012 principal migration assumption of 15,500 net migrants into Scotland per year in the long-term. The projections for the UK use the ONS 2012 "low" migration assumption. The "low" migration assumption for Scotland is for 7,000 net migrants per year in the long-term.

[12] In 2016-17 prices.

The UK Dividend of £1,400 per Scottish person explained



Source: HM Treasury calculations.

These estimates take a favourable view of some of the likely fiscal consequences of independence. The Dividend from staying part of the UK could be relatively higher if, for example:

- Scottish migration in the longer term was lower than the 15,500 net in-migrants per year assumed in these projections. For example, the IFS assume a long-run immigration rate of 7,000 net in-migrants each year;[13,14]
- the premium on government borrowing was greater than 1.2 percentage points, as many independent experts predict it could be;
- the legislated rise in the State Pension age is delayed in an independent Scotland;
- productivity growth was lower for Scotland than that assumed by the OBR for the UK;
- as has often been the case in recent years, oil revenue falls short of the OBR's forecasts; or
- the projection period considered was longer than 20 years, since, as the IFS show, the gap between the public finances of the UK and Scotland is projected to widen beyond 2035-36.

An independent Scotland's relatively large budget deficit at the point of independence would mean that Scotland's debt as a per cent of GDP would be likely to be on an increasing path from year one. In contrast, the OBR forecasts UK debt to be falling from 2016-17 and the UK to be in budget surplus by 2018-19. In the event of independence, the allocation of the national debt would be subject to negotiation. The UK Government has stated its clear position that an independent Scottish state would become responsible for a fair and proportionate share of the UK's current liabilities. A population split of national debt at the end of 2015-16, would mean an

[13] 2012 ONS population projections

[14] If the government of an independent Scotland was unable to influence the age profile of the immigrant population this could lead to greater numbers of immigrants who were economically inactive and thus not paying taxes.

independent Scotland took on debt of around 74 per cent of its GDP.[15] HM Treasury projections use this as the debt 'starting point' for an independent Scotland. They show that due to the persistently large annual budget deficits, debt quickly reaches unsustainable levels without policy action.

The Scottish Government has argued that an independent Scotland would achieve higher levels of growth as an independent country, which would reduce the size of the required fiscal consolidation. HM Treasury projections incorporate estimates of the potential positive economic effects from the Scottish Government's White Paper policies. Even taking these effects into account, growth in an independent Scotland would need to be over 50 per cent higher on average every year over the first 20 years of independence to offset the debt gap from independence. This would be greater than anything Austria, Belgium, Canada, Denmark, France, Finland, Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, or the USA has achieved over the last 20 years.[16]

This is likely to be a favourable estimate of the additional growth required since it assumes that public spending does not increase in line with the additional GDP (as has typically been the case in advanced economies), yet tax receipts do. In fact, public spending is assumed to be lower still due to debt interest savings from the higher tax revenues. As such, public spending is assumed to be at 36 per cent of GDP in 2035-36, instead of over 48 per cent in HM Treasury's projections. For comparison, the level of public spending in the US in 2013 was 38 per cent of GDP.

Scotland's tax and spending

Under independence, the loss of the UK Dividend of £1,400 per Scottish person per year could come in a number of forms of higher taxes and reduced public services.

Maintaining public services

To continue to provide similar levels of public services over the next 20 years, an independent Scotland would need to increase all onshore tax revenues by 13 per cent from the start of independence. To illustrate the scale of this increase,[17] this would be equivalent to setting a 28 per cent basic rate of income tax, a 26 per cent standard rate of VAT, and increasing the main duties (on alcohol, tobacco, fuel and vehicles) by almost 40 per cent.

As part of the UK, Scotland will be able to support similar levels of public services with lower levels of tax. In particular, while the Scotland Act 2012 will provide the Scottish Government with further powers to vary tax and spending as part of the UK, an independent Scotland would need to increase tax by £1,400 per person just to maintain its current level of spending.

Maintaining levels of tax

To maintain similar levels of taxation over the next 20 years, an independent Scotland would need to reduce public spending by 11 per cent. To illustrate the scale of this change, this is equivalent to almost two thirds of Scotland's health spending. As part of the UK, with similar levels of tax, Scotland will therefore be able to continue to support higher levels of public spending by continuing to pool tax revenues.

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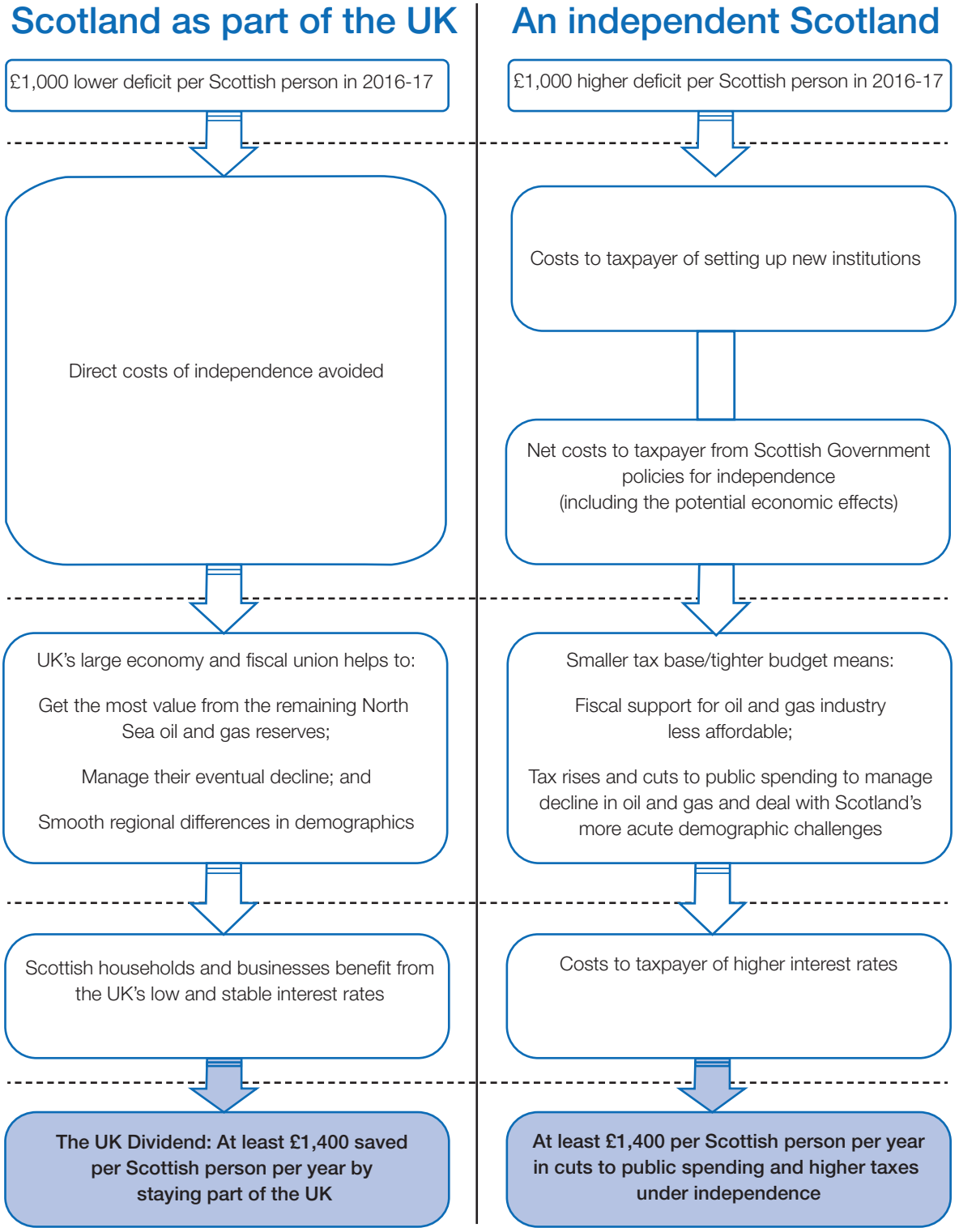
[15] This relates to public sector net debt excluding the temporary effects of financial interventions.

[16] Based on data from IMF (2014) "World Economic Outlook Database"

[17] The illustrative increases in tax rates are based on detailed HMRC outturn figures for Scotland and aim to take into account resulting changes in behaviour that reduce the additional revenue generated. However, for such large increases in rates these behavioural effects may be underestimated.


Scotland as part of the UK
An independent Scotland
£1,000 lower deficit per Scottish person in 2016-17
£1,000 higher deficit per Scottish person in 2016-17
Direct costs of independence avoided
Costs to taxpayer of setting up new institutions
Net costs to taxpayer from Scottish Government policies for independence (including the potential economic effects)
UK's large economy and fiscal union helps to:
Get the most value from the remaining North Sea oil and gas reserves;
Manage their eventual decline; and
Smooth regional differences in demographics
Smaller tax base/tighter budget means:
Fiscal support for oil and gas industry less affordable;
Tax rises and cuts to public spending to manage decline in oil and gas and deal with Scotland's more acute demographic challenges
Scottish households and businesses benefit from the UK's low and stable interest rates
Costs to taxpayer of higher interest rates
The UK Dividend: At least £1,400 saved per Scottish person per year by staying part of the UK
At least £1,400 per Scottish person per year in cuts to public spending and higher taxes under independence

Introduction

In September 2014 people in Scotland will take one of the most important decisions in the history of Scotland and the whole of the United Kingdom – whether to stay in the UK, or leave it and become a new, separate and independent state. In advance of the referendum, the UK Government will ensure that the debate is properly informed by analysis, and that the facts that are crucial to considering Scotland's future are set out.

This is the fourteenth paper in the Scotland analysis programme. It presents the UK Government's analysis of Scotland's public finances over the next twenty years. The paper examines the key factors that will influence Scotland's public finances during this period, and compares the potential financial implications of independence with Scotland's position as part of the UK.

This paper builds on the fifth paper in the series: *Scotland analysis: Macroeconomic and fiscal performance*, which highlighted how well Scotland performs as part of the union. It illustrated how the UK's fiscal union enables all parts of the UK to pool resources, benefit from economies of scale in public spending and share risks. Within this fiscal union, the UK Government has devolved responsibility for some 60 per cent of Scotland's public spending to the Scottish Parliament.

The Scottish Government therefore receives stable and secure levels of funding as part of the UK, but is able to pursue its own policies in relation to key public services such as health, education, housing, policing and transport. Changes to the Scottish Government's budget as part of the UK are determined through the long-standing Barnett formula. This will continue alongside the implementation of the Scotland Act 2012, which will provide the Scottish Government with further powers to vary levels of tax and spending in Scotland from April 2015, and lead to the Scottish Parliament being responsible for funding around one third of its spending. While the current UK Government cannot commit future governments to retain the Barnett formula, all three of the main UK political parties have made clear that no changes are in prospect.

The projections in this paper follow the same approach taken by the Office for Budget Responsibility (OBR) in its Fiscal Sustainability Report (FSR) for the UK. For an independent Scotland, the projections include the firm policy commitments set out by the current Scottish Government in its recent White Paper. The projections also include the direct impacts of independence, such as transition costs and higher government interest rates. The projections therefore go further than the recent Institute for Fiscal Studies (IFS) report on Scotland's fiscal sustainability, which did not incorporate the impact of the current Scottish Government's policy commitments or all the direct fiscal consequences of independence.

The public finance projections in this paper are underpinned by data, assumptions and techniques from a range of independent expert bodies. The projections go out to 2035-36, therefore covering the first 20 years in the event of independence. In comparison, the IFS and the OBR both project over a much longer timeframe, beyond 2060. Nonetheless, HM Treasury acknowledges that any long-term projections of public finances are subject to a large degree of uncertainty. As the OBR comment:

> *"It is important to emphasise that the long-term outlook for public spending and revenues is subject to huge uncertainties. Even backward-looking balance sheet measures are clouded by difficulties of definition and measurement. The long-term figures presented here should be seen as illustrative broad-brush projections rather than precise forecasts. Policymakers need to be aware of these uncertainties, but should not use them as an excuse for ignoring the long-term challenges that lie ahead."*[1]

The same message applies to the projections in this paper.

For ease of comparison, the projections for an independent Scotland are in pounds Sterling. In practice, an independent Scottish state would need to choose which currency it would use which does not include the option of a formal currency union with the continuing UK, which has been ruled out by all three main UK political parties.

For illustrative purposes the Scottish Government presents both a "geographical share of North Sea oil and gas" and a "per capita share of North Sea oil and gas".[2] This paper includes a geographical share of UK North Sea oil and gas revenues in Scotland's overall revenues. This is for illustrative purposes only and does not reflect any UK Government position in the event of independence. Rather, by allocating the largest share of resources to Scotland it ensures that the subsequent analysis represents the most favourable case for an independent Scotland.

As set out in Scotland analysis: EU and international issues, an independent Scotland would be a new state. It is very likely that it would have to go through some form of accession process to become a member of the EU. It would also have to enter into negotiations on the terms of its membership. It cannot be assumed that Scotland would be able to negotiate the favourable terms of EU membership which the UK enjoys.

The terms of EU membership which the Scottish Government has said it wishes to secure is at odds with long-established conditions of EU accession; the problematic nature of some of the specific asks that the Scottish Government has said it intends to make may well render negotiations complex and lengthy, raising questions over whether they could be completed within the 18-month timeframe suggested by the Scottish Government. Terms of EU membership also require the unanimous agreement of all 28 Member States. Nonetheless, for simplicity, the fiscal analysis in this paper assumes that an independent Scotland is a member of the EU from 2016-17.

1 OBR (2013), "Fiscal sustainability report"

2 Scottish Government, GERS 2012-13 and historical series, March 2014.

Structure of the paper

Chapter 1 considers Scotland's fiscal outlook as part of the UK, including the impact of demographic change and the expected decline in North Sea oil and gas revenues.

Chapter 2 sets out the direct fiscal consequences of independence along with the impact of the firm policy commitments set out by the current Scottish Government. This is combined with the analysis in chapter 1 to project the public finances of an independent Scotland over the next twenty years.

Annex A gives a detailed description of the analytical approach used to project the public finances of the UK and an independent Scotland over the longer-term.

Chapter 1:
Scotland's fiscal outlook

Scottish onshore tax revenues per person have been slightly lower than the UK average since devolution in 1998. Over the same time period, public spending per person in Scotland has been around 10 per cent higher than the UK average. Therefore, Scotland's onshore fiscal balance has been considerably weaker than the UK's over the same timeframe.

Including a geographic share of oil revenues, Scotland's overall fiscal position has on average been broadly the same as the UK's since devolution, although much more volatile year-by-year due to the increased sensitivity of the Scottish fiscal position to fluctuations in oil revenues. As such, Scotland's public finances already rely on spending all of the revenues from a geographic share of North Sea oil and gas. There would be no fiscal benefit from independence: the revenues can't be spent twice.

The persistence of these trends into the medium term, and the expected fall in oil and gas revenues, mean that various independent bodies forecast Scotland's fiscal position to be weaker than the UK's in 2016-17 – the proposed year for independence – by around £1,000 per person. This gap is expected to widen in the future as oil and gas revenues continue to decline and Scotland faces a more acute demographic challenge than the UK as whole.

It is exactly these sorts of challenges that the UK's fiscal union acts to smooth. The challenges of an ageing population and volatile and declining oil revenues are shared across the UK in the same way that, for example, the benefits of windfalls in coal and oil revenues, or lower debt interest costs from low borrowing rates, have been and continue to be shared across the UK. This is the UK's integrated fiscal union in action – pooling resources and sharing risks.

Within this integrated fiscal union, Scotland benefits from stable and secure funding provided by the UK's fiscal model whilst further powers are being devolved to the Scottish Parliament through the Scotland Act 2012. This includes the creation of the Scottish rate of income tax, devolution of stamp duty land tax, landfill tax and borrowing powers. This will increase the autonomy and accountability of the Scottish Government, while enabling it to decide when and how to invest in Scotland's infrastructure.

1.1 This chapter examines Scotland's fiscal outlook as part of the UK over the next 20 years. In particular, it explains how the UK's integrated fiscal union would act to pool resources and share risks across the whole of the UK. This would help to deal with some of the main fiscal challenges facing Scotland, including:

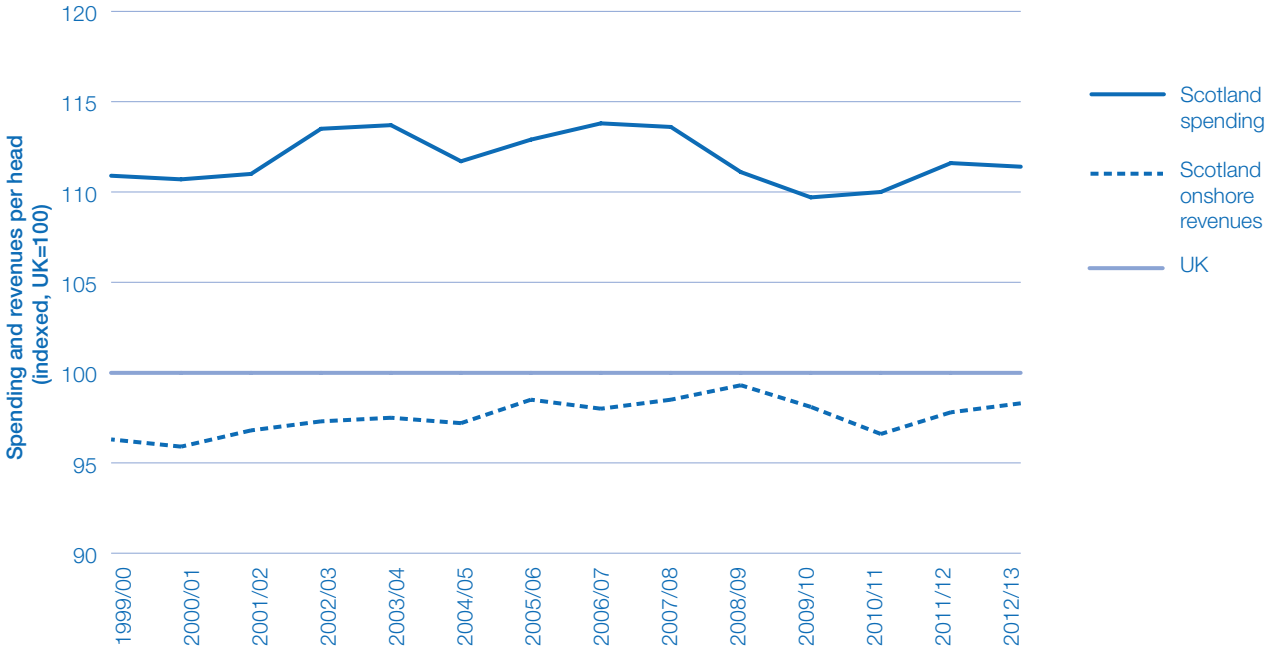
- the Scottish budget deficit, which in 2012-13 was slightly larger per head than the overall UK budget deficit;
- a divergence in the next few years between independent forecasts of the Scottish and UK fiscal position over the medium term, largely as a result of Scotland's reliance on North Sea oil and gas revenues, which have been revised down in successive forecasts;
- the expected long-run decline in North Sea oil and gas revenues; and
- more acute demographic pressures than the UK as a whole.

1.2 Each of these aspects is discussed in turn, as well as analysis of how the UK's fiscal union would act to support these challenges.

Scotland's current fiscal position

1.3 Chart 1.A shows that Scottish onshore tax revenues per person have been slightly lower than the UK average since devolution in 1998. Over the same time period, public spending per person in Scotland has been around 10 per cent higher than the UK average. Therefore, Scotland's onshore fiscal balance has been considerably weaker than the UK's.

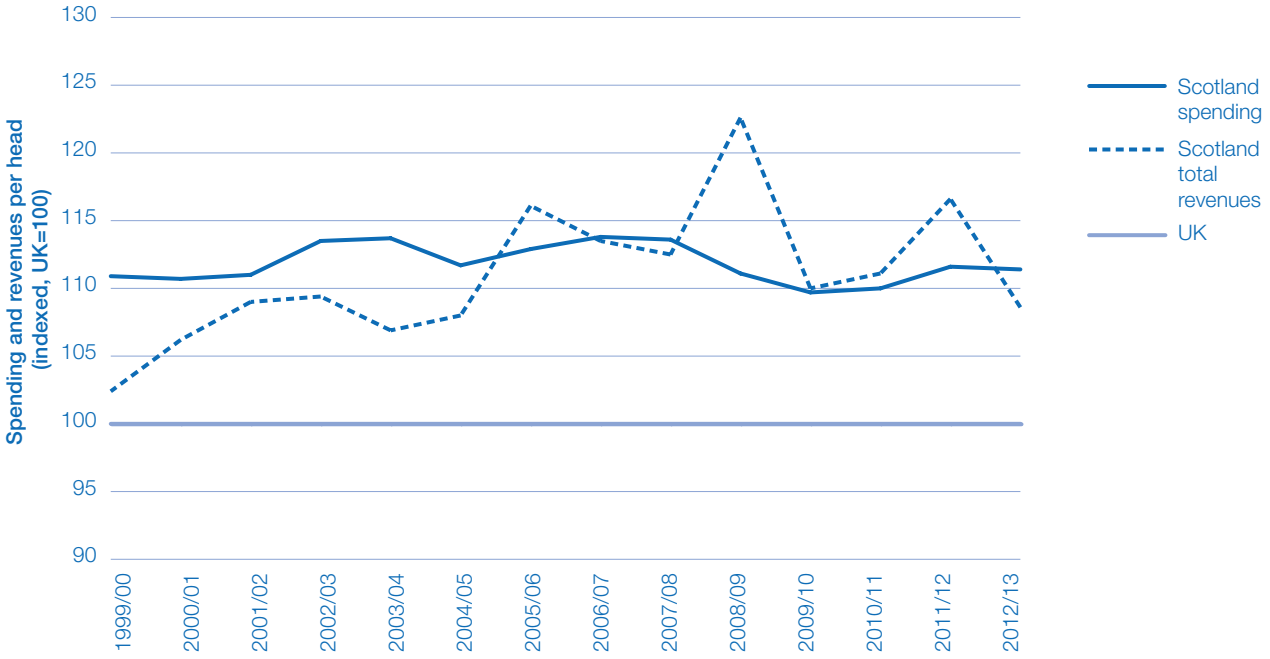
Chart 1.A: Scotland's onshore fiscal position relative to the UK



Source: GERS-14

1.4 In the event of independence, the allocation of North Sea oil and gas revenues would be subject to negotiation. For illustrative purposes the Scottish Government presents both a "geographical share of North Sea oil and gas" and a "per capita share of North Sea oil and gas".[1,2] On the basis of a geographical apportionment, Scotland's overall fiscal balance for the period since devolution is very similar to the UK's public finances over the same period, albeit much more volatile, as shown in Chart 1.B below. It shows how Scotland's public finances already rely on spending all of the revenues from a geographic share of North Sea oil and gas. So there would be no fiscal benefit from independence: the revenues can't be spent twice.

Chart 1.B: Scotland's overall fiscal position relative to the UK



Source: GERS-14

1.5 Through the pooling of major tax revenues across the UK, Scotland therefore contributes a volatile revenue stream from North Sea oil and gas and receives secure and stable funding from the UK Government. The UK's fiscal union therefore protects Scotland from a more difficult set of fiscal choices.

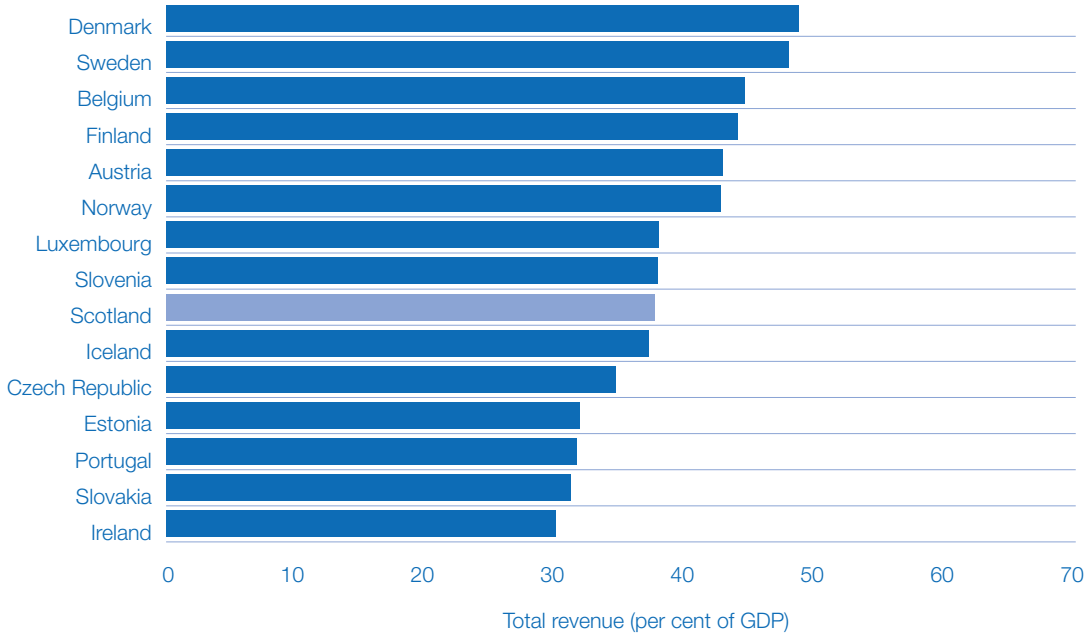
1.6 In the absence of shared public finances, latest Scottish Government data show that in 2012-13 Scotland's fiscal position would have been almost £500 per head weaker than the UK. To fill this gap, Scotland would have faced a choice between implementing immediate spending cuts of £2.5 billion (which equates to almost a quarter of Scotland's health budget), increasing taxes by this amount or borrowing more in financial markets, thus increasing its budget deficit. An independent Scotland would have less flexibility than the UK to absorb shocks of this kind in its budget as it would be likely to pay higher borrowing costs.

[1] Scottish Government, GERS 2012-13 and historical series, March 2014.

[2] This paper apportions UK oil and gas revenues, past and future, to Scotland according to a geographical share of North Sea oil and gas. This does not reflect any UK Government position in the event of independence. Rather, by allocating the largest share of resources to Scotland, it ensures that the subsequent analysis represents the 'best case' for an independent Scotland.

Box 1.A: Scotland's current tax and spending levels relative to other countries

According to the latest Scottish Government figures, Scotland's tax revenue since devolution has averaged 38 per cent of GDP (including a geographic share of North Sea oil and gas). The graph below compares this against a range of other small countries.



Source: Taxation trends in European Union, eurostat, 2013. Data for Scotland from GERS, Scottish Government, March 2014.

The current Scottish Government, in their recent White Paper, referenced levels of public services achieved by some of these countries as a benchmark.

"Looking at neighbouring independent nations, such as Norway and Denmark, it is clear that they enjoy an independence bonus that allows them to deliver fairer societies. They are able to provide more targeted support for families with children and better levels of care for older citizens, and deliver measures to boost their economies, support higher standards of living and create more jobs."

Tax revenues in Norway, Denmark, Finland and Sweden average 46 per cent of GDP, which is substantially higher than the 38 per cent of GDP that Scotland currently generates. As shown in the table below, these countries generate high levels of revenue partly through setting higher tax rates.

	VAT standard rate (%)	Corporation tax main rate (%)
Norway	25.0	27.0
Denmark	25.0	24.5
Sweden	25.0	22.0
Finland	24.0	24.5
UK	20.0	21.0[1]

Source: KPMG tax rates table, retrieved May 2014.

[1] The UK main rate of Corporation tax is being reduced to 20 per cent from April 2015.

These higher rates of VAT are also paid on a wider range of goods and services than in the UK. For example, a rate of 25 per cent is paid on almost all goods and services in Denmark whereas the UK has a wide range of zero-rated items (including most food, children's clothes and shoes, books and water) as well as various goods and services where VAT is applied at a reduced rate of 5 per cent (including domestic gas and electricity).

Despite the ambition of the current Scottish Government to provide Scandinavian levels of public services, Scotland's Future actually committed to cutting both corporation tax and air passenger duty.

Scotland's fiscal position in the next few years

1.7 As a result of the UK Government's action to cut the deficit, the independent Office for Budget Responsibility (OBR) forecast UK public sector net borrowing to reach a small surplus in 2018-19, and the economy to be operating at full capacity.[3] However, independent bodies forecast the fiscal positions of Scotland and the UK as a whole to continue to diverge in the years ahead, with Scotland's notional fiscal position progressively weaker relative to the UK as a whole, largely due to the downward revisions made by the OBR to its North Sea oil and gas revenue forecasts.

North Sea oil and gas revenue forecast

1.8 North Sea oil and gas revenues make up a much smaller proportion of overall UK tax revenues than Scottish revenues. North Sea revenues averaged less than 2 per cent of total UK revenues in the past five years, while attributing a geographical share to Scotland would mean that they averaged 15 per cent of total Scottish revenues, fluctuating within a range of 10 percentage points, highlighting the volatility an independent Scotland would face.[4]

1.9 This means that the successive forecast downgrades in recent years made by the OBR, in response to outturn coming in below forecast, would have had a much larger impact on forecasts for the public finances of an independent Scotland. This would have made it very difficult to plan public spending as highlighted by the National Institute of Economic and Social Research.[5] For example, tax revenues from oil and gas in 2012-13 were around £5 billion lower than the year before (a drop of more than 40 per cent). While the UK's broad and diverse economy is able to absorb this volatility, this equates to almost a half of Scotland's health budget or two thirds of Scotland's spending on education.

1.10 While revenues are volatile and in long-term decline, the government remains committed to maximising the significant remaining potential of the North Sea for the UK economy. The UK's large and diversified tax base allows the UK Government to support the oil and gas industry through policy action, which has a short-term cost, to encourage investment in the sector and ensure it continues to contribute to jobs and energy security for decades to come. For example, the UK government is providing upwards of £20 billion in tax relief for future decommissioning costs and has provided field allowances which supported over £7 billion of investment last year alone.[6]

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[3] Office for Budget Responsibility, Economic and Fiscal outlook, March 2014.

[4] Scottish Government, GERS 2012-13 and historical series, March 2014.

[5] *Assets and liabilities and Scottish independence*, National Institute of Economic and Social Research, April 2014 (p. 5}.

[6] Oil and Gas UK (2014), "Activity Survey 2014".

1.11 The UK Government can afford to do this because of the size and diversity of the UK economy. This helps encourage vital new investment that creates jobs and growth, ensuring the UK makes the most of this valuable resource in the long-term. In contrast, the government of an independent Scotland would have to contribute around £3,800 per head – over ten times more than when costs are spread across the UK – to match the £20 billion[7] guarantee the UK Government has made towards decommissioning in the North Sea.

1.12 Sir Ian Wood's review[8] into increasing oil and gas production clearly set out the size of the prize that still remains in the North Sea, which the size of the UK economy and the diversity of its tax base can help unlock. More detail on the support provided to the oil and gas industry by the UK Government and the Wood Review is outlined in Box 1.B.

Box 1.B: The UK Government's support for the oil and gas industry

The importance of the oil and gas industry

The UK's oil and gas industry is hugely important to Scotland and the UK as a whole:

- It supports approximately 450,000 jobs in the UK, both directly and indirectly.[1] Industry estimates that approximately half of the oil and gas jobs supported across the UK were based in Scotland;
- Approximately 42 billion barrels of oil equivalent have been produced from the UK Continental Shelf (UKCS) since licences were first issued in the mid-1960s,[2] with the Department of Energy and Climate Change (DECC) estimating there is potentially another 20 billion still remaining;[3]
- In 2012, oil and gas provided some 69 per cent of the UK's total primary energy supply.[4] Production specifically from the UKCS was equivalent to 41 per cent of total UK primary energy demand; and
- Capital investment in the UKCS rose to £14.4 billion in 2013 – the highest level of investment on record.[5]

[1] Oil and Gas UK (2013), "Economic Report 2013".

[2] DECC (2014), "Oil and gas: Field data".

[3] Available at DECC website www.gov.uk

[4] DECC (2013), "Digest of United Kingdom Energy Statistics 2013".

[5] Oil and Gas UK (2014), "Activity Survey 2014".

[7] HMT estimate based on Oil and Gas UK (2013) "Economic Report 2013".

[8] Wood, Sir I (2014) "UKCS Maximising Recovery Review: Final Report"

UK Government support for the industry

The UK Government is committed to supporting investment in the oil and gas industry, a vital sector that provides jobs and growth across the United Kingdom. The UK Government has provided support to the industry in a number of forms:

- **Field allowances:** The UK Government has introduced new and extended field allowances to support the industry as extraction becomes more difficult. This includes a doubling of the value and criteria of the small field allowance, a £3 billion allowance to support investment and exploration in large and deep fields, aimed particularly at West of Shetland, a £500 million allowance for large shallow-water gas fields, and an allowance for incremental investment in older fields. At Autumn Statement 2013, the UK Government announced the introduction of a new onshore allowance to support onshore oil and gas projects – including shale gas. The allowance makes the UK's tax regime for shale gas the "most competitive in Europe".[6]
- **Decommissioning relief:** At Budget 2012, the UK Government committed to introducing a new contractual approach to provide greater certainty on tax relief for decommissioning costs – upwards of £20 billion – on the UK Continental Shelf. The first "Decommissioning Relief Deeds" have already been signed, starting to provide the certainty needed to unlock billions of pounds of additional investment.
- **Ultra high pressure, high temperature cluster allowance:** At Budget 2014 the UK Government announced it will introduce a new allowance for ultra high pressure, high temperature oil and gas projects and will consult on the details over the summer. Oil & Gas UK said the new allowance could be a "game-changer" for technically challenging prospects in the North Sea.[7]

This support from the UK Government has helped generate record levels of investment. Oil & Gas UK estimate that around half of the record £14.4bn of investment in the North Sea in 2013 year was supported by government allowances.[8]

The Wood Review

Sir Ian Wood's review made a series of recommendations as to how to maximise future oil and gas production. The Review estimated this could deliver an additional 3 to 4 billion barrels of oil equivalent (boe) over the next 20 years. The government has accepted all of Sir Ian's recommendations, and the Chancellor announced at Budget 2014 that:

- the UK Government will review the oil and gas tax regime to ensure it continues to incentivise economic recovery as the basin matures, working with the new arm's length body created out of the Wood Review, with an initial report back at Autumn Statement 2014;
- the UK Government will task the new oil and gas body with reviewing how to encourage exploration and reduce decommissioning costs, with a report back at Budget 2015; and
- the UK Government has also confirmed the next steps for implementing the new oil and gas body.

[6] Wood Mackenzie (2013), "Upstream Insight: UK advances shale gas fiscal incentives".

[7] Oil and Gas UK, Press Release, March 2014.

[8] Oil and Gas UK, Activity Survey 2014.

1.13 While receipts have declined sharply in the last 3 years, the latest OBR forecast has oil and gas revenues relatively stable at around £3.5 billion a year from 2014-15 to 2018-19, as shown in table 1.A. This is due to record levels of investment from the industry, partly as a result of UK Government action, as recognised by the OBR.

Table 1.A: OBR UK oil and gas revenue forecasts

	£ billion[a]							
	Outturn			Forecast				
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
March 2014	**11.3**	**6.1**	**4.7**	**3.7**	**3.8**	**3.2**	**3.4**	**3.5**
December 2013	11.3	6.5	5.0	4.6	4.2	3.5	3.9	4.0
Diff. from December 2013	***0.0***	***-0.4***	***-0.4***	***-0.9***	***-0.4***	***-0.3***	***-0.5***	***-0.4***
March 2013	11.3	6.5	6.8	6.1	4.7	4.8	4.3	
Diff. from March 2013	***0.0***	***-0.4***	***-2.1***	***-2.4***	***-0.9***	***-1.6***	***-0.9***	

Source: Office for Budget Responsibility
[a] Numbers may not sum due to rounding

1.14 Since its December 2013 forecast the OBR has reduced its North Sea revenues forecast in every year of the forecast period. Its forecast for 2016-17 has been revised down by £0.3 billion from its December 2013 forecast and £1.6 billion from its Budget 2013 forecast.

1.15 These downward revisions continue a trend of successive UK oil and gas revenue forecast downgrades, as shown in the left hand panel of Chart 1C below, highlighting the uncertainty in forecasts of oil and gas revenues even in the short term. Outturn UK oil and gas receipts have come in an average of 20 per cent below year-ahead forecasts made by the OBR at successive Budgets,[9] with the OBR forecasting these lower revenues to continue into the medium-term.

1.16 The right hand panel in Chart 1C assigns Scotland a geographical share of outturn (consistent with both HMRC and GERS outturn shares) and OBR March 2014 forecast North Sea oil and gas revenues. This chart also shows the Scottish Government's most optimistic ('scenario 5') and most pessimistic ('scenario 2') forecasts from its March 2013 oil and gas bulletin.[10,11]

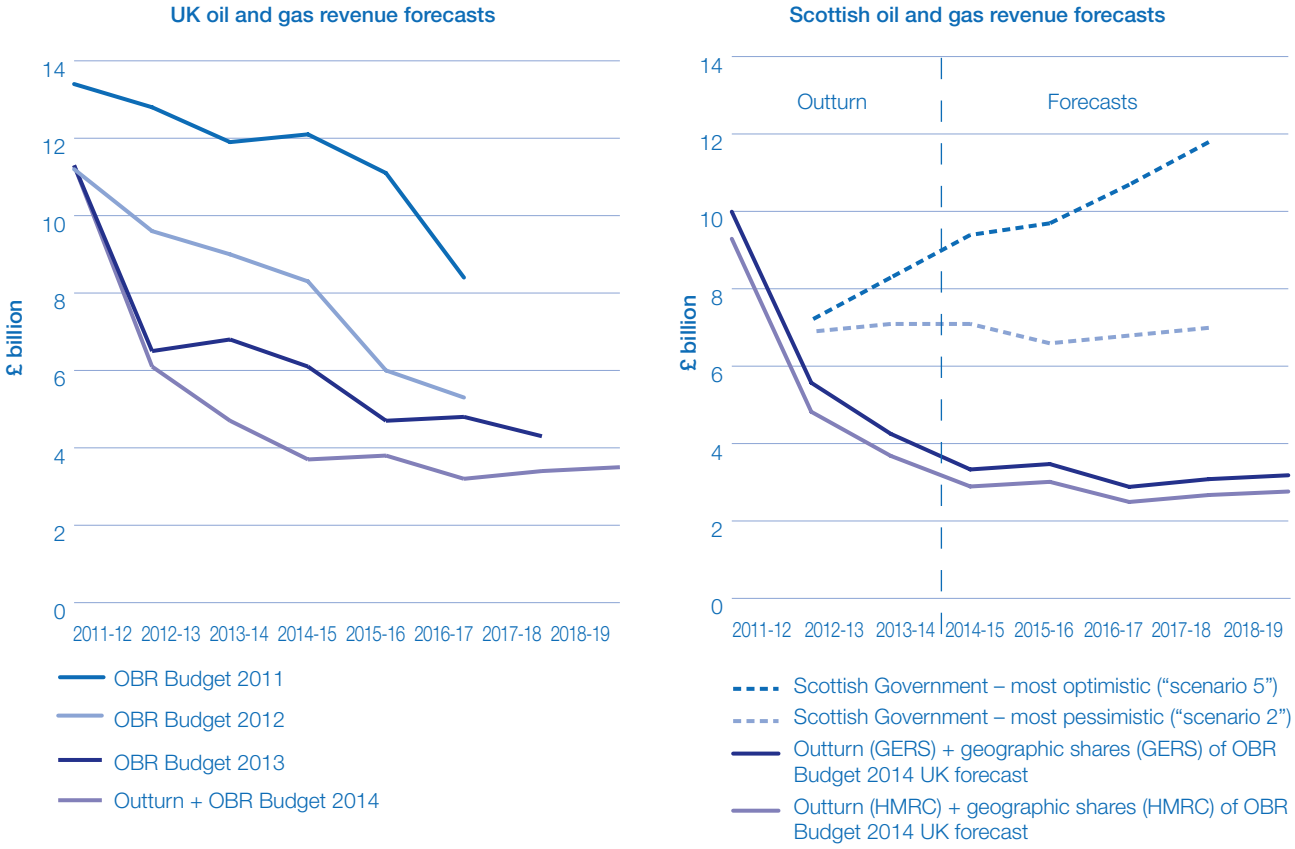
[9] This is also the case for two-year-ahead Budget forecasts, and one- and two-year-ahead Budget and Autumn Statement forecasts combined.

[10] Scottish Government, Oil and Gas Analytical Bulletin.

[11] 'Scenario 1' is based on applying a geographic share to the OBR's December 2012 forecast and is therefore not referred to as a Scottish Government forecast.

1.17 The chart shows that the Scottish Government is substantially more optimistic about the medium-term path for oil revenues. Since publication of the Scottish Government's forecasts, Scottish oil revenue outturn has come in below the Scottish Government's 2012-13 most pessimistic estimate by around £2 billion in 2012-13 and over £3 billion in 2013-14. As the independent Centre for Public Policy for Regions (CPPR) have commented: "These 2012-13 and 2013-14 out-turns for North Sea tax revenues highlight why the Scottish Government's use of the OBR forecasts as a lower limit, rather than a more central estimate, for future offshore revenues is problematic."[12] The CPPR also comment that the Scottish Government claims that OBR forecasts are too pessimistic "seem odd when juxtaposed with this evidence of repeated over-prediction of production by DECC and OBR in recent years."[13]

Chart 1.C: UK and Scottish oil and gas revenue medium-term forecasts[a]



Source: Office for Budget Responsibility; Scottish Government; HM Revenue & Customs.

[a] Scottish outturn is derived by apportioning UK outturn geographically according to both Government Expenditure and Revenue Scotland (GERS) and HM Revenue & Customs (HMRC) historic shares. Scottish estimates based on OBR UK forecasts are derived by apportioning OBR Budget 2014 UK forecast by the 2012-13 geographic share in both Government Expenditure and Revenue Scotland (GERS) and HM Revenue & Customs (HMRC) regional receipts.

1.18 The UK's broader and more diverse tax base helps to support the oil and gas industry and smooth the impact of volatile and unpredictable North Sea oil and gas revenues. Since Budget 2010 the OBR has revised down oil revenues by £21 billion over the 5 years to 2015-16. Instead of needing to cut spending, the Scottish Government has seen its budget increased by £2.2 billion over the 5 years to 2015-16.

[12] CPPR (2014) "Analysis of Scotland's past and future fiscal position".

[13] CPPR (2013) "Reflections on the latest Oil and Gas related analysis by the Scottish Government and the Office for Budget Responsibility."

Scotland's fiscal position as part of the UK

1.19 Various independent bodies such as the IFS and CPPR have recently provided forecasts for Scotland's fiscal deficit in 2016-17 (and the intervening years) as shown in Box 1.A. In 2016-17 they forecast the Scottish fiscal deficit to be around £1,000 higher per person than the UK.

1.20 The IFS and CPPR have also forecast Scotland's fiscal deficit out to 2018-19. They both forecast a Scottish deficit of around 3 per cent of GDP.[14] Meanwhile, the OBR forecast the UK to be running a small budget surplus by 2018-19. As such, the gap between the fiscal positions of the UK and Scotland in 2018-19 remains around £1,000 per person.

1.21 As part of the UK, Scotland's larger fiscal deficit during these years would be absorbed by pooling resources across a larger and more diverse economy. Much in the same way that revenues from the North Sea have benefited the UK's public finances, particularly during the 1980s, tax revenues from other parts of the UK could support Scotland through this more challenging period.

1.22 At the same time, further fiscal powers are being devolved to the Scottish Parliament. As discussed in *Scotland analysis: Macroeconomic and fiscal performance,* the Scotland Act 2012 creates a new Scottish rate of income tax, devolves stamp duty land tax and landfill tax, and provides the Scottish Government with new borrowing powers. These powers will increase the autonomy and accountability of the Scottish Government, enabling it to vary levels of tax and spending in Scotland, and determine when and how to invest further in infrastructure in Scotland. As part of the UK, the Scottish Government would be able to use these new powers while continuing to be supported by the broader and more diverse UK economy.

[14] IFS (2014), "The next five years look better, but tough choices remain for Scotland" and CPPR (2014), "CPPR Briefing Note – Fiscal implications for an independent Scotland when assuming that it takes on a low, or zero, share of UK's existing debt".

Box 1.C: Summary of independent forecasts of the Scottish deficit in 2016-17

Various independent bodies forecast that an independent Scotland's deficit in 2016-17 would be substantially larger than suggested by the current Scottish Government in *Scotland's Future*. The most pessimistic scenario in *Scotland's Future* predicted a deficit of 3.2 per cent of GDP, equivalent to around £1,000 per person. However, the independent bodies all forecast a Scottish deficit above 5 per cent of GDP, or around £1,700 per person.

This difference, of around £700 per person, can be entirely accounted for by differing views on the prospects for tax revenues from North Sea oil and gas production. The table below summarises forecasts of Scotland's fiscal position in 2016-17.

Scottish deficit

Forecasting body	Per cent of GDP	£ billions	£ per head
Scottish Government[1]	3.2	5.5	1,020
Institute for Fiscal Studies (IFS)[2]	5.2	8.9	1,660
Citigroup[3]	5.5	9.5	1,760
Centre for Public Policy for Regions (CPPR)[4]	5.5	9.5	1,760
Memo: UK deficit in 2016-17	2.4	44.5	680

As the latest OBR forecast is for UK borrowing to have fallen to around £700 per person in 2016-17, this suggests that an independent Scotland would need to borrow around £1,000 per head more than the UK.

[1] Most pessimistic scenario ('Scenario 2') in Scottish Government (2013), "Scotland's Future: Your guide to an independent Scotland".

[2] IFS (2014) "The next five years look better, but tough choices remain for Scotland".

[3] Citigroup (2014) "Update on Scotland's Fiscal Deficit".

[4] CPPR (2014), "CPPR Briefing Note – Fiscal implications for an independent Scotland when assuming that it takes on a low, or zero, share of existing debt".

Scotland's longer-term fiscal challenges

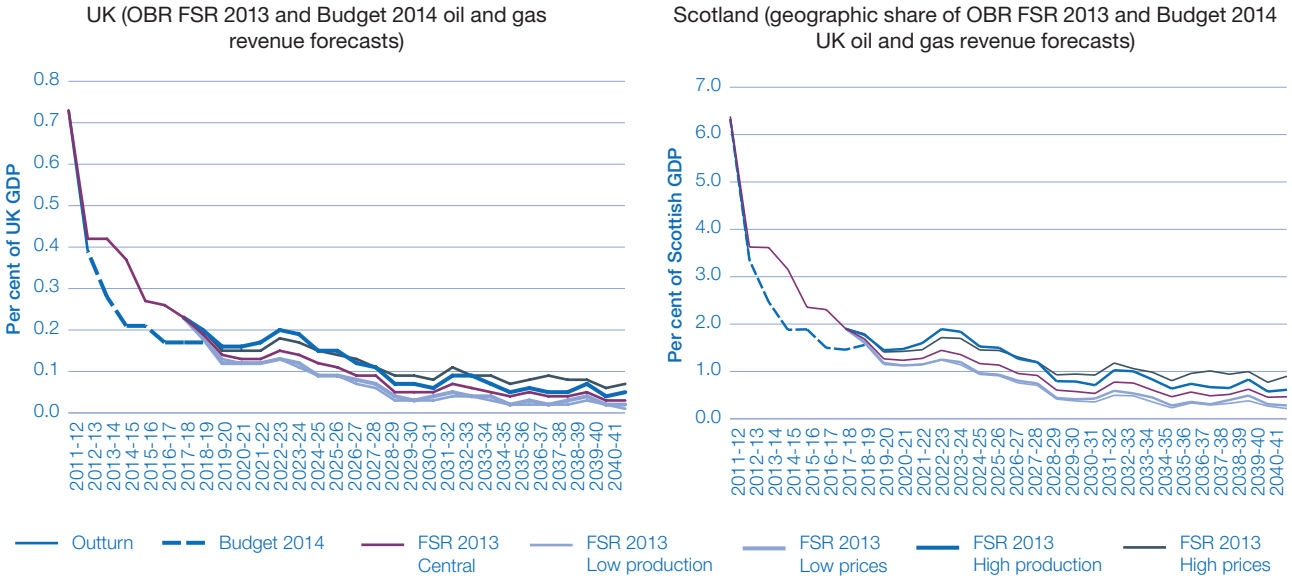
1.23 There are a number of structural pressures facing Scotland over the coming decades, such as dealing with its more acute demographic pressures relative to the UK as a whole and the decline in North Sea oil revenues. If Scotland were to remain part of the UK, it is precisely these type of challenges that the UK's integrated fiscal union would smooth – pooling resources and sharing risks across the whole of the UK. However, in the event of independence Scottish households would bear the cost of meeting these challenges alone.

The long-term decline in North Sea oil and gas

1.24 North Sea oil and gas is a valuable resource but it is also volatile and will eventually decline. As the OBR notes in its *Fiscal Sustainability Report – July 2013* (FSR): "North Sea oil and gas receipts are on a long-term downward trend as the basin matures." This long-term decline in North Sea receipts would be a major challenge facing an independent Scotland, since a geographic share contributes such a large proportion of total Scottish tax revenues.

1.25 In its FSR 2013, the OBR forecast UK oil and gas revenues to decline from 2017-18 to 2040-41, with the broad trend of decline relatively unaffected by the OBR's assumptions on production and prices. This is shown in the left hand chart below. Under all scenarios modelled by the OBR, UK oil and gas revenues are forecast to fall from over 0.7 per cent of GDP in 2011-12 to less than 0.1 per cent of GDP by 2040-41.

Chart 1.D: UK and Scottish oil and gas revenue long-term forecasts[a]



Source: Office for Budget Responsibility; HM Revenue & Customs.

[a] Scottish outturn are forecasts are derived by apportioning UK outturn and OBR forecasts geographically according to HM Revenue & Customs (HMRC) forecast shares, as set out in Annex A. Scottish estimates are shown as a percent of Scottish nominal GDP using Scottish National Accounts Project data for outturn and a forecast for Scottish GDP as set out in Annex A.

1.26 Over the last two decades, the latest Scottish Government figures estimate that Scottish oil revenues peaked at 8.1 per cent of Scottish GDP – more than one fifth of all Scottish tax revenue – in 2008-09.[15] Applying a geographic share to the OBR's FSR 2013 central forecast and scenarios for UK oil and gas revenues, and using HM Treasury's projection for Scottish GDP, Scottish oil revenues are forecast to fall to below 1 per cent of Scottish GDP from 2035-36 under all OBR scenarios.[16]

[15] Scottish Government, GERS 2012-13 and historical series, March 2014.

[16] More detail on how UK revenues are apportioned geographically and the GDP projections used is given in Annex A.

1.27 An independent Scotland would face a much bigger challenge than the UK as a whole over the longer-term in replacing declining oil revenues with other sources of revenue, as has already been identified by the IFS.[17] This would mean that as a result of independence Scottish households would face large additional onshore tax rises or spending cuts to offset the decline in oil revenues.

Oil funds

1.28 The Scottish Government's Fiscal Commission Working Group (FCWG) has recommended that due to an independent Scotland's reliance on oil and gas resources and its exposure to volatile revenues "managing this resource will be a key task for an independent Scotland."[18] As such, in the event of independence the FCWG recommends that an independent Scotland establish two types of oil fund immediately:

- **A short-term stabilisation fund:** *"The Scottish Government should plan its public finances and borrowing requirement on the basis of a cautious forecast for oil and gas revenue. If revenues exceed this forecast, the surplus should be transferred to the stabilisation fund. Conversely, if revenue is below this forecast, reserves could be withdrawn from the fund thereby allowing public spending to be maintained despite short term movements in oil and gas revenues."*

- **A long-term savings fund:** *"To maximise transfers into a savings fund, a long-run objective should be for the Scottish Government to run some form of onshore budget balance, and to seek to invest a fixed percentage of North Sea revenues into a savings fund annually. In the short-run, the Scottish Government should consider starting to make modest investments into a long term savings fund once net borrowing was manageable and public sector net debt, as a share of GDP, was on a downward trajectory."*

1.29 The Scottish Government has agreed with the recommendations of the FCWG: in its White Paper it has stated it intends to set up a 'Scottish Energy Fund' which will be both a stabilisation fund and a savings fund, operating in a similar way to the FCWG recommendations.[19]

1.30 An independent Scotland's contributions to a stabilisation fund would crucially depend on just how 'cautious' the forecasts for oil and gas revenues are. As explained in this chapter, the OBR's forecasts have proven to be around 20 per cent too optimistic in recent years. As explained in this chapter, Scottish Government forecasts are substantially more optimistic than the OBR forecast.

1.31 The FCWG's recommended conditions for setting up a long-term savings fund are for the government of an independent Scotland to be running an onshore budget balance. In the short run it states that investments could be made when debt as a share of GDP is falling. HM Treasury analysis in this paper indicates that neither of these conditions would be met. Therefore, before any oil revenues could be put into a fund, tax rises and spending cuts of at least the amounts set out in this paper would be required.

[17] IFS (2013), "Fiscal sustainability of an independent Scotland"

[18] Fiscal Commission Working Group (2013), "Stabilisation and Savings Funds for Scotland"

[19] Scottish Government (2013), "Scotland's Future: Your guide to an independent Scotland"

1.32 The First Minister of Scotland has estimated that oil revenue contributions to an oil fund "of just £1 billion a year, invested over 20 years, would create a fund for Scotland worth just under £30 billion".[20]

1.33 In the event of independence, if the government of an independent Scotland wished to make contributions of £1 billion per year from 2016-17 for 20 years, these annual contributions would average around 50 per cent of annual Scottish oil and gas receipts (using a geographic share of OBR UK forecast).

1.34 Based on medium term forecasts of Scotland's fiscal position from independent bodies, and the projections in this paper, any contributions to an oil fund would be made whilst the overall Scottish fiscal position is forecast to be in deficit. In the absence of oil fund contributions being funded from onshore tax rises or cuts to public spending, contributions to an oil fund would therefore serve to increase borrowing further. As the current Scottish Government has stated,[21] even if the government of an independent Scotland was able to borrow at the same rates as the UK Government, the returns on the oil fund may not cover the interest payments on its borrowing:

"if a country is transferring resources to an oil fund whilst in deficit, the savings accrued in its oil fund will be offset by a corresponding increase in government debt. The net increase in a country's assets would therefore be close to zero."

"If a country wants to invest in an oil fund to promote long term sustainability and to provide a permanent income stream, its tax revenue has to exceed its expenditure. In other words the country has to be running a fiscal surplus. Countries running a deficit, such as Scotland and the UK, would have to reduce public spending, or increase taxes, to free up resources for investment in an oil fund."

1.35 For these reasons, the fiscal projections for an independent Scotland in this paper do not assume the government of an independent Scotland making contributions to an oil fund.[22]

Demographic pressures

1.36 As the OBR notes in its FSR 2013: "Demographic change is a key long-term pressure on the public finances." Demographics affect the share and size of a country's elderly population and therefore the level of demand for age-related services such as health care and pensions. They also determine the amount of tax received by a government, since taxes are usually levied on earnings and consumption, which vary with age.

1.37 Chart 1.E below shows the OBR's representative age profiles for public service spending items and tax in the UK, demonstrating how the size and age distribution of a country's population will affect its public finances. In early life people in the UK consume a relatively large amount of health care and state-funded education and make little contribution to tax revenues through their income and spending. During working age they consume fewer public services and pay more tax. In later life, they consume more health care and long-term care, but pay less tax as their incomes and spending decline.

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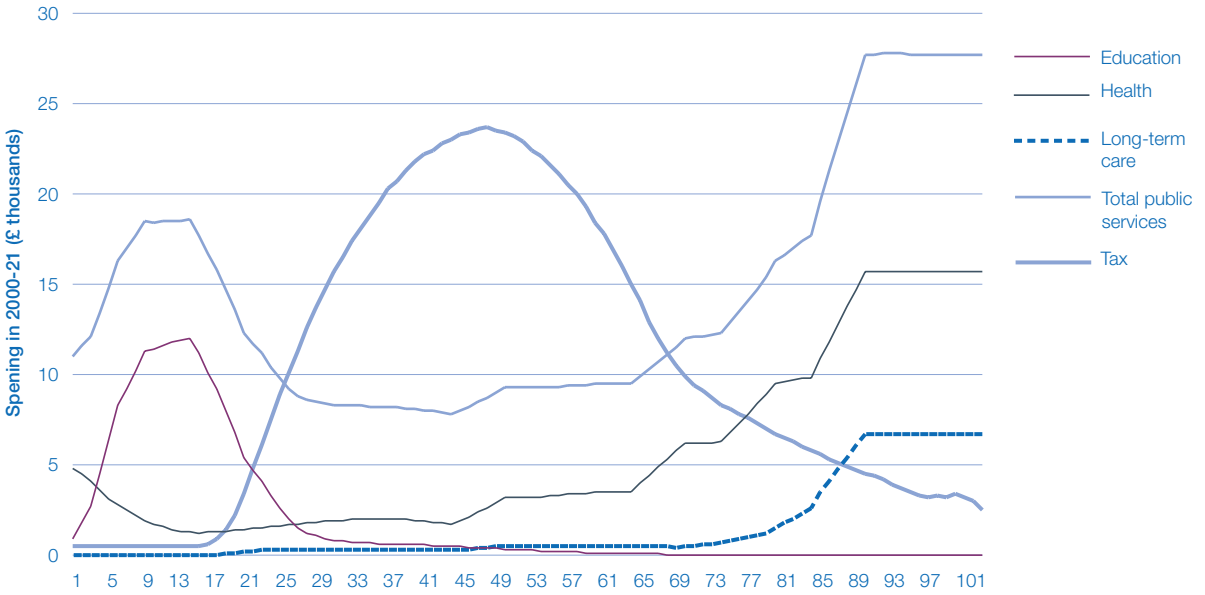
[20] Salmond, A (2012) "Independence and Responsibility: the future of Scotland"

[21] Scottish Government, available at www.scotland.gov.uk/Resource/0043/00435599.pdf

[22] If contributions were made to an oil fund by the government of an independent Scotland whilst its fiscal position is in deficit, and returns on the oil fund did not at least match the interest paid on the borrowing required to make the contributions, then all else equal the projections in this paper will understate the scale of the fiscal challenge facing an independent Scotland.

Chart 1.E: OBR representative age profiles for UK tax and public services spending



Source: Office for Budget Responsibility.

1.38 As the OBR highlights, "Like many developed nations, the UK is projected to have an 'ageing population' over the next few decades, with the ratio of elderly to those of working age rising over time. This reflects increasing life expectancy, declining fertility, and the retirement of the large age cohorts born during the post-war 'baby boom'."[23] However, in relation to its fiscal position, Scotland is likely to face a more challenging demographic situation, relative to the UK as a whole and in comparison to many European countries.

1.39 The National Records of Scotland, in a submission to the Scottish Parliament inquiry into demographic change and ageing population, identified that: "Scotland's projected population growth is less than that of the rest of the UK. However, the age structure of Scotland's population means that it is projected to age more rapidly compared to the UK. The proportion of Scotland's population which is of pensionable age is projected to increase by 2.9 percentage points between 2010 and 2035, compared with a 1.7 percentage point rise for the UK".[24]

1.40 In a recent report, the UK Statistics Authority noted that the dependency ratio of pensioners per 1000 working age people in Scotland is projected to be "higher and increasing" relative to the UK from 2010 to 2035 (the year to which the public finances of an independent Scotland are projected in this paper), based on 2010 ONS population projections.[25] Updating for the 2012 ONS population projections, this projected trend remains, as shown in Chart 1.F below. In the event of independence, in all but the 'high' migration projection the numbers of pensioners per 1,000 working age people is projected to be higher in Scotland relative to the UK. 'High' migration for Scotland assumes 24,000 annual net migrants, equivalent to adding the current population size of Edinburgh within 20 years. As set out in *Scotland analysis: Borders and citizenship* this high level of inward migration would bring significant challenges for an independent Scottish state.[26]

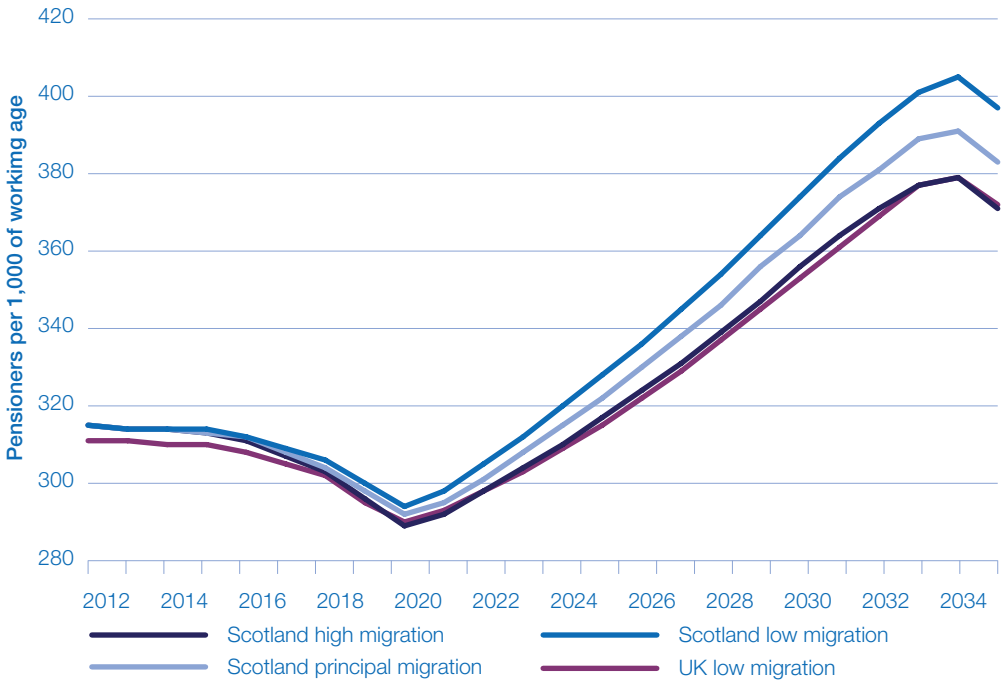
[23] Office for Budget Responsibility, Fiscal Sustainability Report, July 2013.

[24] National Records of Scotland, submission to Scottish Parliament Finance Committee.

[25] UK Statistics Authority, Monitoring Report: Official Statistics in the Context of the Referendum on Scottish Independence.

[26] As set out in *Scotland analysis: Borders and citizenship*, those challenges could include both the maintenance of social cohesion and the funding of the additional infrastructure and social service provision for the immigrant population. While over the medium term immigrant labour may increase tax revenues, the need for additional school places, housing and health services may be more immediate.

Chart 1.F: Pensioner dependency ratios under different migration assumptions for Scotland



Source: Office for National Statistics

1.41 As shown by the age profiles in Chart 1.E, spending on health, long-term care and public services increases strongly beyond retirement age. And as set out in *Scotland analysis: Work and pensions*, a larger pensioner population also means higher spending on pensioner benefits. As a result, larger proportion of pensioners in Scotland relative to the UK will put more pressure on an independent Scotland's public finances.

1.42 To help mitigate the impact of the UK's demographic changes on the public finances the UK Government has legislated various measures, including to increase the State Pension Age to 67 by 2028. In contrast, the current Scottish Government has said that in the event of independence it would consider delaying the State Pension age increase to 67.

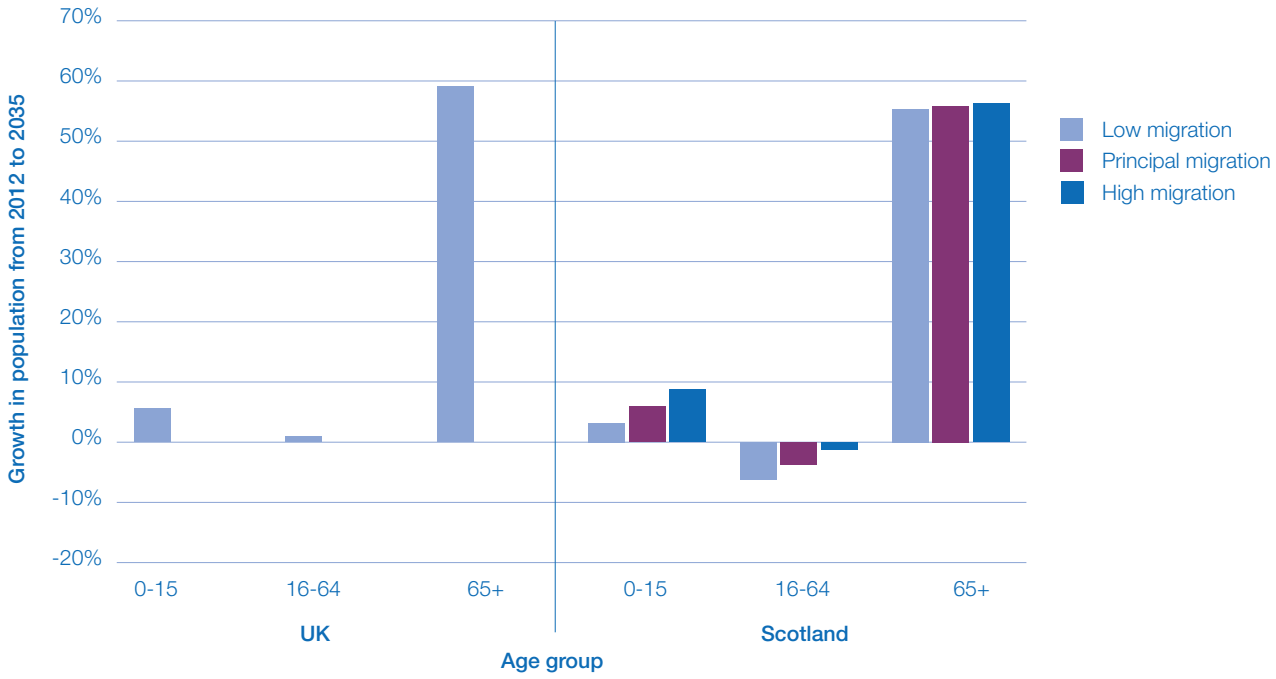
1.43 The Institute for Fiscal Studies (IFS) also highlight Scotland's more acute demographic challenge "the population of Scotland is expected to age more rapidly. In Scotland, only the population aged 66 and over is projected to increase between 2012–13 and 2062–63 (the population aged 65 and under is actually projected to shrink), while in the UK as a whole the population at all ages is projected to increase."[27] The International Longevity Centre UK recently commented that the decline in the working age population in Scotland over the next two to three decades is "the largest percentage fall of any UK nation".[28]

1.44 Chart 1.G supports this expectation of a decline in the Scottish working age population using the latest ONS population projections for the UK and Scotland: from 2012-13 to 2035-36, under like-for-like ("low") ONS migration assumptions, it can be seen that the working age (16-64) population in Scotland is expected to decline by over 6 per cent, compared with a small increase in the UK as a whole, largerly due to different fertility rates. Under all ONS migration assumptions the working age population in Scotland is projected to shrink over the next 20 years.

[27] IFS (2013), "Fiscal sustainability of an independent Scotland"

[28] The International Longevity Centre UK (2014) "Scottish Independence – Charting the implications of demographic change"

Chart 1.G: Projected growth in population of different age groups for the UK and Scotland



Source: Office for National Statistics.

1.45 The expected decline in the Scottish working age population would put significant pressure on an independent Scotland's public finances.

1.46 In contrast, if Scotland were to remain part of the UK the UK's fiscal union serves to smooth differences in regional demographics across the UK, including the impacts of Scotland's larger elderly population and expected decline in working age population.

Chapter 2:
Fiscal consequences of independence

From an estimated deficit of over 5 per cent of GDP in 2016-17 forecast by various independent bodies, this chapter projects the fiscal position of the UK and as an independent Scotland over the next 20 years. It follows similar methodologies to those adopted by the OBR and IFS to project public finances into the long-term. However, going beyond the IFS work, it additionally includes the direct impacts from independence, including:

- the set up costs of creating and running new institutions;
- higher debt interest costs from a premium on Scottish borrowing; and
- the net costs of Scottish Government policies, as set out, but uncosted, in its White Paper.

The analysis in this chapter finds that, without policy action (under existing policies including those of the current Scottish Government set out in Scotland's Future), an independent Scotland would face a permanent and widening gap in its public finances relative to the UK, largely due to the decline in oil revenues and demographic effects. This gap is projected to amount to 10 percentage points higher borrowing and 100 percentage points higher debt as a share of GDP by 2035-36.

As such, as part of the UK, Scotland is projected to be able to have lower tax or higher spending than under independence. This 'UK Dividend' is estimated to be worth £1,400 per person per year from 2016-17 onwards. To offset the loss of the UK Dividend an independent Scotland would need to reduce spending or increase tax (over and above the current UK Government's fiscal consolidation plans). To continue to provide similar levels of public services over the next 20 years, an independent Scotland would need to increase all onshore tax revenues by 13 per cent. To maintain similar levels of taxation over the next 20 years, an independent Scotland would need to reduce public spending by 11 per cent.

2.1 This chapter considers the direct fiscal impacts from Scotland becoming an independent country, including:

- the costs involved in setting up and running new institutions;
- the debt interest costs resulting from higher government borrowing rates; and
- the net economic and fiscal effects of the policies the Scottish Government proposes to implement if Scotland votes for independence.

2.2 These direct fiscal impacts are incorporated into projections for an independent Scotland's public finances relative to the UK, which are largely driven by the challenges discussed in Chapter 1.

Set-up costs of new institutions

2.3 In the event of independence, inevitable costs would result from an independent Scotland needing to set up and run new institutions. *Scotland's Future: Your guide to an independent Scotland* estimates that 300 public bodies currently act for Scotland at the UK level. Under the Scottish Government's plans for independence, roughly 180 of these bodies would transfer their functions to a new or existing organisation in Scotland. This would include a new welfare agency, a significantly expanded tax collection agency, a debt management agency, a security and intelligence agency, a new Scottish defence headquarters, economic regulators, such as the Competition and Markets Authority, a financial regulator, a pensions regulator, transport organisations, such as the Driver and Vehicle Licensing Agency, and a passport office, amongst others. Scotland would be entitled to a share of UK assets, for example public buildings in Scotland, and would have some existing organisations that functions could be transferred to. However, the set up costs for new organisations or transferring of functions to existing organisations still comes at a significant cost. Box 2.A discusses the potential division of assets.

Box 2.A: The division of assets in the event of independence

UK government assets can be broadly grouped into three main categories:

- Financial assets, such as equity investments, debt securities, foreign exchange and Sterling reserves, and the UK Government's shares in Royal Bank of Scotland and Lloyds Banking Group;
- Physical assets, such as land, property and infrastructure owned by the UK Government; and
- Intangible assets, such as software licenses or intellectual property rights.

In the event of independence, these assets would be subject to negotiation between an independent Scottish Government and the continuing UK Government. Neither is likely to be made substantially better or worse off through negotiations.

In the context of HM Treasury's fiscal projections in this paper, most of the UK's assets are either implicitly included in the analysis, or do not affect it. That is because the majority of these assets are either:

i. financial assets accounted for in the paper's net debt measure,[1] which totalled around £210 billion in 2011-12. By assuming a population share of net debt at the point of independence in the projections, an independent Scotland is also assumed to receive a population share of these financial assets; or

ii. physical assets, such as land and buildings, totalling £779 billion in Whole of Government Accounts 2011-12.[2] Those in the UK will naturally be split by geography. Most are in use and therefore cannot easily be sold off (for example, school and hospital buildings).

The remaining assets not captured above include:

i. financial assets not accounted for in the paper's net debt measure, including: those relating to the financial interventions during the crisis, which would be subject to negotiation; and student loans, which are predominantly English;

ii. land and buildings outside of the UK (for example, the British Embassy in Paris). The total value of overseas land and buildings is likely to be small. Property, plant and equipment on the balance sheets of the Foreign & Commonwealth Office and the Department for International Development totalled £2,313 million and £83 million respectively in 2011-12, which includes UK assets as well as those overseas; and

iii. intangible assets – in Whole of Government Accounts 2011-12, there are £35 billion of intangible assets. These intangible assets are defined as identifiable non-monetary assets without physical substance such as research and development in military equipment. These assets would be subject to negotiation but, given their intangible nature, some would be difficult to split, value or sell. Many, such as software licenses, would continue to be needed by an independent Scotland to run its public services and could not therefore be easily realised.

In the event of independence, a split of assets would be subject to negotiation. However, this would not make a material difference to the analysis in this paper. Most of the assets are already taken into account in the analysis or do not affect it. Of the remainder, the value which could easily be realised is small, particularly compared to the value of the UK Dividend that an independent Scotland would be giving up.

[1] Public Sector Net Debt excluding the temporary effects of financial interventions nets off liquid financial assets.

[2] HM Government (2013), "Whole of Government Accounts 2011-12"

2.4 Independent evidence from Professor Robert Young[1] suggests set-up costs in the creation of a new state could be up to 1 per cent of the nation's GDP.[2] As described in Box 2.B, in the context of Scottish independence this figure is likely to be an underestimate when considering the number and scale of new institutions needing to be established. As such, for the projections in this paper, set up costs are assumed to be 1 per cent of GDP, spread over the first Parliament.

[1] Research Chair in Multilevel Governance at the University of Western Ontario

[2] Young (2013), The road to secession: Estimating the costs of independence in advanced industrial states. Available at http://blogs.lse.ac.uk/politicsandpolicy/archives/38032

Box 2.B: Initial costs of setting up new institutions

Professor Robert Young[1] has examined the potential costs of independence in modern industrial states. Whilst recognising that the costs of transition can be exaggerated or downplayed in the course of political debate, his independent analysis in relation to Quebec, shows that the costs of institutional restructuring in the event of independence could range from 0.4 per cent to 1 per cent of the new country's GDP. 1 per cent of Scottish GDP in 2012-13 is equivalent to £1.5 billion or around £300 for every person in Scotland.

Scotland analysis: Work and pensions estimates that the new IT costs required to run a benefits system could amount to £400 million alone. *Scotland analysis: Business and microeconomic framework* estimates the costs of creating a new tax regime in an independent Scottish state could be up to £562 million. The Institute of Chartered Accountants (ICAS) has said that "Changes to the tax system which are less complex than those for an independent Scotland are costing around £750 million." This is in reference to the cost to the New Zealand tax payer from the overhaul of its tax database and IT system. The ICAS report goes on to say: "The cost for an independent Scotland could be significantly greater, especially considering the scale and complexity of the legacy systems which might be inherited from the UK."[2] The Institute for Government (IfG) and the London School of Economics and Political Science (LSE) estimate the average cost for a new policy department or a mid-sized merger to be approximately £15 million. In *Scotland's Future*,[3] the Scottish Government estimate that 300 institutions currently serve Scotland, of which 180 would need to be recreated or have powers transferred to a Scottish institution following independence. If this cost were incurred for all 180 organisations, the total cost would be £2.7 billion. Given these estimates, £1.5 billion is likely to be a favourable estimate of the total costs of setting up new institutions.

[1] Professor Robert Young, Canada Research Chair, Multilevel Governance at the University of Western Ontario, "The road to succession: Estimating the cost of independence in advanced industrial states", December 2013.

[2] ICAS (2014) "Scotland's Tax Future: Taxes Explained"

[3] Scottish Government (2013) "Scotland's Future: Your guide to an independent Scotland"

Ongoing costs from independence

2.5 An independent Scottish state would be likely to have higher ongoing costs in a number of areas as a direct result of being outside of the UK. With the exception of the additional debt interest cost (discussed later) and the cost of an independent Scotland paying more in EU contributions, these costs are difficult to quantify. Whether they are borne by the taxpayer will depend in part upon the policy choices of government of an independent Scotland e.g. on university fees or renewables subsidies. For this reason, only the cost of additional EU contributions has been included in the projections for the fiscal position of an independent Scottish state (see Annex A for more detail). As a result, the projections are therefore likely to be conservative. More detail on the likely ongoing costs is set out in Box 2.C.

Box 2.C: Ongoing costs for an independent Scotland

In many cases, new Scottish institutions will be more expensive to run than Scotland's proportional contribution to the cost of UK institutions. In some cases this is because there are economies of scale in the provision of services that an independent Scottish state would not be able to recreate or where higher costs involved in the provision of services in Scotland are spread across all taxpayers in the UK. There are also likely to be a number of ongoing costs stemming for an independent Scotland:

- **EU budget contributions:** *Scotland analysis: EU and international issues* estimates that an independent Scottish state would contribute €2.9 billion more than its current share of UK contributions to the EU budget over the 7 years from 2014 to 2020, a cost of approximately £350 million per year in 2011 sterling prices.
- **Tax and benefit system:** there are likely to be significant economies of scale in the provision of tax and benefits across the UK. This is difficult to estimate however as there are a number of factors that make cross-country comparisons difficult: for example, the cost of revenue collection will be driven significantly by the complexity of the tax system and the range of functions undertaken by the revenue collection agency. The Scottish Government has estimated that annual tax collection costs in an independent Scotland would be £575 million to £625 million, which is double the current notional cost for Scotland as part of the UK.
- **Energy:** by remaining part of the UK, energy bills in Scotland will be lower. As set out in *Scotland analysis: Energy*, the costs of supporting Scottish energy network investment, small-scale renewables and programmes to support remote consumers are currently shared among consumers across the UK. If the full costs of supporting large scale Scottish renewables are included, Scottish consumers benefit by up to £189 for households and a medium sized manufacturer by up to £608,000 in 2020. In the event of independence, the government of an independent Scottish state would need to decide how to meet the additional costs of supporting remote consumers, network investment and low carbon generation. This would result in higher Scottish energy bills or an additional burden on the Scottish taxpayer.
- **Education costs:** the European Commission has set out that university fees in an independent Scottish state could not be charged to students in the continuing UK. At present students in the rest of the UK contribute approximately £150 million per year to Scottish university funding. The Scottish Government would have to decide whether to start charging all students, manage much higher flows of students from the continuing UK to Scotland, or subsidise Scottish universities for the loss of fees from continuing UK students, with implications for an independent Scotland's public finances.
- **Postal services:** in 2013-14, the UK Government provided Post Office Limited with £415 million to maintain, modernise and protect a geographically comprehensive post office network across the UK, which includes many Post Offices in Scotland that are not expected to be commercially viable. An independent Scotland would have to decide whether to fund these non-commercial elements of its Post Office network.

Borrowing costs

2.6 As set out in *Scotland analysis: Assessment of a sterling currency union*, an independent Scottish state would be expected to have a number of characteristics that would lead to a higher risk premium on its debt than the UK:

- a less liquid debt market;
- a lack of an institutional track record and institutional uncertainty;
- higher economic and fiscal volatility;
- a larger future potential debt burden;
- a larger financial services sector, with larger contingent liabilities, as a share of GDP; and
- reduced monetary policy flexibility to respond to external shocks.[3]

2.7 As Oxford Economics comment in their report for the Weir Group: "Some elements of these risks would inevitably arise if Scotland became independent, raising the new government's borrowing costs above those of the UK under any currency scenario."

2.8 As discussed in Box 2.D, there is a range of estimates from independent experts of the possible size of the premium an independent Scotland would face on its borrowing above UK rates. Almost all estimates are for a premium in excess of 100 basis points (or 1 percentage point). As Oxford Economics' report states: "it seems reasonable to conclude that an independent Scottish government would borrow at a significant premium to the current UK. That premium would probably be in excess of one percentage point given the scale of the risks and the economic characteristics of an independent Scotland."[4]

2.9 The National Institute of Economic and Social Research (NIESR) estimates that an independent Scottish state would pay an interest rate premium of between 0.72 and 1.65 percentage points above UK rates. But the NIESR estimates were based on a period over which the Scottish fiscal deficit was lower than it is forecast to be in the future.[5]

2.10 HM Treasury uses the midpoint of this range, equivalent to 1.2 percentage points, as the premium on an independent Scotland's government borrowing. This is applied in each year of the projections. Although there are reasons to think this might be an under-estimate.

2.11 As Oxford Economics comments in its report:

"there are reasons to think that the prognosis for funding costs may be even more adverse than the [NIESR] results suggest. Their analysis was undertaken for the 2000-12 period during which North Sea revenues were more than three times higher (as a proportion of GDP) than they are now expected to be in the decade after independence. [...] [W]ith revenues split on a geographic basis the OBR's assessment equates to a drop from revenue of about 5.1% of Scottish GDP to an average of approximately 1.5% in the decade from 2016-17. Such a drop would cause Scotland's fiscal deficit to average some 3.6% of GDP larger than the deficit assumed by [NIESR], all else equal.

[...] Since a one percentage point increase in the Scottish deficit (as a proportion of GDP) translates roughly an additional half of one per cent premium on funding costs according to NIESR's analysis, it seems clear that an independent Scotland would have to either cut or tax harder or accept an even larger increment on its funding costs "[6]

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3 HM Government (2014), "*Scotland analysis: Assessment of a sterling currency union*".

4 Weir Group, Oxford Economics (2014), "The potential implications of independence for business in Scotland".

5 NIESR (2013), "Scotland's Currency Options".

6 Weir Group, Oxford Economics (2014), "The potential implications of independence for business in Scotland".

2.12 The NIESR range of estimates for the premium also assumed that an independent Scotland was within a formal sterling currency union with the continuing UK. Since NIESR published its estimates the UK Government has received formal, published HM Treasury advice stating that, "On the basis of the scale of the challenges, and the Scottish Government's proposals for addressing them, HM Treasury would advise the UK Government against entering into a currency union".[7] As a result, the Chancellor of the Exchequer set out that, "I could not as Chancellor recommend that we could share the pound with an independent Scotland."[8] The Chief Secretary to the Treasury and the Shadow Chancellor have both taken the same view.

2.13 The fiscal analysis in this paper reinforces that decision. As set out in *Scotland analysis: Assessment of a sterling currency union*, the position of the public finances matters to the stability of a currency union because it reflects governments' fiscal capacity to respond to an economic shock. The projections for persistent and substantial deficits and elevated debt levels in an independent Scotland weigh strongly against agreeing to a currency union because it would raise questions about the ability of the governments to sustain the currency union under stress.

2.14 Despite the NIESR range for an independent Scotland's premium not reflecting Scotland's more challenging future fiscal position, and being inconsistent with the 3 main UK political parties ruling out a currency union, the projections in this paper assume a favourable premium of 1.2 percentage points, equal to the mid-point of the NIESR range.

2.15 This premium is applied constantly across the projection period, although as Citigroup[9] have argued, the premium could initially be higher until the government of an independent Scotland builds up liquidity and credibility. It would also be very likely to spike higher in the event that an independent Scotland faced an economic or financial crisis, or lost credibility in its ability to repay its debts. The premium might also be expected to reflect the size of the fiscal deficit in an independent Scotland, which HM Treasury project will widen over the long-term.

Box 2.D: Summary of independent estimates of the premium on Scottish borrowing rates in the event of independence

The **National Institute of Economic and Social Research** (NIESR) have estimated the size of an independent Scottish state's interest rate premium taking into account Scotland's expected debt- and deficit-to-GDP levels, tax volatility and the expected liquidity of the Scottish bond market. The analysis assumes that an independent Scottish state is able to negotiate a formal sterling currency union with the continuing UK, and receives a geographic share of oil and a population share of debt. On this basis, NIESR calculate that an independent Scottish state would pay an interest rate premium of between 0.72 and 1.65 per cent on top of the long run average interest rates for UK 10 year bonds. NIESR judge that there is "greater statistical precision over the upper bound estimate".[1]

[1] NIESR (2013), "Scotland's Currency Options".

[7] Scotland analysis: assessment of a sterling currency union.

[8] Chancellor on the prospect of a currency union with an independent Scotland.

[9] Citi Group (2014), UK-Scottish Independence – "Will it happen? What would be the implications?"

However, this analysis does not include all of the likely credit risk factors. In particular, the lack of credit history and institutional uncertainty would be expected to increase an independent Scottish state's borrowing costs, at least initially. The estimated range may therefore be an underestimate of an independent Scottish government's initial borrowing rate.

Professor Charles Goodhart found that an independent Scottish state could easily pay an interest premium over the UK rate of above 1 per cent "even if economic events went quite well, potentially spiking far higher, as seen in the euro area, if economic developments should deteriorate".[2] This premium was estimated based on liquidity risk alone.

Professor Ronald MacDonald commented that "it is now widely accepted that an independent Scotland would incur a premium on its debt... This premium would be determined by financial markets but is likely to be in the region of 1 – 2 per cent above what HMT would have to pay on similar UK debt".[3]

Jefferies International, the global investment firm, also suggested that the premium on independent Scottish bonds over UK gilts could be 100 basis points (i.e. 1 percentage point), but added that "in a default scenario they could easily trade 500 basis points or more over".[4]

Citigroup estimate that an independent Scotland outside of a formal currency union would have a long-term premium over UK gilt rates of around 125 basis points, but that the initial premium following independence "may need to be larger to aid the establishment of a new, unproven market which initially would be very illiquid".[5]

Deutsche Bank comment that the weaker credit rating an independent Scotland is likely to face would have a "sizeable impact" on its borrowing premium. Following Moody's, who found that "the most likely scenario is that [an independent] Scotland would be rated somewhere in the middle of investment grade, though at least two notches below the UK's rating"[6] Deutsche Bank estimated this would translate into a borrowing premium of between 130 and 160 basis points higher than UK yields.[7]

Blackrock, the world's largest investment manager suggested that an independent Scottish state "would likely need to pay a premium. This would be expressed in both higher yields and shorter maturities".[8]

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[2] C. Goodhart (2013), "Scottish financial structure" in Goudie, A. (ed.) (2013).

[3] R. MacDonald blog (2013), "A Viable Plan B?"

[4] Jefferies (2013), "Scottish Independence: Straw man or something to worry about"

[5] CitiGroup (2014), "UK-Scottish Independence – Will it happen? What would be the implications?"

[6] Moody's (2014), "Rating Scenarios for an Independent Scottish Sovereign"

[7] Deutsche Bank (2014), "Scotland: The independence question"

[8] Blackrock (2014), "Investment and Independence – The Scottish Referendum"

2.16 Higher government borrowing costs feed through to higher debt interest payments. On the basis of the OBR debt interest ready reckoner, a 1.2 percentage point increase in borrowing rates implies additional financing costs of over £2.5 billion over a 5 year period,[10] or over £450 per Scottish person. In the absence of further borrowing, this would mean tax rises or spending reductions would be needed to offset that amount. In terms of total Government spending, £2.5 billion equates to around 4 per cent of current total spending.

The fiscal and economic effects of Scottish Government policies

2.17 The current Scottish Government has set out a range of policies that it would look to pursue in an independent Scotland. Its White Paper, *Scotland's Future*,[11] set out policies for a first Budget, the first Parliamentary term, and beyond in an independent Scotland.

First Budget policies

2.18 The current Scottish Government's proposals for a first Budget in an independent Scotland are based on the assumption that the UK would spend £3 billion on defence in Scotland. However, as *Scotland analysis: defence* made clear, Scotland currently benefits from the security provided by all of the UK's £34 billion defence budget.

2.19 Nonetheless, the White Paper forecasts of Scotland's public finances in 2016-17 (as part of the UK) currently include a population share of this spending. By setting Scottish defence spending equal to a population share of £2.5 billion in a first Budget, an independent Scotland would (in comparison) reduce its spending by around £0.5 billion.

2.20 Scottish Government has suggested that further reductions in Scottish borrowing could be achieved by abolishing the married couples allowance, cancelling the Shares for Rights scheme and streamlining overseas representation, although no impact assessment is provided in the White Paper.

2.21 Overall, the current Scottish Government expects these policies to save an independent Scotland a total of around £600 million per year. It then intends to spend these savings on a range of policies, key among which are:

- continuing to fund a number of universal services that are already provided as part of the UK (free personal care, free prescriptions, free higher education and free concessionary travel);
- reversing the removal of the spare room subsidy;
- reducing energy bills (albeit by moving the cost of the Energy Company Obligation and Warm Home Discount Scheme from bill-payers to tax-payers);
- providing 600 hours of childcare to around half of all two year olds (which the Scottish Government could choose to do as part of the UK).

2.22 Consistent with the White Paper, these first Budget policies are assumed to be fiscally neutral in HM Treasury projections. Estimates of aggregate borrowing and debt from 2016-17 onwards are therefore unaffected by the first Budget policies.

[10] Calculated by applying a Scottish population share to the estimate of additional UK debt interest costs from higher gilt rates and short rates as published by the Office for Budget Responsibility alongside Budget 2014 (supplementary table 2.23), and scaling for the size of the premium.

[11] Scottish Government (2013), "Scotland's Future: Your guide to an independent Scotland"

First term policies

2.23 For the first parliamentary term in an independent Scotland, the current Scottish Government has made three main commitments. They are:

- providing childcare for 1,140 hours per year for every three and four year old and vulnerable two year old (which the Scottish Government could already choose to do as part of the UK);
- cutting Air Passenger Duty by 50 per cent with a view to eventually abolishing it; and
- a reduction in corporation tax by up to three percentage points below the UK rate.

2.24 No attempt was made in the White Paper to explain how these tax cuts and spending increases would be costed. Moreover, the Scottish Government would also look to increase the National Insurance Employment Allowance and commence negotiations to renationalise the Royal Mail. Again, neither of these proposals are costed.

2.25 In December 2013 HM Treasury published *Unfunded commitments in Scotland's Future*, which estimated the first year costs (in 2011-12 prices) of the three main policies set out above:[12]

- increased childcare provision: £570 million in the first year;
- reducing Air Passenger Duty by 50 per cent: £130 million in the first year; and
- reducing corporation tax by 3 percentage points below the UK rate: £300 million in the first year.

2.26 The projections in this paper build on these costings, by updating them for latest data and considering how they might grow over the projection period. The projections also include an assessment of the dynamic fiscal and economic effects across the projection period. Given that the Scottish Government has not specified when during the first parliamentary term after independence these policies would be implemented, this paper makes the cost-saving assumption that they are all implemented in the final year of the first term – 2020-21.[13] More detail of these costings is set out in Annex A. More details on the dynamic effects are given in boxes 2.E and 2.F.

Second term policies

2.27 During a second term in an independent Scotland, the current Scottish Government would further extend childcare so that all children from age one to school age would be provided with the same level of childcare (1,140 hours per year). Again, this commitment was not costed by the Scottish Government, but the Scottish Parliament Information Centre estimate that the first and second term childcare policy commitments combined could cost £1,210 million by the end of the second term (in 2011-12 prices). This analysis grows forward the costs underlying this to estimate the net cost of the policy over the projection period. Detail on this costing and other fiscal effects of the policy can be found in Annex A.

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[12] HM Treasury (2013), "Unfunded commitments in Scotland's future".

[13] The Scottish Government policy is to reduce Corporation Tax by up to 3 percentage points below the UK rate. The modelling in this paper assumes a 3 percentage point cut, from 20 per cent (the UK rate from April 2015) to 17 per cent occurs in 2020, but that the cut is 'pre-announced' in 2016 and sustained thereafter. This timing combination ensures that, within the first Parliament of independence, the economic effects from the policy are maximised, whilst the direct fiscal costs are minimised. The reduction is assumed to happen within the first Parliament as it is one of the current Scottish Government's major policy commitments for independence.

Box 2.E: Labour market impacts of the childcare policy in an independent Scotland

HM Treasury's long-term term fiscal projections in this paper include an adjusted[1] Scottish Parliament Information Centre (SPICE) costing of the Scottish Government's policy commitment that, under independence, children from one to school age will be entitled to 1,140 hours of childcare per year. The Scottish Government also consider the potential economic impacts of the childcare policy. This box examines the Scottish Government's analysis of the potential economic impacts, summarises independent academic evidence, and, on the basis of this, sets out the labour market impact assumed in HM Treasury's fiscal projections.

Context

The Scottish Government estimates the policy could impact on 212,000 families and 240,000 children once fully operational.[2] According to the Scottish Government, expanding the provision of childcare might also increase the supply of labour by enabling mothers who want to work to do so,[3] which could increase economic output, and feed through to higher tax revenues and lower social security spending.

Scottish Government analysis

A Scottish Government paper[4] on the childcare policy considers the effect of a 6 percentage point increase in the female labour market participation rate,[5] and uses that to estimate a £700 million increase in tax revenue due to higher economic output. There are two difficulties with the calculations:

- The paper presents no evidence that the specific Scottish Government policy could lead to an increase in female labour market participation of that size. The 6 percentage point figure is therefore hypothetical, as the Scottish Parliament Information Centre (SPICE) comment: "The Scottish Government analysis does not consider whether the proposed changes in childcare policy would lead to such a change, rather it seeks to estimate what might happen if such a change in female participation took place";[6] and

[1] The SPICE costing is adjusted for the likely impacts of the childcare policy on tax credits and Universal Credit. More detail on these effects is given in Annex A.

[2] There is no indication of the anticipated level of take-up of the offer these figures assume. In practice not all familes will necessarily take up their full entitlement to the offer.

[3] Consistent with the academic literature, this analysis assumes the impact of childcare policy is on mothers' labour market decisions and there is no direct impact on fathers' labour market choices. This is in line with data on parental labour market participation – see, for instance, Figure 5.1 of Brewer and Paull (2006).

[4] Scottish Government, *Childcare and Female Labour Market Participation*, 12 January 2014. http://www.scotland.gov.uk/Topics/Economy/Childcare-and-Female-Labour-Market-Participation

[5] The labour market participation rate is the proportion of the population which is in employment or seeking work ('economically active').

[6] *Early Learning and Childcare*, Scottish Parliament Information Centre, April 2014, available at www.scottish.parliament.uk.

- The Scottish Government sets out that:
  - 212,000 families would be affected by the policy; and
  - A 6 percentage point increase in female labour force participation equates to 104,000 women who do not currently work moving into jobs or job-seeking.

  HM Treasury estimates, based on ONS data, suggest that around 83,000 mothers of young children are out of work,[7] meaning that it is not possible for 104,000 to move into work in the short term.

Given these difficulties HM Treasury has not adopted Scottish Government figures for increased participation but has considered the academic evidence to assess the potential long term impact on female participation rates.

Academic evidence

There is a range of academic estimates of the employment effect of providing childcare. HM Treasury has applied the estimated effect on employment from independent academic research to the specific parameters of the Scottish Government policy. The results are presented below. The results are notably smaller than the Scottish Government hypothetical figures of 104,000 additional mothers in work and a 6 percentage point increase in female participation.

Source	HM Treasury calculations[8]	
	Additional mothers in work	Increase in female participation rate (percentage points)
Brewer and Crawford (2010)	1,600	0.1
Brewer and Paull (2006)	13,800	0.6
Cascio (2009)	33,100	1.5
Havnes and Mogstad (2011)	2,300	0.1
Average:	**12,700**	**0.6**

- Brewer and Crawford[9] consider the employment effect of childcare in the UK by using schooling as a proxy. Providing universal childcare for 30 hours a week may be thought of as similar to providing free schooling for children of school age. Brewer and Crawford estimate that two in every 100 out-of-work lone parents move into work when their last child reaches the usual age of entering school. Applying this estimate to Scottish labour market data suggests a 0.1 percentage point increase in female labour force participation.[10]

[7] Calculated based on UK-level data for mothers of children aged 0 to 3, from ONS (2013) "Women in the labour market" and ONS (2012) "Measuring National Well-being: Households and families 2012."

[8] Using data from the 2011 UK census and Scottish Labour Force Survey data of the number of mothers in Scotland, the number of lone parents not in employment, and the number of females aged 16 and over..

[9] Brewer, Crawford (2010), "Starting school and leaving welfare: The impact of public education on lone parents' welfare receipt".

[10] This estimate does not include the potential impact on out-of-work mothers in couples.

- In earlier work, Brewer and Paull[10] also considered the changes in maternal employment in the UK around the time of school entry. They found that, when the last child enters school, maternal employment rates increase by around 6.5 percentage points. Applying this estimate to Scottish labour market data suggests a 0.6 percentage point increase in overall female labour force participation. This figure was based on a less robust methodology than the 2010 paper, in as much as it also includes moves into employment not due to the policy.
- Cascio,[11] uses data from US censuses across a numbers of states that introduced grants for kindergarten programmes and estimates that 4 in 10 single mothers with no younger children entered the workforce following public school enrolment of a five-year-old child. Applying this estimate to Scottish labour market data suggests a 1.5 percentage point increase in female labour force participation.
- Havnes and Mogstad,[12] use data from different Norwegian municipalities from when childcare policy was changed during the late 1970s. They find that the maternal employment rate increased by 1.1 percentage points for a 17.9 percentage point increase in childcare coverage in the policy affected areas. Applying this estimate to Scottish labour market data suggests a 0.1 percentage point increase in female labour force participation.

Labour market impact assumed HM Treasury projections

There is clearly a broad range of estimates for the labour market effect of increased childcare provision. Each finding will be driven by the specifics of the policy examined and the labour market conditions in the countries and regions being analysed. The findings of the Brewer and Crawford study – the most recent of the two Brewer studies using UK data and a more sophisticated method to the earlier Brewer and Paull work – can be equated to the Scottish Government childcare policy leading to an additional 0.1 percentage point impact on female labour force participation. The Cascio and Havnes and Mogstad studies use US and Norwegian data respectively, making it likely that their findings are less applicable to the Scottish Government policy than the Brewer studies.

However, to account for the possibility that the labour market effects from the Scottish Government's childcare policy are higher than the most recent Brewer estimate, for example because some women already in employment might increase their hours, the HM Treasury projections apply the average increase in female labour force participation from the 4 independent academic studies, of 0.6 percentage points. This contrasts with the hypothetical Scottish Government figure of 6 per cent.

In HM Treasury's projections, increased labour force participation increases Scottish employment growth and has a small positive impact on the level of Scottish GDP. It also has a small positive effect on the amount of Income Tax and National Insurance Contributions raised in Scotland, of around £130 million a year (in 2016-17 prices). More detail of these impacts are given in Annex A.

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[10] Brewer and Paull (2006), "Newborns and new schools: critical times in women's employment".

[11] Cascio (2009), "Maternal Labor Supply and the Introduction of Kindergartens into American Public Schools".

[12] Havnes and Mogstad (2011), "Money for nothing? Universal childcare and maternal employment".

Box 2.F: Economic impact of a 3 percentage point reduction in the rate of Corporation Tax in an independent Scotland

In the event of independence, the Scottish Government stated in its White Paper that it would set out a plan in its first term to reduce the headline rate of Corporation Tax (CT) by up to 3 percentage points below the prevailing UK rate. The intention of 'pre-announcing' the rate cut is to "stimulate economic activity in advance of it taking place and to retain and attract new investment."[1]

Scottish Government analysis suggests that a 3 percentage point cut could increase the level of Scottish economic output by 1.4 per cent, boost employment by 1.1 per cent and raise investment by 1.9 per cent after 20 years.[2]

HM Treasury has estimated the economic impacts of the proposed policy using a similar model to those used to assess the economic impact of significant UK Government tax reforms. The following policy assumptions have been made in the modelling:

1. The continuing UK government does not respond to the cut in the headline rate in and independent Scotland by cutting the UK rate further. Oxford Economics' report for the Weir Group comments that the Scottish Government's estimates of the economic impact of the CT cut are "probably overoptimistic in a context where other countries, including the UK, are also reducing their CT rates."[3]
2. A 3 percentage point cut, from 20 per cent (the UK rate from April 2015) to 17 per cent is 'pre-announced' in 2016, and comes into effect in 2020 and sustained thereafter;
3. The policy is assumed to be fiscally neutral;
4. Barriers to trade, labour and capital mobility emerge between an independent Scotland and the continuing UK over time, consistent with the analysis in *Scotland analysis: macroeconomic and fiscal performance*, which showed that a "border effect" is likely to emerge over time; and
5. No exchange rate frictions exist.[4]

The results suggest that after 20 years **real Scottish GDP increases by 0.6 to 0.8 per cent**. This is driven by a boost to investment of 1.4 to 2.6 per cent, consumption of 0.4 to 0.5 per cent, and exports of 1.6 to 2.0 per cent.[5,6]

A 0.8 per cent increase in the level of GDP is incorporated into HM Treasury's projections.

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[1] Scottish Government (2013), "Scotland's Future: Your guide to an independent Scotland".

[2] Scottish Government (2011), "The impact of a reduction in corporation tax on the Scottish economy".

[3] Weir Group, Oxford Economics (2014), "The potential implications of independence for business in Scotland".

[4] This is a simplifying assumption, but given that the UK Government has ruled out a currency union assuming no exchange rate frictions is likely to overstate the economic benefits of the Scottish CT cut, all else equal (unless an independent Scottish Government was to adopt sterlingisation).

[5] The upper bounds of the ranges are obtained by including the effect of the CT cut on Foreign Direct Investment.

[6] See Annex A for possible reasons for the differences in results between the Scottish Government and HM Treasury modelling.

Box 2.G: Impact of a 50 per cent reduction in Air Passenger Duty in an independent Scotland

The projections in this paper include an HMRC costing of the current Scottish Government's policy commitment, under independence, to reduce Air Passenger Duty (APD). In the absence of more detail about the policy, it is assumed that APD in an independent Scotland would be halved across all bands of flights from Scottish airports.

Consistent with the HM Treasury publication[1] on unfunded commitments in the White Paper, the cost of this measure in 2016-17 is estimated to be £130 million in 2011-12 prices. This costing made assumptions about three key factors:

- The Scottish proportion of UK APD revenue, before behavioural effects, will be 8.1 per cent in 2016-17;[2]
- The number of passengers departing from Scottish airports is estimated to be 3 per cent higher as a result of the reduced APD rates;[3] and
- The weighted average rate paid in Scotland in 2016-17 (and therefore the distribution of passengers and rates) remains the same as in 2012-13.

This policy is assumed to be implemented from 2020-21 – the latest year in the first term and therefore a cost-saving assumption. To get a costing for this year and beyond, the nominal costing is grown from 2016-17, using forecast growth in UK passenger numbers and assuming that rates of APD in an independent Scotland increase with inflation (RPI). As this measure is only estimated to increase passenger numbers by 3 per cent, the additional tax revenue generated does not substantively reduce the cost of halving the duty paid per flight.

[1] Unfunded commitments in 'Scotland's Future', HM Treasury, December 2013.

[2] Based on the 2012-13 proportion published by HMRC in Disaggregated tax and NICs receipts, HM Revenue and Customs, March 2014.

[3] This behavioural response is informed by Department for Transport's (DfT) analysis in Modelling the Effects of Price Differentials at UK Airports, HM Revenue and Customs Research Report 188, October 2012.

Longer term policies

Welfare and pensions

2.28 The current Scottish Government has highlighted a number of areas where it would look to make welfare more generous in an independent Scotland. This includes delaying when the state pension age increases to 67 and reversing the implementation of Universal Credit and the Personal Independence Payment. However, no firm commitment is made to any change in welfare spending totals. Given the uncertainty around the welfare policies that might be taken forward in an independent Scotland, the additional costs associated with these policies are not reflected in HM Treasury's projections. However, as explained in *Scotland analysis: work and pensions*, these proposals would be costly. The delay in increasing the State Pension Age alone would cost around £6 billion between 2026-27 and 2035-36 in extra pension costs. It could also lead to around £9 billion lost in terms of GDP as people leave the labour market earlier than they would otherwise have done.[14] If these policies were introduced in an independent Scotland, HM Treasury's projections will understate the levels of borrowing and debt in an independent Scotland, all else equal.

[14] *Scotland analysis: work and pensions*.

Migration

2.29 The current Scottish Government have stated its intention to have a more open immigration policy than the UK, whilst also seeking to join the Common Travel Area.[15] Membership of the Common Travel Area would need to be negotiated with the continuing UK and all existing Common Travel Area members. The success of these negotiations would likely depend on an independent Scottish state agreeing to align certain visa and immigration policies with the current members of the Common Travel Area.

2.30 Balancing these factors, HM Treasury's projection for an independent Scotland use the ONS' principal 2012 migration assumption of 15,500 net migrants per year in the long term; more than double the 7,000 net migrants per year under the "low" migration assumption for Scotland, but less than the 24,000 annual net migrants assumed in the "high" migration assumption. HM Treaury's UK projections, and the Scotland projections in the IFS' "basic model" use the "low" migration assumption.

2.31 HM Treasury's assumption of higher migration reduces some of the costs from independence since more migrants are assumed to be, but may not necessarily be, of working age and paying taxes. However, increased immigration as a solution to long-term demographic challenges has limitations, which are discussed in detail in the UK Government Paper *Scotland analysis: Borders and citizenship*.[16] Annual net immigration of 15,500 people per year is equivalent to adding a city of the population of Dundee every 10 years, which would bring significant challenges for an independent Scottish state.

Projecting the public finances

2.32 This section projects the public finance positions for an independent Scotland and the UK in a similar way to the OBR's projections for the UK in Fiscal Sustainability Reports. The IFS used the same approach for its projections for Scotland and the UK in *Fiscal sustainability of an independent Scotland*.[17] HM Treasury updates their approach for the OBR's Budget 2014 forecast and the latest population projections from the ONS and also assume that oil and gas revenues decline in line with the OBR's projections in FSR 2013.[18]

2.33 Comparing the debt projections of the HM Treasury model and IFS 'basic model' against each other on a like-for-like basis (calibrating to the IFS assumptions), the HM Treasury model generates slightly lower debt projections for Scotland on average over the projection period considered in this paper.

2.34 HM Treasury projections incorporate the effects of the fiscal challenges facing Scotland in the near term and over the longer term as identified in Chapter 1. The effect of the medium term fiscal position, long-term oil decline, and demographics, were also analysed by the IFS. However, the HM Treasury projections go beyond the scope considered by the IFS by including the direct impacts of independence identified in this chapter, and allowing for the economic and fiscal effects of the Scottish Government's White Paper policies. A detailed explanation of the projections methodology is given in Annex A.

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[15] Scottish Government (2013), "Scotland's Future: Your guide to an independent Scotland"

[16] *Scotland analysis: Borders and citizenship*.

[17] IFS (2013) "Fiscal sustainability of an independent Scotland".

[18] The IFS' 'basic model' assumes that oil and gas revenues stay constant as a share of GDP in the long-run "rather than declining in the way that might be expected [...] for consistency with the OBR's central projections" but acknowledge that "This scenario seems easier to envisage for the UK as a whole, where these revenues (as forecast by the OBR) are projected to make up only 1.8% of national income in 2017–18; it would be a bigger challenge to find other sources of such revenues from Scotland alone, since these revenues are projected to constitute 3.6% of Scottish national income in 2017–18." (p.18) HM Treasury's projections for both an independent Scotland and the UK assume that oil and gas revenues decline consistent with the OBR's long run oil and gas revenues forecast.

Economic and policy assumptions

2.35 As with all analysis which projects a country's fiscal position, the public finance projections in this paper are driven by a number of assumptions. For the UK projection HM Treasury make many of the same assumptions as the OBR in its FSR 2013, on aspects such as the rate of productivity growth, migration and interest rates.

2.36 For an independent Scotland, HM Treasury assumptions are informed by Scottish Government announcements or analysis by external institutions. Many of these have already been discussed in this paper, such as: the fiscal position of Scotland in 2018-19 – the 'starting point' from which demographics affect the projections; the forecasts used for oil revenues in the medium and longer-term; the premium on Scottish borrowing; and the rate of Scottish migration.

2.37 In the event of independence, the allocation of the national debt would also be subject to negotiation. The UK Government has stated its clear position that an independent Scottish state would become responsible for a fair and proportionate share of the UK's current liabilities. These projections assume that an independent Scotland receives a population share of UK debt by the end of 2015-16, as forecast by the OBR. A population split of public sector net debt at the end of 2015-16, would mean an independent Scotland inherited a national debt of around 74 per cent of its GDP. The allocation of debt is discussed in Box 2.H.

2.38 The key assumptions used for the UK and an independent Scotland are summarised in Table 2.A and discussed in more detail in Annex A.

Table 2.A: Key assumptions

Assumption	UK	An independent Scotland
Starting debt	78.3 per cent of GDP (OBR Budget 2014 PSND forecast for 2015-16)	Population share (8.3 per cent) of UK
Borrowing in 2018-19 (the year after which the effects of demographics are included)	-0.2 per cent of GDP (OBR March 2014 PSNB forecast, ex. APF)	3.3 per cent of GDP = 2.9 per cent of GDP CPPR deficit (ex. APF) for Scotland as part of the UK + 0.2 per cent of GDP set-up costs of independence + 0.2 per cent of GDP higher EU contributions from independence
North Sea oil and gas revenues	Up to 2018-19: OBR Budget 2014 forecast From 2019-20: OBR central UK oil and gas revenue projection in FSR 2013	Geographical share of OBR UK forecasts (using HMRC shares)
Sovereign interest rates	Until 2018-19: as in OBR Budget 2014 forecast; 2019-20 to 2026-27: increasing in straight line to 5 per cent; 2027-28 onwards: 5 per cent (as in OBR FSR 2013)	As for UK but with a constant premium of 1.2 percentage points applied (mid-point of NIESR range)[a]
Migration	ONS 2012 UK low migration	ONS 2012 Scotland principal migration assumption
Productivity growth beyond 2018-19	2.2 per cent (as in OBR FSR 2013)	2.2 per cent (as in OBR FSR 2013 and IFS report)[b]

Source: OBR (2014) "Economic and Fiscal Outlook"; OBR (2013) "Fiscal Sustainability Report"; IFS (2013) "Fiscal sustainability of an independent Scotland"; National Institute for Economic and Social Research (2013), "Scotland's currency options"; Office for National Statistics; (2013) "National Population Projections, 2012-based Statistical Bulletin; (PPR(2014) "Analysis of Scotland's past and future fiscal position".

[a] This is the midpoint between the NIESR 0.72-1.65 per cent range for the premium on Scottish borrowing above UK rates.
[b] This is the rate of productivity growth before the economic effects of Scottish Government policies are factored in.

Box 2.H: Allocation of UK debt in the event of independence

As set out in *UK debt and the Scottish independence referendum, in the event of Scottish independence*,[1] the continuing UK Government would in all circumstances honour the contractual terms of the debt issued by the UK Government. An independent Scottish state would become responsible for a fair and proportionate share of the UK's current liabilities. A separate contract between the continuing UK Government and an independent Scottish state's Government would need to be established. The respective shares of debt and the terms of repayment would be subject to negotiation between the governments.

This box discusses some of the possible debt settlements that have been suggested in the Scottish independence debate. It discusses international law in the area of debt allocation and its implications when a country or region becomes independent from an existing state.

A per-capita share of debt

When Czechoslovakia separated, debt was allocated on a two-to-one basis, reflecting the relative size of the Czech and Slovak populations. A consensus has formed among various external commentators in favour of such a population allocation of debt in the event of Scottish independence.[2,3] The Scottish Government has also suggested a per capita division might be the most reasonable approach:

"If we focus solely on the assets and liabilities of the UK state, a per capita distribution arrangement would strike me as a fair and reasonable approach".

John Swinney, Scottish Finance Minister, 11 December 2012

A GDP share of debt

Another possible approach to allocating national debt could be according to GDP (i.e. income or "affordability"), as highlighted by the National Institute of Economic and Social Research (NIESR):

"So far as general principles can be drawn [...] non-physical assets and liabilities are separated on some basis of 'fairness', of which two leading contenders are a population and income basis."

National Institute for Economic and Social Research
Assets and liabilities and Scottish independence, April 2014

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[1] HM Treasury (2014), "UK debt and the Scotland independence referendum, in the event of Scottish independence".

[2] Professor Brian Ashcroft, Emeritus professor in economics, University of Strathclyde (15 April 2013), "*[I]t seems a reasonable logical argument that as part of the United Kingdom Scotland should broadly be expected to share on a per capita basis in UK public spending, taxation and debt. Asking Scotland to take a per capita share of UK debt if Scotland decided to leave the UK union would seem to be reasonable, since everybody in the UK might be said to be in the same boat together.*"

[3] Professor Charles Goodhart CBE, Emeritus professor in economics, London School of Economics in Andrew Goudie book: Scotland's Future (March 2013), "*For the purpose of this exercise, it is assumed that the share of the UK's public sector net debt (PSND) to be allocated to Scotland in the event of independence would be approximately 8.5 per cent [- a broad population share].*"

A share of debt according to historic deficits

The Scottish Government's Fiscal Commission Working Group has suggested another option: "An alternative way to determine Scotland's share of UK public sector debt could be to base the calculation on an estimate of Scotland's historic contribution to the UK's public finances."[4]

The concept is that the sum of the past annual fiscal positions for Scotland[5] is compared to that of the UK to determine the proportion of total net borrowing that was made by Scotland relative to the UK as a whole. This proportion is then applied to the UK's net debt stock. The Scottish Government has calculated the proportion of total net borrowing made by Scotland relative to the UK as 5.1 per cent, using data from the Scottish Government's experimental data series from 1980-81 to 2011-12.However, this approach has a number of substantial drawbacks, both in principle and due to data constraints:

- Firstly, as identified by NIESR, "the starting point is arbitrary"[7] and the calculation is very vulnerable to the time period considered:
  - Out of 307 years of union and debt issuance, the Scottish Government's approach only considers fiscal data over the last 34 years.
  - To illustrate the impact the starting year has, if the period since 1990 is instead analysed, the Scottish proportion almost doubles to 9.8 per cent. If the period since devolution is used (i.e. from 1999), prior to which the data is largely experimental, the Scottish proportion is 9.2 per cent.
  - As the CPPR comment: *"why begin in 1980; the year when North Sea tax revenues started to accrue to the UK and substantially boosted Scotland's fiscal balance? Scotland's onshore (non-oil) fiscal balance is known to have been worse, in relative terms, than that of the UK back to 1980 and it would seem reasonable to argue that this would have been the case for some time earlier than that date too. It would be logical to calculate the net fiscal balance position, relative to the UK, back to 1707, but data back that far does not exist."*[8]

[4] The Scottish Government (2013), *Fiscal Commission Working Group – First Report – Macroeconomic Framework*, page 171.

[5] Assuming a geographic split of North Sea oil and gas revenues, on the basis of the median line.

[6] The Scottish Government (2013), *Scotland's Balance Sheet*, available at www.scotland.gov.uk.

[7] National Institute of Economic and Social Research (September 2013), *Scotland's Currency Options*, page 25.

[8] CPPR (2014), "Fiscal implications for an independent Scotland when assuming that it takes on a low, or zero, share of the UK existing debt".

- Secondly, even from 1980-81, historic data on the Scottish net fiscal position misses much of the picture:
  - Financial transactions and large elements of the financial interventions made by the UK Government during the crisis to support the financial system are not captured in the net fiscal position, yet do count toward debt. Scaling the total debt stock by a proportion which does not fully account for the amount of money actually needing to be financed is therefore unlikely to be appropriate.[9,10]
  - The approach assumes that the benefits that Scotland has enjoyed as part of the 307 year union of the UK are wholly reflected in the Scottish net fiscal balance over only the last 34 years. In reality, Scotland and the rest of the UK have benefitted generally from the integrated union of the UK and the positive "spillovers" and risk sharing that occurs across its constituent parts. These include the low borrowing costs and economic resilience provided by the UK's strong and credible institutions. They also include the physical assets bought and invested in, and the tax incentives provided to industries. For example, the Scottish deficit will not wholly account for Scottish infrastructure projects funded by the UK Government. Nor will the Scottish deficit reflect the large tax incentives and decommissioning relief costs provided to the North Sea oil and gas industry to promote and incentivise exploration and drilling. NIESR highlight: "There is at least some evidence from economic historians that Scotland has been the main beneficiary of the Union."[11]

As the CPPR conclude: *"Initiating the calculation in 1980 seems to be one of many potential starting points for such a calculation. Adding in the challenge of determining Scotland's share of the total debt arising from any such chosen start date means a wide array of different outcomes is highly plausible. ... [W]e are unaware of any historical disentanglement of the accumulation of national debt in the circumstances surrounding the break-up of other nations."*[12]

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[9] National Institute of Economic and Social Research (September 2013), *Scotland's Currency Options*, page 25. As NIESR ask: "is it reasonable to retrospectively allocate tax revenue from oil and gas and not retrospectively allocate taxpayer exposures to banks?"

[10] Ashcroft (2013), "Scotland's Public Sector Net Debt". And as Brian Ashcroft, emeritus professor in economics at the University of Strathclyde, comments: "if we are to compute Scotland's share of UK debt on an historic basis, shouldn't we also allow for special Scottish factors that directly affected the level of UK public net debt? One obvious and significant omission is the bailout of the two Scottish banks in 2008-09."

[11] National Institute of Economic and Social Research (September 2013), *Scotland's Currency Options*, page 25.

[12] CPPR (2014), "Fiscal implications for an independent Scotland when assuming that it takes on a low, or zero, share of the UK's existing debt".

International law

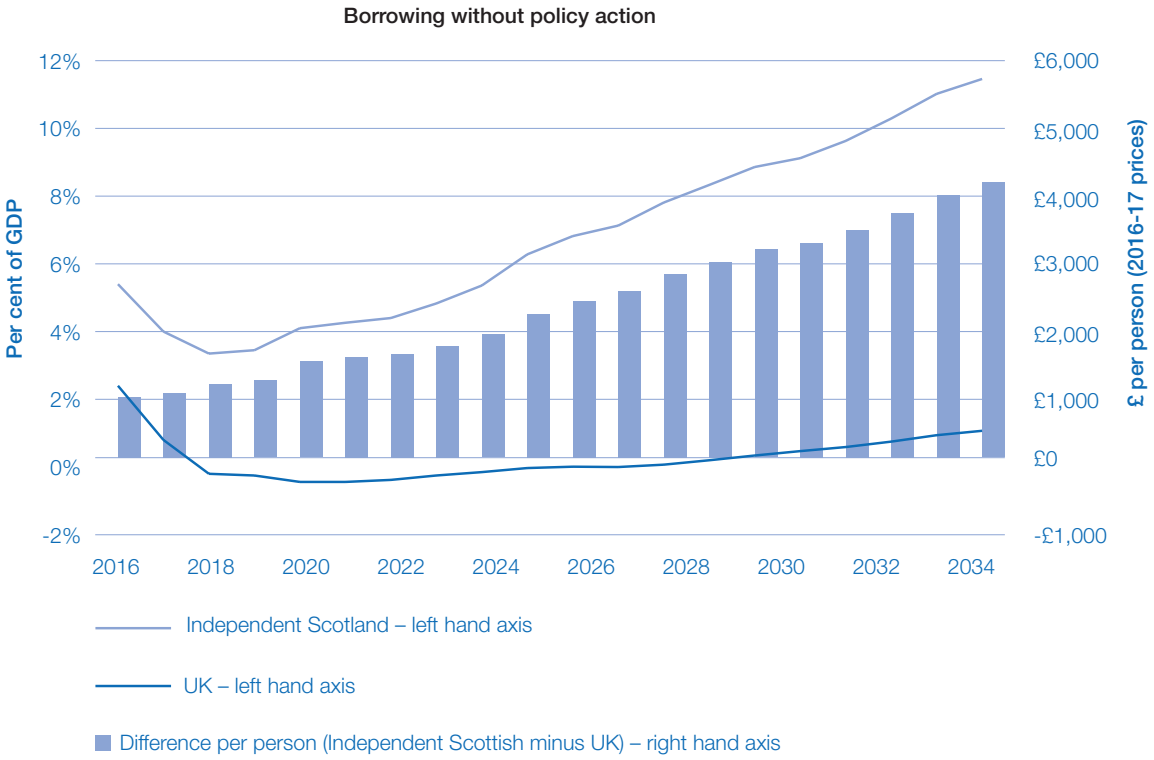
State practice supports the view that as a matter of international law, the relevant debt is the debt at the time of secession, having been generated by the state of which the separating entity was part. That is, the debt in question at the point of independence is the debt of the UK as a whole, not that of England, Wales, Northern Ireland and Scotland. A historic deficits approach, which treats past UK debt at the point of independence as debt of the constituent parts of the UK, is therefore inconsistent with this approach.

There are a number of relevant principles in international law, which would inform the allocation of existing UK debt in the event of independence. The key principle in relation to the apportionment of debts is 'equitable apportionment'. In defining an 'equitable apportionment', the ability to service debt – or 'capacité contributive', a forward looking concept – is one relevant factor likely to be taken into account, which supports a population or GDP apportionment of debt. A historic deficits approach is a backward looking concept and therefore inconsistent with the ability to service debts at the point of independence or in the future.

Borrowing projections

2.39 Scotland's deficit in 2016-17 is forecast by independent bodies to be around £1,000 higher per person than for the UK as a whole. This borrowing gap between an independent Scotland and the UK is projected to widen to around £4,200 per person by 2035-36, without corrective policy action by an independent Scottish government. Of this, around £2,300 is from higher debt interest, highlighting the deadweight costs of policy inaction.

Chart 2.A: Borrowing gap between an independent Scotland and the UK



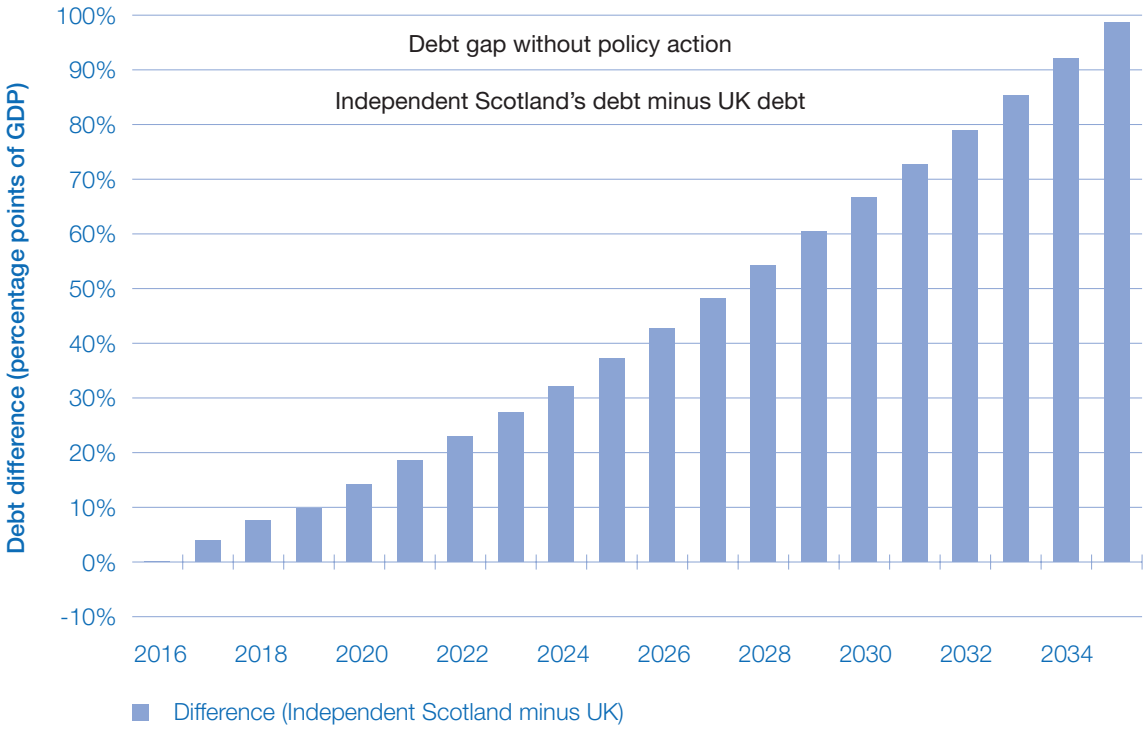
Source: HM Treasury.

2.40 In the absence of higher taxes or spending cuts, an independent Scotland is projected to be borrowing over 10 percentage points of GDP more than the UK year after year by 2035-36. Public spending in an independent Scotland is projected to be over 48 per cent of GDP by 2035-36 – of which almost 8 percentage points is estimated to be in debt interest payments. Tax revenues are projected to be around 37 per cent of GDP.

Debt projections

2.41 Debt-to-GDP in an independent Scotland is projected to be around 100 percentage points of GDP higher than the UK by 2035-36. Without policy action over the projection period a debt burden of this size would inevitably need to be addressed by future generations through eventual cuts to public spending or tax increases.

Chart 2.B: Debt gap between an independent Scotland and the UK



Source: HM Treasury

2.42 Even if an independent Scotland had migration of 24,000 annual net migrants in the long-term (as per the ONS "high" migration assumption) the debt gap by 2035-36 is still projected to be around 90 percentage points of GDP. As set out in *Scotland analysis: Borders and citizenship* this high level of inward migration would bring significant challenges for an independent Scottish state.[19]

2.43 Box 2.G discusses the GDP projections underlying these fiscal projection and estimates the additional GDP growth required in an independent Scotland to close the debt gap above.

[19] As set out in *Scotland analysis: Borders and citizenship*, those challenges could include both the maintenance of social cohesion and the funding of the additional infrastructure and social service provision for the immigrant population. While over the medium term immigrant labour may increase tax revenues, the need for additional school places, housing and health services may be more immediate.

Box 2.I: Economic growth

Drivers of growth

HM Treasury's projections for economic growth in the onshore economy are driven by 4 main inputs:

1. Productivity growth – which for the UK and an independent Scotland is assumed to be in line with the OBR FSR 2013 assumption of 2.2 per cent a year over the long term;
2. Population growth – which varies according to the migration assumption used for each country from the ONS 2012 population projections; and
3. Labour market participation – which in the projections is slightly higher for Scotland than the UK, due to an assumed small increase in female labour market participation in an independent Scotland as a result of the Scottish Government's childcare policy for independence.
4. Whole economy inflation – which for the UK and an independent Scotland HM Treasury's projections assume to be in line with the OBR FSR 2013 assumption of 2.2 per cent per year over the long term.

GDP projections for the UK and an independent Scotland

Removing the effect of population change and inflation components above, but adding in offshore output, HM Treasury's projections assume that an independent Scotland starts with total real GDP per capita which is around 10 per cent higher than the UK. Given that an independent Scotland's onshore real GDP per capita is assumed to stay broadly equal to the UK, this 10 per cent higher real GDP per capita is largely driven by the assumption that Scotland has a geographical share of offshore output. Over time, Scottish real GDP per capita converges towards the UK level as offshore output declines, implying a lower real GDP per capita *growth* rate than for the UK over the projection period.[1] The GDP projections for an independent Scotland also include the economic effects from Scottish Government policies, including a 0.6 per cent increase in the level of GDP assumed from the corporation tax cut.

GDP growth required to offset the debt-to-GDP gap

The Scottish Government has argued that an independent Scotland would achieve higher levels of growth as an independent country, which would reduce the size of the required fiscal consolidation. HM Treasury projections incorporate estimates of the potential positive economic effects from the Scottish Government's White Paper policies. Even taking these effects into account, growth in an independent Scotland would need to be over 50 per cent higher on average every year over the first 20 years of independence to offset the debt gap from independence. This would be greater than anything Austria, Belgium, Canada, Denmark, France, Finland, Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, or the USA has achieved over the last 20 years.[2]

This is likely to be a favourable estimate of the additional growth required since it assumes that public spending does not increase in line with the additional GDP (as has typically been the case in advanced economies), yet tax receipts do. In fact, public spending is assumed to be lower still due to debt interest savings from the higher tax revenues. As such, public spending is assumed to be at 36 per cent of GDP in 2035-36, instead of over 48 per cent in HM Treasury's projections. For comparison, the level of public spending in the US in 2013 was 38 per cent of GDP.

[1] More detail on the GDP projections for the UK and an independent Scotland is given in Annex A.

[2] Based on data from IMF (2014) "World Economic Outlook Database"

The UK Dividend: lower taxes and higher public spending for the people of Scotland from remaining part of the UK

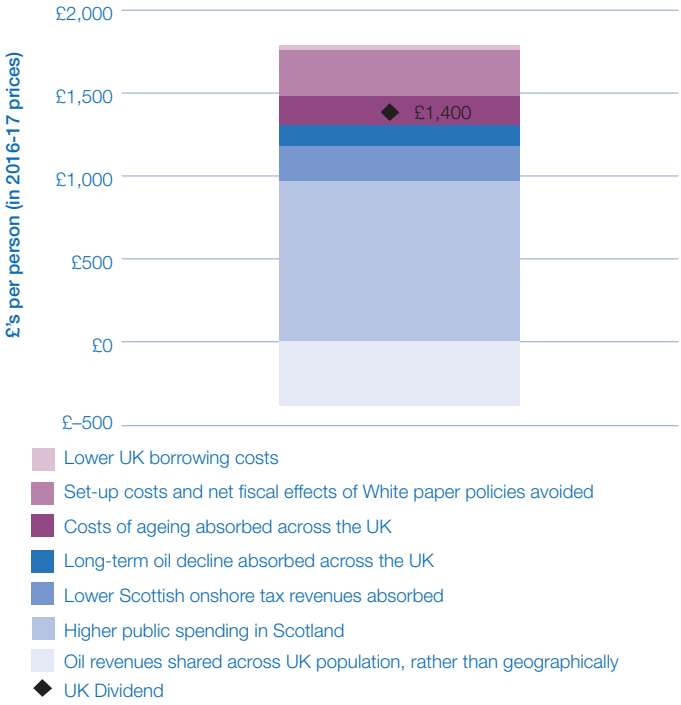
2.44 The fiscal projections above estimate the increasing fiscal costs of independence in the absence of policy action. Based on these projections, it is therefore very likely that an independent Scottish government would have to reduce public spending and/or increase taxes to ensure fiscal sustainability.

2.45 Additional cuts to public services above and beyond UK consolidation and tax increases would be needed, equivalent to £1,400 per person[20] per year from 2016-17, to close the gap in the public finances of an independent Scotland, relative to the UK, by 2035-36. In other words, the analysis in this paper estimates that the UK Dividend from staying part of the UK is equivalent to leaving each Scottish person £1,400 per year better off from lower taxes and increased public services as part of the UK.

2.46 The UK Dividend comes from a number of different components, as shown in the Chart 2.C. The majority of the dividend comes from higher public spending in Scotland and lower onshore tax revenues at present and by 2016-17, that are not covered by higher oil revenues. Over the following 20 years, remaining part of the UK would mean Scottish people would not face the fiscal costs of an ageing population and declining oil revenues alone. The UK Dividend also includes Scottish people avoiding the direct net costs that would come with independence. These include the costs of higher interest rates for an independent Scottish state to borrow, the costs of setting up new institutions, and the costs of funding the Scottish Government's White Paper policies (net of the potential economic benefits).

[20] In 2016-17 prices.

Chart 2.C: The UK Dividend of £1,400 per Scottish person explained



Source: HM Treasury calculations.

2.47 The projections which inform the £1,400 UK Dividend take a favourable view of some of the likely consequences of independence. The benefits of staying part of the UK could be substantially higher if, for example:

- Scottish migration over the long term was lower than the additional 15,500 net in-migrants per year assumed in HM Treasury's analysis. For example, the IFS assume a long-run immigration rate of an additional 7,000 net in-migrants each year;[21]
- the premium on Scottish borrowing was higher than 1.2 per cent, as various independent bodies predict it could be;
- the legislated rise in the State Pension age is delayed in an independent Scotland, or the implementation of Universal Credit and the Personal Independence payment were reversed;
- productivity growth was lower for Scotland than that assumed by the OBR for the UK; or
- as has often been the case in recent years, oil revenue falls short of the OBR's forecasts, or revenues are put into an oil fund whilst the public finances are in deficit.

2.48 The estimated £1,400 also assumes that an independent Scotland implements in full the fiscal consolidation plans announced by the UK Government for 2016-17 to 2018-19. If an independent Scottish Government chose to avoid or delay the consolidation, subsequent tax increases or spending cuts would need to be even larger.

[21] IFS (2013), "Fiscal sustainability of an independent Scotland".

2.49 The tax increases or spending cuts would also need to be deeper if Scotland wished (or was compelled) to run a more prudent fiscal policy than the UK to account for its increased exposure to volatile oil revenues and a larger banking sector than the UK, relative to the size of its economy. For example, as set out in *Scotland analysis: Financial services and banking*, the UK – with a banking sector around 490 per cent relative to the size of its economy – saw its debt to GDP ratio go up by around 40 percentage points since the financial crisis. Scotland, if currently independent, would have a banking sector over 1,250 per cent relative to the size of its economy.

2.50 If oil and gas revenues came in above the OBR forecast, given that the current Scottish Government has committed to setting up a stabilisation fund (see Chapter 1) it might be realistic to assume that an independent Scotland would follow the recommendations of the Fiscal Commission Working Group and allocate any 'upside surprise' revenues to an oil fund. If this was to happen, the HM Treasury estimate of permanent tax rises or spending cuts of £1,400 per person would still need to be found.

2.51 If past forecasting performance is any guide to the future, it is quite possible that oil and gas revenues underperform the OBR Budget 2014 forecast. Considering the year-ahead forecasts alone, outturn UK oil and gas receipts have come in an average of 20 per cent below year-ahead forecasts made by the OBR at successive Budgets. If UK oil and gas revenues came in below the OBR's Budget 2014 or FSR 2013 forecast the estimated savings in tax rises and spending cuts from Scotland staying part of the UK would be larger still.

Scotland's tax and spending choices

2.52 As explained in *Scotland analysis: Macroeconomic and fiscal performance*, Scotland currently receives secure and stable funding because the UK's fiscal model pools resources across a broad and diverse economy. But within this integrated UK-wide system, the Scottish Parliament already has responsibility for around 60 per cent of Scotland's spending (including health, education, housing, transport, policing and justice) while the Scotland Act 2012 is providing increased powers over taxation.

2.53 Specifically, in addition to control over council tax and business rates, the Scottish Parliament will become responsible for the Scottish rate of income tax, as well as stamp duty land tax and landfill tax in Scotland. The Act is also providing the Scottish Government with new capital borrowing powers of up to £2.2 billion. These new powers will enable the Scottish Government to vary levels of tax and spending in Scotland, and decide when and how to invest further in Scotland's infrastructure.

2.54 Independence would mean the end of pooling tax revenues and risks with other parts of the UK. An independent Scottish state would no longer receive a block grant from the UK Government so would therefore need to fund its public spending from its own tax revenues. Under independence, the loss of the UK Dividend £1,400 per person per year, could come in a number of forms of higher taxes or reduced public services.

Maintaining public services

2.55 To continue to provide similar levels of public services over the next 20 years, an independent Scotland would need to increase all onshore tax revenues by 13 per cent. To illustrate the scale of this increase, this would be equivalent to setting a 28 per cent basic rate of income tax, a 26 per cent standard rate of VAT, and increasing the main duties (on alcohol, tobacco, fuel and vehicles) by almost 40 per cent.

2.56 As part of the UK, Scotland would therefore be able to support similar levels of public services with lower levels of tax. In particular, while the Scotland Act 2012 will provide the Scottish Government with further powers to vary tax and spending as part of the UK, an independent Scotland would need to permanently increase tax by £1,400 per person just to maintain the existing level of public services.

Maintaining levels of tax

2.57 To maintain similar levels of taxation over the next 20 years, an independent Scotland would need to reduce public spending by 11 per cent. To illustrate the scale of this change, this is equivalent to almost two thirds of Scotland's health spending or all Scotland's education spending. As part of the UK, with similar levels of tax, Scotland would instead be able to support higher levels of public spending by continuing to pool tax revenues.

Annex A:
Projecting the long-run public finances

Summary

A.1 This Annex describes HM Treasury's methodology for projecting the long-run fiscal positions of the UK and an independent Scottish state.

A.2 The Treasury approach follows the Office for Budget Responsibility (OBR) in its *Fiscal sustainability report* (FSR) and the Institute for Fiscal Studies (IFS) in its publication *Fiscal sustainability of an independent Scotland* in assessing the impact of future demographic change on the public finances.[1]

A.3 This approach constructs projections for individual items of tax and spending and for GDP, taking into account latest UK Government legislated policies and the firm policy commitment in the Scottish Government's White Paper. When policy is not defined over the long term, the projections are made on the assumption of unchanged policy, in line with the OBR and IFS methodology. These projections are used to project the future path of government borrowing and debt. The Treasury approach extends on the IFS approach to projecting the long-term public finances of an independent Scotland by taking into account the fiscal impact of a declining offshore sector, direct fiscal impacts of independence, and policies committed to by the Scottish Government.

A.4 The Treasury analysis projects forward from an initial economic and fiscal position. For the UK projection, HM Treasury use the OBR's March 2014 Economic and fiscal outlook (EFO) give a starting position.[2] For Scotland, HM Treasury assume that the Scottish notional debt and borrowing position as part of the UK is as forecast by the Centre for Public Policy for the Regions (CPPR).[3,4] As the CPPR forecast does not provide levels of tax, spending and GDP, these are constructed by assuming historic relationships between the UK's economic and fiscal position and that of Scotland continue to hold. Direct effects of independence are then included to give the starting economic and fiscal position under independence.

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1 OBR (2013), "Fiscal sustainability report"; IFS (2013), "Fiscal sustainability of an independent Scotland" (modelling approach described in "The UK's public finances in the long-run: the IFS model")

2 OBR (2014), "Economic and fiscal outlook"

3 The CPPR forecast two estimates for the Scottish fiscal position according to two different apportionment methods for a geographical share of the OBR's UK oil and gas revenues forecast. 2.9 per cent is the more generous (i.e. lower) of the two.

4 CPPR (2014), "Analysis of Scotland's past and future fiscal position"

A.5 The Treasury analysis takes as its input this initial fiscal position and constructs 'bottom-up' projections of the amounts of tax and spending in future years. These 'bottom-up' projections are produced for each main category of tax and spending e.g. health spending and income tax revenues. Summing up these individual projections of tax and spending implies a level of non-interest government borrowing in each future year. Combined with assumptions about how the government finances its borrowing, this implies a path for future total government borrowing and debt.

A.6 The Treasury projections cover a 20 year period (from 2016-17 to 2035-36), rather than projecting to 2062-63 as per the latest publications from the OBR and IFS.

A.7 The projections are used to assess the difference between the UK long-term fiscal position and that of an independent Scotland. One method of assessment used is to examine the difference in borrowing or debt under unchanged policy in any given year. This difference is expressed in pounds per person terms, in 2016-17 prices.

A.8 A second measure used is the 'fiscal gap' – the fiscal adjustment required to bring an independent Scotland's fiscal position in line with that of the UK in the long term. The fiscal gap is found by indentifying a target level for debt in 2035-36 (in this case the projected level of UK debt in 2035-36) and calculating the permanent fiscal consolidation which, if made in 2016-17, would mean that debt was projected to reach its target level in 2035-36. This permanent adjustment is calculated as a constant per cent of GDP across the projection period. This is then expressed in pounds per person, in 2016-17 prices.

The medium-term economic and fiscal position

A.9 The economic and fiscal position of the UK for the three years from 2016-17 to 2018-19 is assumed to be as forecast by the OBR in its March 2014 EFO.[5] For these three years, the Scottish notional debt and borrowing position as part of the UK is assumed to be as forecast by the Centre for Public Policy for Regions (CPPR).[6]

A.10 As the CPPR forecast does not provide levels of tax, spending and GDP, these are constructed by assuming historic relationships between the UK's economic and fiscal position and that of Scotland continue to hold. These assumptions are:

- Total managed expenditure per capita is around 10 per cent higher in Scotland than for the UK as a whole;
- Scottish onshore revenues per capita are 98 per cent of the level of the UK as a whole;
- Onshore GDP per capita is the same for Scotland as for the UK as a whole.

A.11 It is also assumed that Scotland collects revenues from the offshore sector which are equal to around 80 per cent of the revenues forecast by the OBR for the UK as a whole (precise shares of revenues in each year based on HMRC estimates of the location of offshore activity, described in more detail below).

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[5] HM Treasury uses the OBR's 'underlying' public sector net borrowing measure (which excludes the effects transfers ongoing between the Exchequer and the Bank of England's Asset Purchase Facility) to construct the initial spending revenue and borrowing positions for the UK and an independent Scotland. This means the analysis does not artificially project these flows into the future. However, it does allow transfers between the APF and the Exchequer to impact the initial position for UK PSND. This means that these transfers impact on the initial Scottish debt allocation but not thereafter.

[6] Scotland total net fiscal balance as a percentage of GDP on Kemp and Stephen shares of offshore revenues basis, from CPPR briefing note *Analysis of Scotland's past and future fiscal position*.

A.12 These assumptions imply deficit figures very close to those in the CPPR forecast. Where the calculated tax and spend levels do not exactly imply the CPPR total fiscal deficit forecast, onshore tax and spending are adjusted by equal amounts in order to imply the CPPR total fiscal deficit in each year.

A.13 Applying these assumptions gives the fiscal position for Scotland as part of the UK. To account for the impacts of independence several further assumptions are made:

- Scotland takes a population share of the OBR's forecast for UK public sector net debt at the point of independence (end of fiscal year 2015-16);
- Scotland issues new debt at a rate including a premium over the UK rate;
- Scotland faces some start-up costs of independence; and
- Scotland's net contributions to the EU increase.

A.14 These assumptions imply projected levels of tax and spending, borrowing and debt for both the UK and an independent Scotland for the years 2016-17 to 2018-19.

Long term projections

A.15 For the years from 2019-20 onwards, HM Treasury generate long-term projections of levels of tax and spending by major category. For most categories, this means calculations are made of the expected growth of spending and tax revenues, given the demographic trends in the Office for National Statistics' (ONS) population projections, using the OBR methodology.

A.16 There are 4 categories of projections which are an exception to this:

- Projections of state pensions and benefits spending are calculated for both the UK and Scotland using the Department for Work and Pensions' (DWP) long term pensions and benefits model. These projections, produced using economic and demographic assumptions consistent with Treasury assumptions, were published by DWP in *Scotland Analysis: work and pensions* and are fed into the Treasury analysis.[7]
- Public service pensions spending for the UK is as projected by the Government Actuary's Department for the OBR's FSR 2013. The Scottish projection for public service pension spending is obtained by scaling the UK projection by the relative size of the pension age population in the UK and Scotland in each year.
- Projections of revenues from the offshore sector are produced based on trends in the production and price of offshore output. These projections are discussed in detail in a later section.
- Debt interest spending is a function of the level of debt in each year and the interest rate paid on debt. The projection of debt interest spending is described in detail in a later section.

A.17 For all other categories, where demographic trends are used to project future levels of tax and spending, the Treasury approach follows closely that of the OBR in its FSR. This is to take starting levels of tax and spending by category and project them forward for future years in line with demographic trends and growth in incomes.

[7] *Scotland analysis: work and pensions.*

A.18 In order to obtain initial levels of tax and spend by category, the HM Treasury analysis makes assumptions about the breakdown of total tax and spending in 2018-19 and apply these to the total tax and spending levels that constitute the 2018-19 fiscal position described above. Non-interest spending excluding pensions and benefits in 2018-19 is assumed, for Scotland, to be divided between the main areas of spending in the same proportions as calculated by the IFS. Onshore revenues are also apportioned according to the IFS projections. For the UK in 2018-19 spending is apportioned in line with the projections made by the OBR in its 2013 FSR and tax in line with its March 2014 EFO.

A.19 Projecting forward, it is assumed that the amount of spending on (or revenues received from) a person of a given age and given sex grows in line with the growth of incomes over time. A change in the demographic structure of the population will therefore change the total level of tax and spending projected across the whole population.

A.20 For both the UK and an independent Scotland, for each category e.g. health or income tax, the HM Treasury analysis uses the OBR's 'age profiles' to apportion the level of tax or spending in 2018-19 between people of each age and sex. These age profiles are used by the OBR in their long-term projections and reflect information collected about the age distribution of spending and tax. To project e.g. spending on health in 2025-26, the level of health spending on a person of a particular age and sex in 2018-19 is multiplied by the number of people of that age and sex projected to be alive in 2025-26, according to the ONS population projections. This multiplication is carried out for each age for both sexes and the amounts summed. This figure is grown in line with the growth of incomes between 2018-19 and 2025-26 to give the projected spend on health in 2025-26.[8]

A.21 The projections for the UK use the ONS' 'low migration' population projections, in line with the OBR and IFS approaches. For Scotland, the ONS' principal population projection is used. This is a departure from the IFS approach, which uses the 'low migration' population projection for Scotland. The Treasury projections use the latest, 2012-based, ONS population projections. The IFS projections used the 2010-based projections. More information on the effect of this difference is given in a later section.

Offshore revenue projections

A.22 The Treasury projections capture the impact of expected future trends in offshore activity. These feed into both the UK and Scotland projections.

A.23 The UK projection combines the OBR's latest medium and long-term revenue forecasts. For the years to 2018-19, onshore and offshore revenues from the production of oil and gas in the UK and the UK continental shelf are as forecast by the OBR in its March 2014 EFO. For the years from 2019-20 onwards, the projections are equal to the OBR's central long-term forecast of UK oil and gas revenues in its 2013 FSR. The projection for Scottish revenues is produced by applying HMRC's estimates of the Scottish geographical share of UK oil and gas revenues to the UK projection.

[8] UK long-term care spending is projected by scaling the OBR's FSR 2013 projection to account for the updated 2012-based ONS population projections. This is done by projecting social care spending using the OBR age profiles for both 2010-based and 2012-based population projections. The FSR projection is scaled by the ratio of these two projections.

A.24 Medium-term (until 2018-19) revenue shares are based on the geographical split of fields using the Scottish Adjacent Waters boundary order (1999). Information regarding oil and gas production, and operating and capital expenditure is produced by the Department for Energy and Climate Change (DECC) and is based on detailed field-by-field data provided by operators. The data for Scottish fields is run through HMRC's micro simulation model which replicates the UK oil and gas fiscal regime. This gives a forecast of production and tax revenues for the Scottish sector.

A.25 HMRC analysis of the output from the micro simulation model beyond 2018-19 estimates the proportion of "Scottish" tax receipts increasing on a straight line basis up to 95 per cent by 2040. This is consistent with the assumption that new discoveries will increasingly be more likely in Scottish waters than the rest of the UK, as implied by the split of production projections in the data.

GDP projections

A.26 HM Treasury projects long-term GDP growth in a similar way to the OBR in its FSR. The Treasury model departs from the OBR's approach in capturing the impact of a declining offshore sector.

A.27 As described above, UK GDP up until 2018-19 is assumed to be as forecast in the OBR's March 2014 forecast. Scottish onshore GDP up until 2018-19 is assumed to be equal to that of the UK on a per-capita basis. The projection of Scottish offshore GDP is described later.

A.28 Consistent with the OBR, from 2019-20 onwards, HM Treasury estimates UK total nominal GDP growth as the product of (i) workforce growth (ii) productivity growth (iii) whole economy inflation. Scottish onshore nominal GDP growth is also estimated in this way.

A.29 Similarly to the OBR, HM Treasury calculate the number of people in work in each future year by combining ONS population projections with calculated age-specific participation rates and an assumption about the equilibrium rate of unemployment. The model uses Labour Force Survey data on participation rates by age and takes into account the legislated future rises in the State Pension age to calculate age-specific participation rates for each year of age for both sexes. Growth in the number of people in work is assumed to be matched by a corresponding increase in GDP.

A.30 Consistent with the OBR, the projections assume productivity growth of 2.2 per cent per year from 2019-20 for the UK and an independent Scotland. Similarly, whole economy inflation is assumed to be 2.2 per cent per year for both the UK and an independent Scotland for each year from 2019-20.

A.31 UK offshore output is calculated by growing ONS outturn figures for offshore gross value added in line with the DECC production forecast. In line with the FSR, HM Treasury assume that production declines by 5 per cent each year from 2018-19 onwards. HM Treasury assume that oil and gas prices grow in line with OBR assumptions.

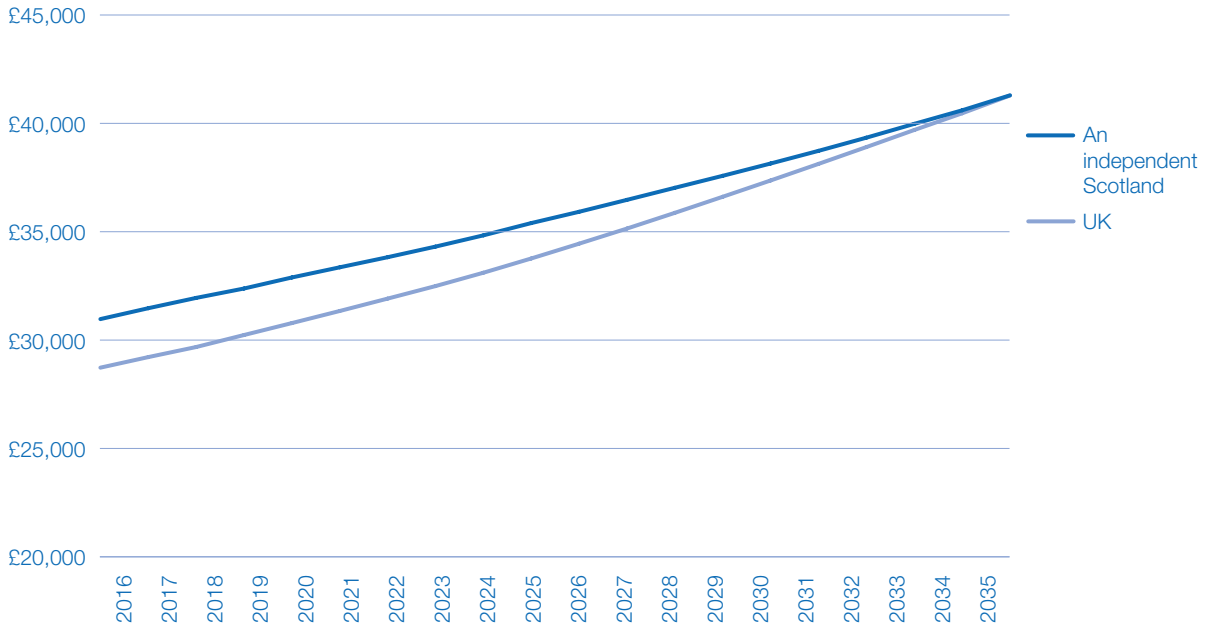
A.32 Scottish offshore output is calculated in a similar manner. Outturn offshore GDP from the Scottish National Accounts Project is grown in line with the DECC production forecast and OBR long-term assumptions. As the OBR offshore price forecast is based on forecasts for both oil and gas forecasts, is the OBR price forecast is re-weighted using estimated Scottish shares of offshore oil and gas according to Kemp and Stephen (2013).[9]

[9] The Hypothetical Scottish Shares of Revenues and Expenditures from the UK Continental Shelf 2000 – 2013, Professor Alexander G. Kemp and Linda Stephen, 2013

A.33 Total Scottish GDP is calculated as the sum of onshore and offshore GDP. The GDP projections for an independent Scotland also include the potential economic effects of Scottish Government policies, as described in the next section. However, they do not include the 'border effect' estimate in *Scotland analysis: Macroeconomic and fiscal performance*, which, if included, would serve to reduce the GDP projections for an independent Scotland.

A.34 Comparing the GDP projections for the UK and an independent Scotland, Chart A.1 below shows that Scottish real GDP per capita is projected to be 10 per cent higher than the UK at the point of independence. This is due to Scotland being allocated a geographical share of offshore output. Over time, Scottish GDP per capita converges towards the UK level as offshore output declines.

Chart A.1: Treasury projections of real GDP per capita in central projections for UK and an independent Scotland (2016-17 prices)



Source: HM Treasury.

Impact of set-up and ongoing costs of independence and of Scottish Government policies

A.35 The Treasury approach goes beyond the IFS approach to projecting the public finances of an independent Scotland by taking into account set-up and ongoing costs of independence. It also takes into account the firm policy commitments by the Scottish Government which have fiscal implications. Estimates of these fiscal impacts are added to the aggregate levels of projected spending and taxation and therefore directly impact borrowing.

A.36 Estimates of the potential indirect effects of the policies are also included.

Set up costs

A.37 As described in Chapter 2, there are various set-up costs that could be expected as a result of independence. In the Treasury analysis, an estimate of the total impact of these costs (equivalent to 1 per cent of Scottish GDP) is included and spread evenly across the first Parliament (assumed to be 2016-17 to 2020-21), increasing Scotland's total managed expenditure in those years.

EU contributions

A.38 As described in Chapter 2, an independent Scotland would likely face higher EU contributions. The EU rebate, the UK's EU contributions and Scotland's notional share of these two, is assumed to grow in line with EU inflation, which is assumed to be 2%. In 2011, it is estimated that Scotland's share of the EU contributions adjusted for the rebate was £350 million. This has therefore been inflated by 2% per annum and added to the projections for an independent Scotland from 2016-17 to 2035-36. This has the effect of increasing total managed expenditure in all years of the projection period.

Scottish Government policies

A.39 The Treasury analysis also incorporates estimated impacts from the firm policy commitments for independence made by the current Scottish Government. The policies included are (i) providing childcare for 30 hours per week for 38 weeks per year for every three and four year old and vulnerable two year old; (ii) reducing air passenger duty (APD) by 50 per cent; (iii) reducing corporation tax by 3 percentage points below the UK rate.

A.40 In each case, the direct fiscal impact of these policies is included in the projections. The childcare policy increases total spending and the APD and corporation tax policies reduce total tax revenues.

A.41 The potential indirect fiscal impacts of the policies through their potential impact on the economy, are also included.

A.42 The costings for the APD policy are set out in Box 2.G in Chapter 2. The costings for the childcare and corporation tax policies are set out below.

Increased childcare provision

A.43 Th childcare costings in the Treasury projection are based on the Scottish Parliament Information Centre's estimate of the direct cost of the Scottish Government's childcare commitments in 2011-12 prices: £570 million by the end of first Parliament and £1,210 million by the end of the second Parliament. HM Treasury grow the costs underlying these costings by average earnings growth (as forecast by the OBR) to estimate the cost of the policy over the projection period.

A.44 However, families in Scotland currently receive support for up to 70% of their childcare costs through tax credits, so the costings have been adjusted for the offsetting savings in the Tax Credit system. To do this it has been assumed that any family with a 1-4 year-old will no longer have any childcare costs. In practice, it is likely that some families will still have childcare costs even after 30 hours of free provision, just as families with school age children do. Childcare provision under Universal Credit extends support to parents working fewer than 16 hours and increases the rate of support to 85%. The costings have also been adjusted for this. There will also be consequential savings to support provided through Tax-Free Childcare (to be implemented from autumn 2015) and to tax relief provided through Employer Supported Childcare, (being phased out from autumn 2015). As these systems provide support at a lower proportion of costs than tax credits, consequential savings are likely to be lower, and they have not been included in the costing.

A.45 Treasury estimates of slightly higher levels of female participation, as a result of greater provision of childcare, are fed directly into the calculation of employment growth. The potential impact of this additional participation on income tax revenues and national insurance contribution is also included. To do this, it is assumed that all additional female participation is at the most tax rich point of the OBR's age-profiles for income tax and

national insurance contributions. While, in reality, additional female participation would be spread over a range of ages, this approach makes a generous assessment of the fiscal impacts of this policy assuming that additional IT and NICs revenues are equal to around £130 million a year (in 2016-17 prices).

Corporation tax cut

A.46 In the December 2013 HM Treasury publication *Unfunded commitments in Scotland's Future*, reducing corporation tax by 3 percentage points below the UK rate was estimated to cost £300 million (in 2011 prices) in the first year. In HM Treasury's projections this policy is assumed to be implemented from 2020-21 – the final year in the first term and therefore a cost-saving assumption. To obtain a costing for this year and beyond the same methodology is followed as for the December 2013 costing, but grown for the latest HMRC tax ready reckoner (consistent with Budget 2014)[10] and it is updated to 2020-21 and beyond by the projected growth in onshore corporation tax.

A.47 HMRC have estimated the economic impact of reducing corporation tax (CT) by 3 percentage points using a multi-regional computational general equilibrium (MR-CGE) model.[11] This model estimates this policy to have a small positive impact on the level of GDP, investment, consumption and exports in all years of the projection period. These effects are set out in more detail in Box 2.E in chapter 2.

A.48 Aside from the possible differences in the policy assumptions made by the Scottish Government policy in its modelling[12] (which are not specified in its modelling or White Paper), there are two main identifiable reasons which could contribute to the Scottish Government estimating larger economic effects:

- **Initial tax rate:** consistent with the UK CT rate at the time, the Scottish Government model starts from an initial higher tax rate of 23 per cent and simulates a 3 percentage point cut to 20 per cent. Consistent with the announced UK CT rate of 20 per cent from April 2015, the MR-CGE simulation assumes a Scottish CT cut from 20 per cent to 17 per cent. Consequently, with a higher initial tax rate in the Scottish Government model the initial pre-cut economic distortion from CT is likely to be higher, making for a greater economic impact when CT is then reduced.
- **Foreign-Direct-Investment:** Given that neither the HMRC nor the Scottish Government models include Foreign Direct Investment (FDI), an off-model adjustment has been made to account for the additional foreign investment generated by cutting CT. For this adjustment, the Scottish Government analysis used the assumption that a 1 per cent cut in CT raises FDI inflows by 6 per cent. In contrast, Following Ederveen and de Mooij (2005), the HMRC analysis assumes a 4.2 per cent FDI increase for every 1 per cent cut in CT, leading to a lower expansion of FDI (and hence total

[10] Available at www.gov.uk/government/publications/direct-effects-of-illustrative-tax-changes

[11] The analysis of the economic impacts of the Scottish Government's proposed CT policy uses HM Revenue & Customs' Multi-Regional Computable General Equilibrium (MR-CGE) model, which HMRC commissioned from PricewaterhouseCoopers (PwC). As with HMRC's general CGE model. The MR-CGE is a dynamic model that aims to capture the decision making of firms and households over time. It can be used to estimate how the effects of tax policies evolve over time and the immediate effect of pre-announced policies. In addition, the MR-CGE model can capture the economic interactions (movement of goods and factors of production) between the four countries of the UK in response to a policy set in one of the countries. The model can be calibrated to allow for the introduction of "frictions" which affect the freedom with which labour, capital and trade moves between different regions of the UK or international countries. More information on this model can be found at https://www.gov.uk/government/uploads/system/attachment data/file/1301135/2014 regional CGE Research Report.pdf

[12] The Scottish Government (2011) "The impact of a reduction in corporation tax on the Scottish economy".

investment) following the CT rate cut. In addition, in the Scottish Government analysis the extra investment is put back through the model, which will in turn generate further knock on economic effects. The HMRC modelling does not do this.

Borrowing, debt and debt interest projections

A.49 The projection for government net borrowing in any given year is calculated as the difference between total expenditure and total revenues in that year. The projection for government net debt in a given year is calculated as the previous year's level of debt plus net borrowing in that year. The net borrowing and debt to GDP ratios are calculated by dividing government net borrowing and debt by GDP for the corresponding year.[13]

A.50 The projected stock of debt, when combined with assumptions about the way in which the Government finances its debt, gives a projection for debt interest spending, which enters the spending projections as an element of total managed expenditure and therefore affects borrowing and debt. In projecting debt interest spending, assumptions are required about the average interest rate paid on new debt issued in each year of the projection period.

A.51 It is assumed that interest rates paid on new UK debt are consistent with the approach used by the OBR in its March 2014 EFO and 2013 FSR. That means that UK rates follow the OBR Budget 2014 forecast to 2018-19, and then are assumed to increase in a straight line to reach a steady level of 5 per cent from 2027-28. As set out in Chapter 2, HM Treasury assume that an independent Scotland would issue new debt at a fixed premium of 1.2 percentage points above the interest rate for the UK as a whole.

A.52 In line with the OBR, 5 per cent of the stock of debt held in any year is assumed to redeem. HM Treasury assume that new debt is issued to cover this redemption as well as net borrowing for the year. Debt interest paid on this new issuance is at the rate for new debt for the given year.

A.53 Taking account of these assumptions, total debt interest in each year is calculated as the sum of three component parts. For the example year of 2025-26, these are (i) debt interest paid on debt held at the point of independence and still held in 2025-26 (consistent with the OBR, this has a constant assumed weighted-average interest rate, which is calculated to be 5 per cent given the OBR's UK medium-term debt interest forecasts and the forecast stock of debt);[14] (ii) debt interest paid on new debt issued in each year from 2016-17 to 2024-25 and still held in 2025-26 (the interest paid on this debt is the weighted average of all interest rates for new debt over the period from 2016-17 to 2024-25) and; (iii) debt interest paid on new debt issued in 2025-26 (the interest rate paid on this debt is the rate for new debt in 2025-26).

A.54 The debt and borrowing projections are used to calculate the fiscal gap. A fiscal gap is the permanent consolidation required for the projected level of debt to reach a specific target level in a specific year. In the context of this paper, the fiscal gap is calculated by finding the permanent improvement to the Scottish primary balance as a percentage of GDP in 2016-17 which, if maintained in every future year of the projection (in percentage of GDP terms), would mean that the debt estimate for an independent Scotland was the same as the UK (in per cent of GDP terms) in 2035-36.

[13] In line with IFS methodology, the HM Treasury analysis does not project the impact of financial transactions on public sector net debt. For this reason the projections in this paper are likely to understate debt.

[14] The HM Treasury analysis makes the simplifying assumption that an independent Scotland would pay this same average interest rate on the population share of UK debt that it assumes on independence.

Comparison with the IFS long-term projections

A.55 To assess the similarity of the Treasury model to the IFS model, HM Treasury has run Scottish projections on a set of assumptions consistent with the IFS. This exercise exposes the impact of the differences in the underlying models used by the Treasury and the IFS.

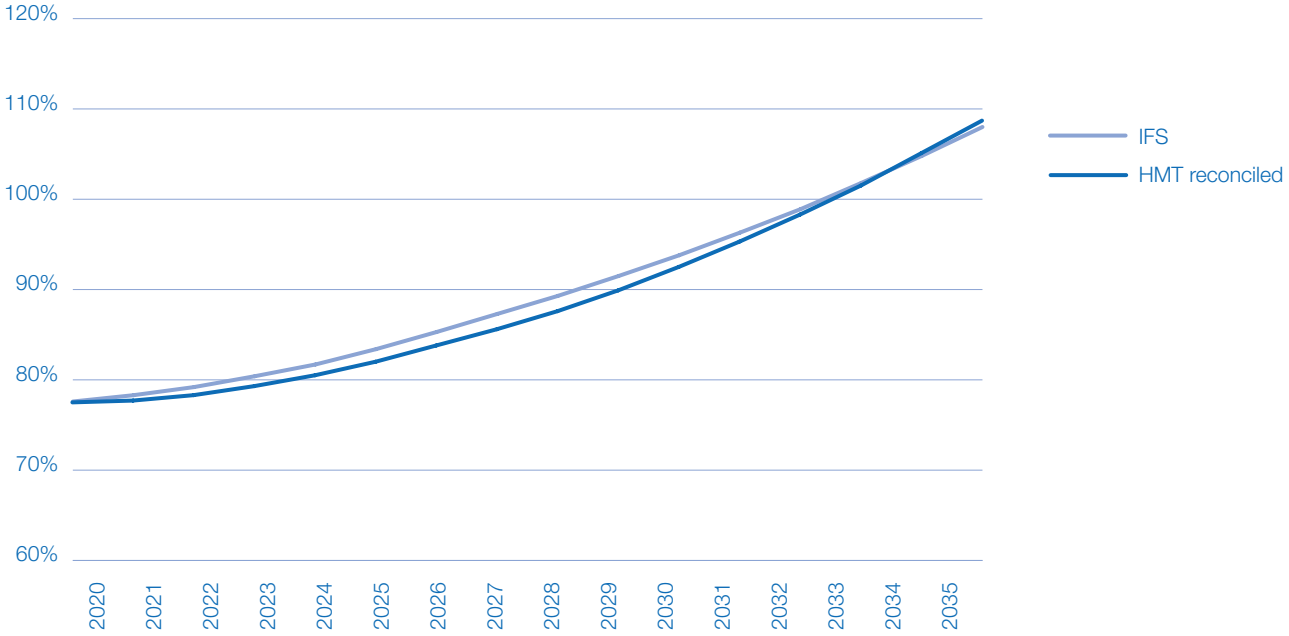
A.56 Consistent with the IFS central projection, the Treasury model was set to run from 2020-21 (starting year of IFS long-term projections) with the following parameters and inputs:

- 2010-based ONS population projections (low migration variant);
- The impact of Scottish Government policies and other direct impacts of independence were not included (including set-up costs);
- Non-interest spending and onshore non-interest revenues set at the same level as the IFS for 2020-21, with the same composition of spending and tax as the IFS project in that year.[15]
- Public sector net debt (as a percentage of GDP) as forecast by the IFS for 2020-21;
- The offshore economy is projected to grow in line with onshore rates of productivity growth and inflation;
- Offshore revenues as forecast in the OBR's March 2013 forecast up until 2017-18 and then held constant as a percentage of GDP thereafter; and
- No premium on Scotland's borrowing (i.e. Scotland borrows at the same rate as assumed for the UK).
- Debt interest payments are modelled as the debt stock in the previous year multiplied by the interest rate on new debt in each year.

A.57 Running projections on this basis gives an 'HMT reconciled' public sector net debt projection which is very close to the IFS central projection in all years of the forecast period considered by the Treasury. The projection is up to two percentage points of GDP lower a year and is less than one percentage point higher in 2035-36.

[15] An exception to this is pensions and benefits spending which is calculated 'off-model' by DWP and so not adjusted.

Chart A.2: IFS central Scotland debt projection as a per cent of GDP and HM Treasury reconciled Scotland projection



Source: Institute for Fiscal Studies; HM Treasury.

A.58 The main differences between the Treasury model and IFS model arise due to the different methodology for projecting pensions and benefits spending, and the different approach to projecting net interest payments.

A.59 This reconciliation exercise suggests that these and other methodological differences have a small overall impact on the debt projections over the HM Treasury projection period. The Treasury and IFS models appear to produce similar results for a given set of parameters.

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