

Taxing an independent Scotland

IFS Briefing Note BN141

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Institute for Fiscal Studies

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ISBN: 978-1-909463-25-7

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¹ The authors gratefully acknowledge funding from the Economic and Social Research Council (ESRC) through the Centre for the Microeconomic Analysis of Public Policy at IFS (grant reference RES-544-28-5001). The ESRC is supporting a programme of work addressing issues around the future of Scotland. One of the strands focuses on supporting new work at current major ESRC investments before and potentially after the referendum. The Family Resources Survey was collected by the Department for Work and Pensions and made available through the Economic and Social Data Service (ESDS), which bears no responsibility for the interpretation of the data in this briefing note. Living Costs and Food Survey data are collected by the Office for National Statistics and distributed by the ESDS. Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland. The authors thank Ben Deaner and Olga Gdula for research assistance, Emma Chamberlain, Jonathan Cribb, Carl Emmerson, Helen Miller, Gareth Myles, David Phillips and George Stoye for help and advice, and Judith Payne for copy-editing. Any errors and omissions are the responsibility of the authors.

Executive summary

- UK government revenue in 2011–12 was £596.2 billion in today's (2013–14) prices, or £9,420 per person. The equivalent figures for Scotland depend on how revenues from North Sea oil and gas are allocated between nations of the UK. The Scottish government estimates that, if such offshore revenues are allocated in proportion to population, Scottish revenue would be £49.2 billion, or £9,280 per person: £140 (1.5%) lower than in the UK as a whole. But if offshore revenues are allocated on a geographical basis, Scottish revenue would be £59.2 billion, or £11,172 per person: £1,751 (18.6%) higher than in the UK as a whole. Most of this higher revenue would disappear by 2017–18 if offshore revenues decline in line with the Office for Budget Responsibility's (OBR's) central forecast – although the future path of offshore revenues is highly uncertain and the Scottish government is more optimistic.
- Although onshore revenue per person is similar in Scotland to that in the UK as a whole, slightly less of it comes from income tax in Scotland: in 2011–12, income tax accounted for 23.3% of Scottish onshore revenue (£2,120 per person in today's prices) compared with 26.1% (£2,411 per person) in the UK as a whole. That is partly because incomes in Scotland are less unequally distributed, with fewer of the very high-income individuals who provide such a large share of income tax revenue in the UK.
- Scottish onshore revenue also comes less from taxes on wealth and property than the UK's as a whole (partly because council tax rates in Scotland are about 20% lower than in England), and more from VAT and taxes on alcohol and tobacco.
- Even without independence, Scotland will have autonomy over some areas of tax policy. If Scotland opts for independence, however, it will gain almost complete autonomy in the design of its tax system. This autonomy would provide an opportunity to improve upon the current UK tax system – for example, along the lines proposed in the recent IFS-led Mirrlees Review of the tax system.

- Differences between Scotland and the UK as a whole mostly point towards lower optimal tax rates in Scotland. A less unequal income distribution means there is less need for redistribution via heavy income taxation; less congested roads mean less rationale for heavy motoring taxation. This does not necessarily mean that tax rates should be below their current UK levels, however: current UK tax rates might not be optimal, or the government of an independent Scotland might place more value on redistribution or public services.
- Independence would also bring new challenges. An independent Scotland would be a much smaller and more internationally open economy than the UK is – particularly because of what would become cross-border movements of goods and services, people and capital between Scotland and the rest of the UK (rUK). This has implications ranging from cross-border shopping in the context of indirect taxes to tax competition in the direct tax system. Tax competition between Scotland and rUK could leave them raising less revenue than if the countries cooperated to set rates at what would be best for them collectively. If Scotland sets a corporation tax rate 3 percentage points lower than in rUK, as the Scottish National Party proposes, preventing companies from artificially shifting profits north of the border would be a real challenge for the rUK government.
- Greater international openness would point towards relying more on relatively immobile tax bases, especially property. But in recent years Scotland has been moving in the opposite direction, raising less of its revenue from property taxes by freezing council tax rates in cash terms. Property taxation is ripe for reform and is an area where Scotland will have almost complete policy autonomy even without independence.
- Previous IFS research has found that, if the government of a Scotland independent from 2016 felt the need to introduce tax rises or spending cuts equivalent to those pencilled in for the UK as a whole for 2016–17 and 2017–18, that would require £2.5 billion (in today's terms) of new measures. If it also wanted to offset the decline in North Sea revenues by 2017–18 forecast by the OBR, that would require a further £3.4 billion, making £5.9 billion in total.

- An independent Scottish government undertaking such a fiscal tightening might well choose to cut public services or social security benefits rather than rely entirely on tax rises. But to give a sense of scale, if an independent Scotland started by replicating the existing UK tax system, a 1 percentage point increase in all rates of income tax, or in the main rate of VAT, would raise around £430 million in Scotland. But there would be many other options for raising extra revenue.

1. Introduction

This briefing note looks at the way that tax revenue in Scotland is currently delivered and at the reform options that would be open to an independent Scotland.

Section 2 describes the current level and composition of tax revenues in Scotland and examines how and why they differ from those in the UK as a whole.

Scotland already has autonomy over significant areas of taxation, especially following the 2012 Scotland Act. Section 3 describes those powers and how they have been used to date. If Scotland opts for independence, however, it will gain almost complete autonomy in the design of its tax system.

This autonomy would provide an opportunity to design a tax system without some of the flaws of the current UK tax system. The recent IFS-led Mirrlees Review of the tax system proposed a range of reforms for the UK that would allow the government to raise the same amount of revenue and achieve the same amount of redistribution much more efficiently than it does at present. For the most part, these would be sensible changes for an independent Scotland to introduce as well. Section 4 briefly reviews these ideas.

However, there may be reasons that the tax system appropriate for an independent Scotland might differ from the tax system appropriate for the UK as a whole. Section 5 examines what those reasons are and what they might imply for the design of tax policy in an independent Scotland. Chief among them is that an independent Scotland would be a much smaller and more internationally open economy than the UK is – particularly because of what would become cross-border movements of goods and services, people and capital between Scotland and the rest of the UK (rUK). This has implications ranging from cross-border shopping in the context of indirect taxes to tax competition in the direct tax system. Other issues include the greater importance of North Sea oil and gas taxation in Scotland and whether any differences between Scotland and rUK in

the income distribution and the labour market might imply that different structures of personal income taxation would be appropriate.

The UK still has a large structural budget deficit, and if the recent fall in North Sea revenues continues as expected by the Office for Budget Responsibility (OBR) then an independent Scotland would start out with an even bigger one. As well as looking at how an independent Scotland could raise the same amount of revenue more efficiently, therefore, we also look at the options an independent Scotland would have for raising taxes. Section 6 gives a brief overview of some of the main options for raising revenue within the existing tax structure, how much revenue they would raise, who would lose from them and what economic effects they might have.

Section 7 concludes.

2. Tax revenues in Scotland

This section describes the current level and composition of tax revenues in Scotland and examines how and why they differ from those in the UK as a whole.

Most taxes are collected at the national level and it is not straightforward to identify those obtained from Scotland's residents or enterprises. For many years, the Scottish government has produced estimates in *Government Expenditure and Revenue Scotland* (GERS).² The latest edition of GERS contains estimates up to 2011–12 and most of the figures in this section are taken from that.

Recently, HM Revenue and Customs (HMRC) for the first time produced its own estimates allocating revenue from HMRC taxes between England, Scotland, Wales and Northern Ireland.³ But unlike GERS, this does not provide a breakdown of total revenue, since it does not include revenue not collected by HMRC, such as council tax, business rates and vehicle excise duty, which collectively account for some 20% of total UK revenue.⁴ And while the HMRC figures ostensibly extend up to 2012–13, in fact for all the main taxes the 2012–13 (and often 2011–12) 'estimates' simply assume that Scotland's share of UK revenue is the average of its share in three previous years. In practice, where figures are provided on a

² See <http://www.scotland.gov.uk/Topics/Statistics/Browse/Economy/GERS>.

³ See <http://www.hmrc.gov.uk/statistics/receipts.htm>.

⁴ Non-HMRC revenue from table 2.8 of the supplementary fiscal tables to Office for Budget Responsibility, *Economic and Fiscal Outlook*, March 2013 (<http://budgetresponsibility.org.uk/economic-and-fiscal-outlook-march-2013/>).

comparable basis, the GERS and HMRC estimates are mostly very similar. There are three notable exceptions – onshore corporation tax, stamp duty on shares and North Sea revenues – which we discuss below. The appendix to this briefing note gives more detail of how GERS estimates Scotland’s revenue share for each tax and how HMRC’s approach differs.

We distinguish between onshore and offshore revenues: since North Sea oil and gas is a potentially important source of revenue for an independent Scotland, but its allocation between Scotland and rUK is uncertain, we first analyse onshore revenue in isolation and then look at the effect of adding in onshore revenue.

2.1 Onshore revenue

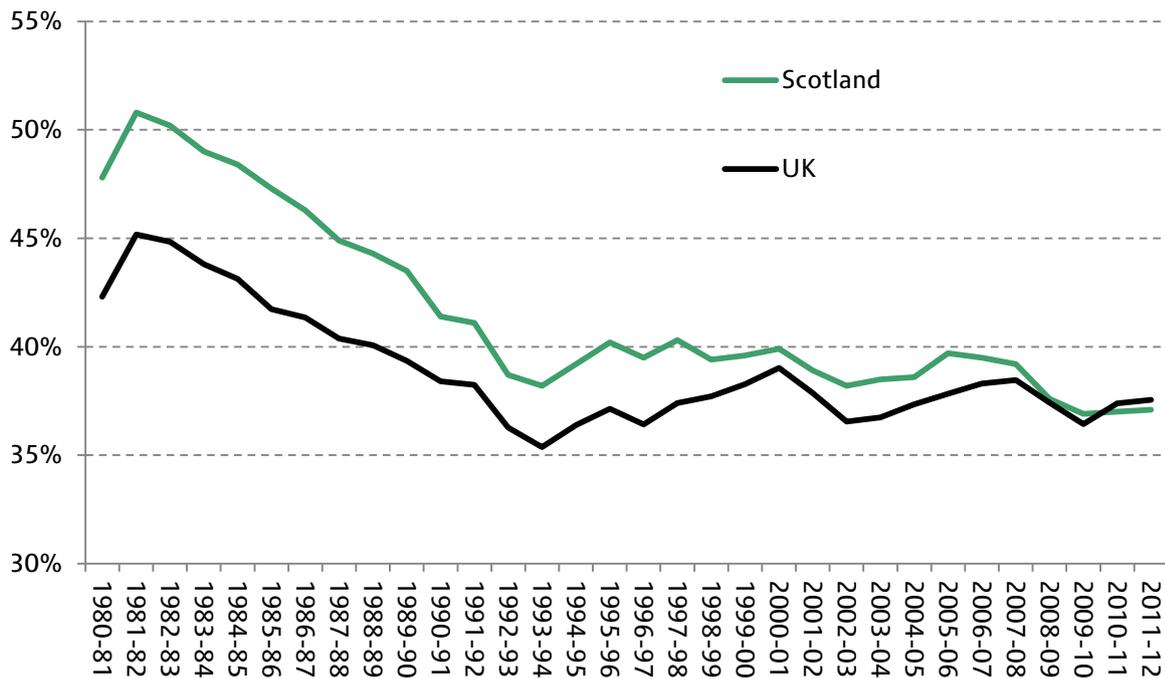
In 2011–12, onshore revenue in Scotland was £48.2 billion (in 2013–14 prices), equivalent to £9,094 per resident of Scotland or 37.1% of Scottish onshore GDP.⁵ In the UK as a whole, onshore revenue was £584.5 billion: £9,159 per person or 37.6% of onshore GDP. With 8.4% of the UK population, Scotland contributed 8.2% of UK onshore revenues.

The shares of national income taken in tax in Scotland and the UK as a whole have not always been so similar: 30 years earlier, Scotland’s onshore revenues were 5.6% of GDP higher than those in the UK. As Figure 1 shows, the share of national income taken in tax has fallen faster in Scotland than in the UK as a whole, eliminating the gap that previously existed. Unfortunately, the Scottish government does not publish revenue estimates for individual taxes going that far back, so it is unclear what was responsible for Scotland’s higher revenue in the past.

Table 1 shows the composition of onshore revenue in 2011–12 in Scotland and the UK, while Figure 2 illustrates the contributions of different groups of taxes.

⁵ Unless otherwise stated, 2011–12 figures in this briefing note are expressed in 2013–14 prices, using the GDP deflator to adjust over time. They can readily be converted to nominal 2011–12 prices by dividing by 1.0411. GDP figures are based on experimental data from the Scottish National Accounts Project. Population figures are 2011 census-based ONS mid-year estimates for 2011 and include children as well as adults.

Figure 1. Onshore revenue as a percentage of onshore GDP



Source: Authors' calculations using data from GERS 2011–12 and Historical Fiscal Balance Calculations from the Scottish National Accounts Project (SNAP).

Figure 2. Composition of onshore revenue in Scotland and the UK, 2011–12



Note: 'Capital taxes' are capital gains tax, inheritance tax and stamp duty on shares. 'Property taxes' are stamp duty land tax, council tax and business rates. 'Other indirect taxes' are excise duties and environmental taxes.

Source: As for Table 1.

Table 1. Scottish and UK onshore revenues by source, 2011–12 (in 2013–14 prices)

	Scotland			UK			Scotland as % of UK
	£ bn	£ per person	% of onshore revenue	£ bn	£ per person	% of onshore revenue	
Income tax ^a	11.2	2,120	23.3%	152.6	2,411	26.1%	7.4%
National Insurance contributions	8.7	1,649	18.1%	105.8	1,671	18.1%	8.3%
Onshore corporation tax	3.1	585	6.4%	34.3	541	5.9%	9.0%
Capital gains tax	0.3	48	0.5%	4.5	71	0.8%	5.7%
Inheritance tax	0.2	32	0.4%	3.0	48	0.5%	5.6%
Stamp duty on shares	0.2	45	0.5%	2.9	46	0.5%	8.3%
Stamp duty land tax	0.3	54	0.6%	6.4	101	1.1%	4.5%
Business rates	2.0	380	4.2%	25.0	394	4.3%	8.1%
Council tax	2.1	390	4.3%	27.0	427	4.6%	7.7%
VAT	9.9	1,877	20.6%	114.3	1,806	19.6%	8.7%
Fuel duties	2.4	451	5.0%	27.9	441	4.8%	8.6%
Tobacco duties	1.2	222	2.4%	10.3	163	1.8%	11.4%
Alcohol duties	1.0	193	2.1%	10.6	167	1.8%	9.6%
Vehicle excise duty	0.5	93	1.0%	6.2	98	1.1%	8.0%
Betting and gaming duties	0.1	23	0.2%	1.3	20	0.2%	9.4%
Insurance premium tax	0.3	49	0.5%	3.1	49	0.5%	8.4%
Air passenger duty	0.2	42	0.5%	2.7	43	0.5%	8.1%
Landfill tax	0.1	19	0.2%	1.1	18	0.2%	9.0%
Climate change levy	0.1	13	0.1%	0.7	11	0.1%	9.4%
Aggregates levy	0.1	10	0.1%	0.3	5	0.1%	18.4%
Other receipts and adjustments ^b	4.2	800	8.8%	44.5	703	7.6%	18.5%
Total onshore current revenue	48.2	9,094	100.0%	584.5	9,235	100.0%	8.2%

^a Net of the part of tax credits classified as negative income tax in the National Accounts. Most of the cost of tax credits is counted as government spending.

^b Includes some small taxes, TV licences, National Lottery funds, royalties, interest and dividends, rent, gross operating surplus and accounting adjustments.

Source: Authors' calculations from table 3.1 of GERS 2011–12.

On the whole, the composition of revenue in Scotland does not differ greatly from that in the UK as a whole. In both cases, the three big taxes – income tax, National Insurance contributions (NICs) and VAT – account for more than three-fifths of revenue. But according to GERS, relative to the UK as a whole, somewhat more of Scotland’s onshore revenue comes from:

- corporation tax;
- VAT;
- ‘sin taxes’ on alcohol, tobacco and gambling;
- smaller environmental taxes;
- ‘other revenue’.⁶

Scotland generates somewhat less of its revenue from:

- income tax;
- capital gains tax (CGT) and inheritance tax;
- stamp duty land tax (SDLT) and council tax.

In terms of revenue per person, the biggest difference comes from the biggest tax: in 2011–12, income tax provided £2,120 per person in Scotland, well below the UK figure of £2,411. This is particularly interesting because NICs, which are like income tax in many respects, yield similar amounts in Scotland and the rest of the UK (£1,649 and £1,671 per person respectively). This is explained by a combination of two factors.

First, taxable incomes are slightly more equally distributed in Scotland than in the UK as a whole. Table 2 shows that Scots are less likely to have an income too low to pay tax, but also less likely to have an income high enough to pay higher- or additional-rate tax. Given the progressive nature of income tax, a more equal income distribution generally translates into lower income tax revenues. Particularly important is that the proportion of adults paying additional-rate tax in Scotland is barely half the proportion in the UK as a whole. Although this is a tiny fraction of the adult population, they contribute about a quarter of income tax revenue in the UK as a whole but only about an eighth in Scotland. But while higher and additional rates of income tax bring in substantial revenue from those (more numerous outside Scotland) lucky enough to be affected by them,

⁶ This last difference principally reflects the profits of Scottish Water, a public corporation that has no direct equivalent in England and Wales, where water provision is privatised.

those earning above the NI upper earnings limit (set at the weekly equivalent of the income tax higher-rate threshold), in contrast, pay a much lower rate of NICs on those additional earnings than on the slice of earnings below the UEL. Scotland’s relative lack of very high earners does not undercut Scottish NICs revenue in the same way as it undercuts Scottish income tax revenue.

Table 2. Population shares by income tax band, 2011–12

Income tax band	Scotland	UK
Non-taxpayers	39.5%	40.9%
Basic rate ^a	53.7%	51.5%
Higher rate	6.4%	7.0%
Additional rate	0.3%	0.5%

^a Includes people whose only taxable income is from savings.

Note: Figures shown are percentages of individuals aged 16+ in mid-2011.

Source: Number of taxpayers from tables 2.1 and 2.2 of HMRC Statistics (<http://www.hmrc.gov.uk/statistics/tax-statistics.htm>); population statistics from ONS, *Population estimates for UK, England and Wales, Scotland and Northern Ireland – Mid-2011, 2013* (<http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcn%3A77-319259>).

The second factor explaining the different patterns for income tax and NICs is that, in 2010–11 (the latest year for which this breakdown is available) investment income accounted for 7% of taxpayers’ incomes in the UK as a whole, but only 5% in Scotland.⁷ Since investment income is not subject to NICs, this tends to reduce Scottish income tax revenues relative to Scottish NICs revenues.

Scotland’s lower share of CGT may also reflect this combination of lower capital assets and a more equal income distribution: CGT is, of course, only payable on investment returns, and most CGT is paid by the very well off (in part because there is a substantial tax-free CGT allowance). Similar considerations apply to inheritance tax. SDLT is an even more extreme case: in 2011–12, it yielded barely half as much revenue per person in Scotland as in the UK as a whole (£54 and £101 respectively), a lower fraction than for any other tax. The average property transaction value in Scotland was only three-quarters of the corresponding figure for the UK,⁸

⁷ Authors’ calculations from table 3.11 of HMRC Statistics (<http://www.hmrc.gov.uk/statistics/income-by-year.htm>).

⁸ Authors’ calculations from table 15.4 of HMRC Statistics (<http://www.hmrc.gov.uk/statistics/stamp-duty.htm>).

and SDLT's highly progressive rate structure – with higher-value transactions subject to much higher SDLT rates, which apply to the whole purchase price (not just the part above the relevant threshold) – magnified the revenue implications of that.

Council tax revenue is lower in Scotland than in the UK as a whole for a different reason. Scotland actually has fewer properties in council tax band A and more in bands D to H than the British average.⁹ But in 2011–12, the rates of council tax applied to properties in a given band were 20% lower in Scotland than in England, on average, so the overall average council tax bill in Scotland was 18% lower than that in England. It was not always thus: in 1997, the average council tax bill was 15% *higher* in Scotland than in England.¹⁰ But Scotland did not experience the rapid increases in council tax rates that England saw over the subsequent 10 years, and a council tax freeze that has been in place in Scotland since 2007 has only more recently (and incompletely) been emulated in England.

Where Scots pay more than the rest of the UK is in indirect taxes. In cash terms, the biggest difference is VAT, which in 2011–12 raised £1,877 per person in Scotland compared with £1,806 in the UK as a whole. This is a relatively recent development: 10 years earlier, Scots paid no more than the UK average. More stable has been Scotland's higher revenue share from alcohol and tobacco duties. This is less important than VAT in cash terms, but a bigger percentage difference. Scots simply smoke more than their neighbours elsewhere in the UK. With alcohol, the story is more complicated. GERS does not provide a breakdown between different forms of alcohol, but HMRC estimates suggest that Scots paid little more tax on wine than the UK average and actually somewhat less on beer and cider, but that Scots paid around 70% more in duty on spirits than the UK

⁹ There was no such marked difference when council tax was introduced in 1993 – council tax band cut-offs were set lower in Scotland than in England to reflect Scotland's lower property prices – and there has been no revaluation in England or Scotland since, so this presumably implies that new building in Scotland has focused more on high-band properties than in the rest of Britain.

¹⁰ Authors' calculations from Scottish government council tax data (<http://www.scotland.gov.uk/Topics/Statistics/Browse/Local-Government-Finance/DatasetsCouncilTax>) and DCLG council tax statistics (<https://www.gov.uk/government/organisations/department-for-communities-and-local-government/series/council-tax-statistics>).

average. Since spirits are taxed far more heavily per unit of alcohol than other drinks, Scots' preference for spirits over beer goes much of the way to explaining why they pay more in alcohol duties.¹¹ Although tiny in revenue terms, a disproportionate share of revenues from small environmental taxes consistently comes from Scotland as well. In 2011–12, the aggregates levy raised twice as much revenue per person in Scotland as in the UK as a whole, reflecting greater exploitation of sand, gravel and rock in Scotland.

According to GERS, Scotland also contributes more onshore corporation tax per person than the rest of the UK. HMRC, however, finds the opposite. In 2011–12, with 8.4% of the UK population, Scotland contributed 9.0% of UK onshore corporation tax (£3.1 billion in 2013–14 prices) according to GERS, but only 7.7% (£2.6 billion) according to HMRC. This £400 million difference is equivalent to about 1% of all Scottish revenue.

This difference between GERS and HMRC estimates reflects the difficulty of allocating corporation tax revenues to different areas. UK corporation tax applies to profits created from economic activities located in the UK. Where firms operate in more than one part of the UK, it is difficult to know how much of their profits are attributable to activities in each location, and companies are not required to divide up their profits in this way. Both GERS and HMRC approximate the division of onshore corporation tax revenue based on estimates of the location of profits. GERS uses a regional measure of profits contained in the ONS regional accounts¹² that is predominantly based on the share of wages earned in Scotland. HMRC allocates individual companies' profits to regions, largely based on the location of their employment, and aggregates this to get the share of profits in each location.

¹¹ Another factor in tobacco and alcohol taxation is that Scots are further from the English Channel, which may affect their access to (legal and illegal) cheap cigarettes and alcohol. However, the GERS and HMRC estimates are based on reported expenditure on these goods in household surveys, not data on sales in each area. So differences between UK and Scotland figures will reflect cross-border shopping and smuggling only insofar as survey respondents are more likely to under-report their purchases from these sources.

¹² <http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Regional+Accounts>.

Neither of these estimates is clearly superior to the other, and both may be some way off. Profits are not necessarily generated in proportion to the number of employees, or their wages. Some employees may be more instrumental in generating profits than others; and profits also arise from capital assets – both physical (such as buildings and equipment) and intangible (such as intellectual property and brand value) – the location and contribution of which may differ from the location and wages of employees. Calculating how much of a company's profits are attributable to economic activity in different locations is conceptually and practically difficult and is the source of many problems in international corporate taxation.

GERS and HMRC also differ in how much revenue they allocate to Scotland from stamp duty on share transactions. The difference between the 2011–12 GERS estimate of £240 million (in 2013–14 prices) and HMRC's £143 million is only small in cash terms – stamp duty is only a small contributor to the exchequer – but in percentage terms it is the single biggest difference between the two sets of figures, with HMRC's estimate some 40% lower than that in GERS.

In this case, it is clear that HMRC's estimate gives a better guide to what Scotland's share would be under independence. GERS allocates revenue from stamp duty on share transactions to Scotland based on the proportion of share-owning UK adults that are resident in Scotland. But that is a poor guide to what Scotland's share of stamp duty revenue would be under independence. The number of people owning shares does not tell us the value of shares traded each year (the tax base). More fundamentally, the location of the shares' owners is not the relevant consideration for stamp duty. Stamp duty is paid not on transactions of shares owned by UK residents, but on transactions of shares in UK companies (or foreign company shares held on a UK register). Since UK companies (and their shares) must be registered in a specific part of the UK, an obvious starting point under independence would be for Scotland to tax transactions of shares in Scottish-registered companies, which may bear little relation to shares held by Scottish residents. HMRC's approach recognises this, allocating stamp duty revenue according to companies' registered addresses (weighted by share turnover). HMRC's conclusion that Scotland provides less stamp duty (per person) on shares than the UK as a whole thus looks correct.

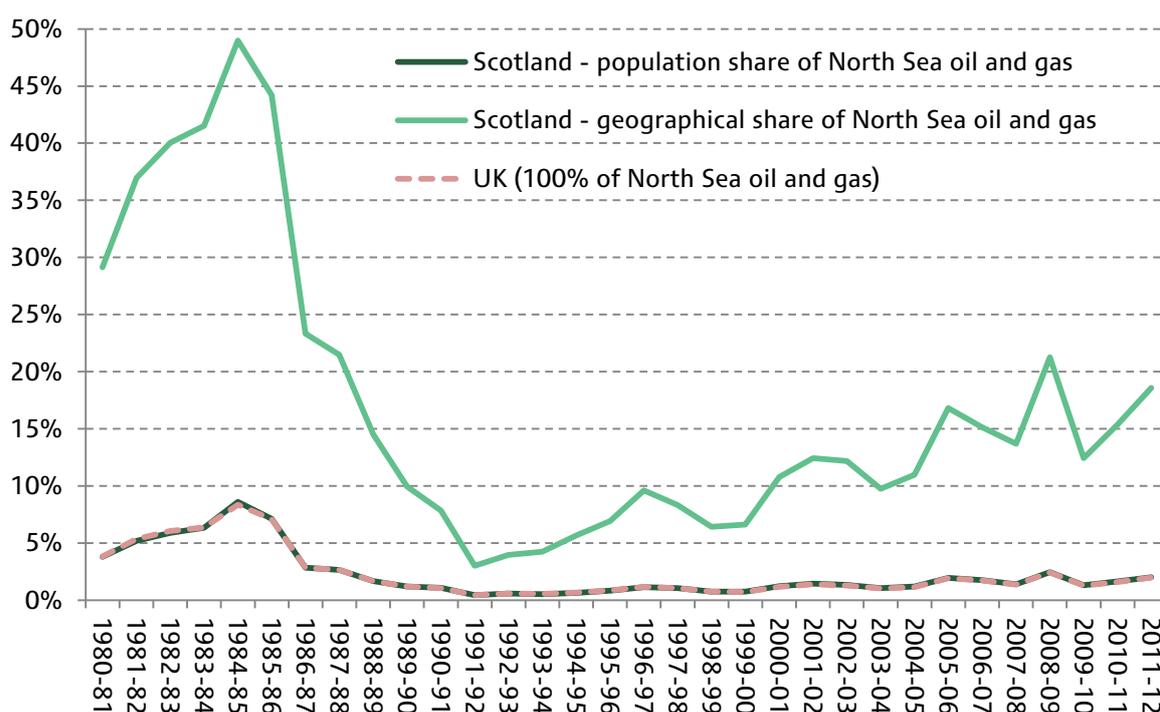
2.2 Adding in offshore revenue

North Sea oil and gas production contributed £11.7 billion to the UK exchequer in 2011–12.¹³ How ownership of this resource would be divided in the event of Scottish independence would be a matter for legal argument and negotiation.

Both GERS and HMRC show two illustrative possibilities, one that divides North Sea production simply according to Scotland's share of the UK population and one that divides it on a geographical basis according to the location of individual oil and gas fields relative to a boundary that was established in the Scottish Adjacent Waters Boundaries Order 1999.¹⁴

Figure 3 shows offshore revenue as a percentage of total revenue for the UK and GERS's estimate of this percentage for Scotland on both a population and a geographical basis for allocating the revenues.

Figure 3. North Sea revenue as a percentage of total revenue



Source: Authors' calculations using GERS 2011–12 and SNAP Historical Fiscal Balance Calculations.

¹³ This revenue came from a combination of offshore corporation tax (including a supplementary charge applied only to North Sea profits) and petroleum revenue tax.

¹⁴ See <http://www.legislation.gov.uk/ukxi/1999/1126/contents/made>. While both GERS and HMRC use this boundary for illustrative purposes, note that it is not certain that this is the boundary that would be used if offshore revenues were divided on a geographical basis under independence.

North Sea revenues peaked at just over 8% of overall UK revenues in the mid-1980s, before declining dramatically in the late 1980s and early 1990s to provide less than 1% of revenues during most of the 1990s. Their importance has since increased somewhat, rising to a peak of 2.4% of revenues in 2008–09 as oil prices spiked. Allocated on a population basis, the contribution of oil and gas to overall revenues is almost identical for Scotland, reflecting the fact that onshore revenues per person in Scotland are close to the UK average.

Allocating Scotland a geographical share of North Sea revenues leads to similar trends over time: a rise in the importance of North Sea oil and gas during the early 1980s, followed by a dramatic fall and then a partial reversal. However, the importance of North Sea revenues to Scotland becomes much greater. On this basis, they peaked at 49% of Scotland's overall revenue in 1984–85, and averaged 16% of revenue over the period from 2005–06 to 2011–12.

Unsurprisingly, when revenue is allocated on a population basis, GERS and HMRC both report that Scotland's share of North Sea revenues in 2011–12 was 8.4% (£1.0 billion in 2013–14 prices). However, when revenues are allocated on a geographical basis, GERS and HMRC estimates differ substantially: GERS estimates Scotland's share in 2011–12 at 94% (£11.0 billion), while HMRC's estimate is 83% (£9.7 billion). Note that this difference arises despite the fact that GERS and HMRC use the same border to divide fields between Scotland and rUK. It must therefore reflect differences in their models of how much taxable profit is attributable to each field, though it is not clear exactly what modelling differences account for these strikingly different results.¹⁵

Even this difference pales, however, in comparison with what might happen to total UK offshore revenues in the coming years. The Office for Budget Responsibility's central forecast is that UK offshore revenue will fall dramatically, from 0.7% of national income in 2011–12 to 0.2% in 2017–18.¹⁶ Were that prediction to be borne out, a geographical share of

¹⁵ Although the levels are different, trends over time in HMRC's estimates of offshore revenue are similar to those in the GERS estimates shown in Figure 3.

¹⁶ Source: Table 4.6 of Office for Budget Responsibility, *Economic and Fiscal Outlook*, March 2013 (<http://budgetresponsibility.org.uk/pubs/March-2013-EFO-44734674673453.pdf>).

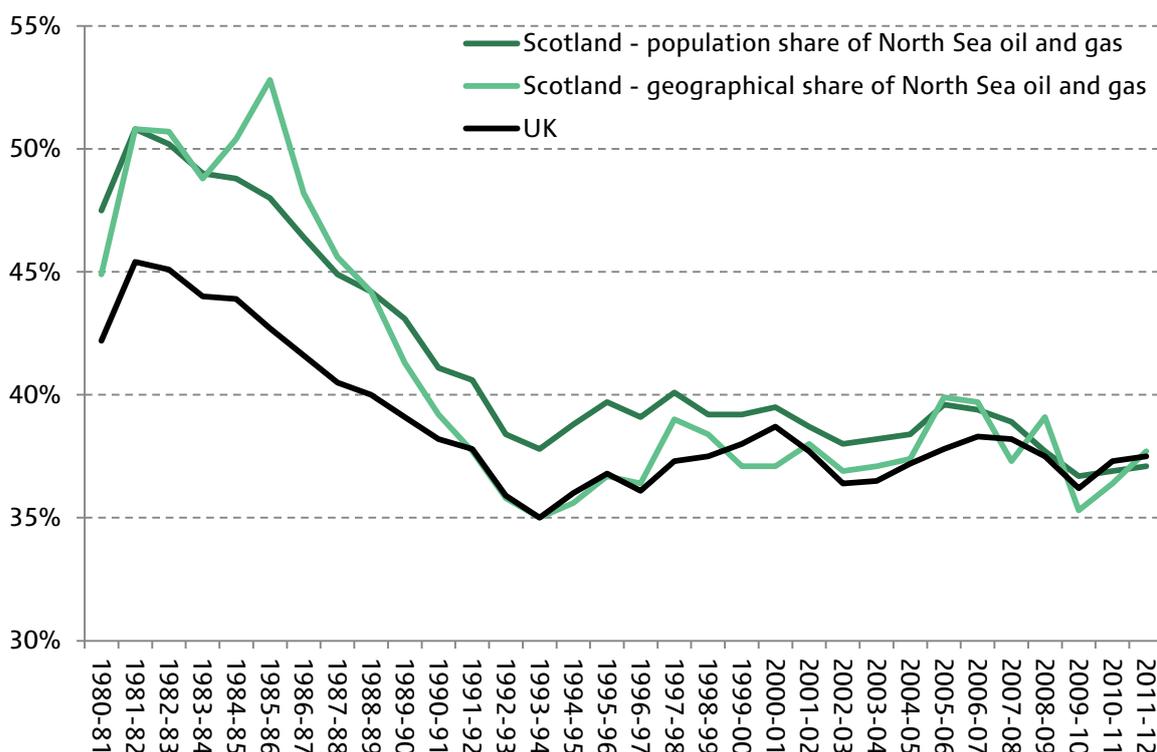
that shrunken pie would be worth far less to Scotland than it was in 2011–12 under either GERS or HMRC modelling. However, the future path of offshore revenues is highly uncertain and the Scottish government is more optimistic.

We can now bring onshore and offshore revenues together to look at total revenue. Total UK government revenue in 2011–12 of £596.2 billion (in 2013–14 prices) equates to £9,420 per person. If offshore revenues are allocated on a population basis, Scottish revenue would be £49.2 billion, or £9,280 per person: £140 (1.5%) lower than in the UK as a whole. But if offshore revenues are allocated on a geographical basis, GERS estimates that Scottish revenue would be £59.2 billion, or £11,172 per person: £1,751 (18.6%) higher than in the UK as a whole. Most of this higher revenue would disappear, however, if offshore revenues decline as the OBR expects by 2017–18.

The allocation of North Sea oil and gas makes much less difference to tax revenues measured as a share of national income, because it affects the calculation of Scottish GDP as well as Scottish revenues. In 2011–12, UK revenues were 37.5% of UK GDP. The corresponding figure for Scotland is slightly lower, at 37.1%, if North Sea oil and gas are allocated on a population basis, and slightly higher, at 37.7%, if they are allocated on a geographical basis according to GERS.

Figure 4 shows that the allocation of North Sea oil and gas would have made a much bigger difference in the past. If they are allocated on a population basis, the picture looks little different from that for onshore revenue alone shown in Figure 1. But allocating them on a geographical basis makes Scotland's revenue peak at 53% of GDP in 1985–86 – 5 percentage points higher than if oil and gas are allocated on a population basis and fully 10 percentage points higher than the UK figure for that year – and then fall precipitously to close the gap with the UK entirely by 1991–92. At that point, Scottish revenues as a share of GDP look *lower* if oil and gas are allocated on a geographical basis than on a population basis, because the extra oil and gas added more to estimated GDP than to revenue.

Figure 4. Total (onshore and offshore) revenue as a percentage of GDP



Source: Authors' calculations using GERS 2011–12 and SNAP Historical Fiscal Balance Calculations.

3. Tax-setting powers without independence

Scotland will have autonomy over significant areas of taxation even if it does not opt for independence. Control over council tax and business rates is already devolved. Scotland has made some different choices in this area from those of England and Wales. For example:

- There are some differences in the treatment of second homes in council tax and empty properties in both council tax and business rates.
- When council tax benefit was abolished as a Britain-wide scheme in April 2013, Scotland did not follow England's lead in requiring each local authority to design its own local rebate scheme to replace it, but (like Wales) opted to run a single scheme across the whole of Scotland. This scheme essentially replicates the old council tax benefit, at least for the time being.
- Local authorities in Scotland have consistently chosen lower council tax rates than their English counterparts, partly under pressure from the Scottish government (which has control over their grant funding).

- Business rates relief for low-value properties is more generous in Scotland than in England or Wales. It is also structured with bigger ‘cliff-edges’ than that in England (though not Wales), with, for example, the business rates bill on a property with an estimated annual market rental value of £18,001 being more than £2,000 higher than that on a property with an £18,000 valuation.
- Scotland’s Business Rates Incentivisation Scheme, which allows local authorities to keep (for a period) half of any additional business rates revenue they collect by attracting more businesses into the area, serves a similar purpose to England’s Business Rates Retention Scheme but works somewhat differently.

Yet the Scottish parliament has eschewed more fundamental reform of these taxes. As in England (though not Wales), council tax is still based on 1991 property values, with the same ratio of liabilities for different bands that has been in place since council tax was introduced and the same 25% discount for sole occupants. And as in England and Wales, business rates are still levied on the basis of assessed market rental values of properties, and at the same percentage of value as in England (Wales’s is marginally different), with (albeit different) discounts for low-value properties. Indeed, following a consultation on business rates policy, the Scottish government recently reaffirmed its commitment to maintaining business rates on that basis in the future, continuing to match the rate set in England and (like both England and Wales) postponing the next revaluation from 2015 to 2017.¹⁷

Under the 2012 Scotland Act,¹⁸ the third major tax levied specifically on property will also be devolved. From April 2015, SDLT will cease to apply in Scotland and the Scottish parliament will be able to introduce replacement taxes of its own. The Land and Buildings Transaction Tax (Scotland) Bill was passed by the Scottish parliament and received royal assent on 31 July 2013.¹⁹ The LBTT, like SDLT, is a tax levied on the value of property transactions. But there is one important difference. Under SDLT, the relevant rate applies to the whole sale price, so that transactions

¹⁷ See <http://www.scotland.gov.uk/Publications/2013/09/2234>.

¹⁸ <http://www.legislation.gov.uk/ukpga/2012/11/contents/enacted>.

¹⁹ See <http://www.legislation.gov.uk/asp/2013/11/contents/enacted>.

either side of a threshold attract very different tax liabilities. This will not arise under Scotland's LBTT as each rate of LBTT will apply only to the part of the sale price above the corresponding threshold.

The Scotland Act also abolishes landfill tax in Scotland from April 2015. The Landfill Tax (Scotland) Bill is currently before the Scottish parliament and envisages a tax essentially similar to the UK landfill tax, and the Scottish government has announced that it will set rates no lower than those in place for UK landfill tax.²⁰

Finally, there is income tax. Under the 1998 Scotland Act,²¹ the Scottish parliament has the power to increase or reduce the basic rate of income tax by up to 3 percentage points (in half-point steps), except on savings and dividend income, for 'Scottish taxpayers' – essentially people who are resident in Scotland for more of the year than in any other part of the UK. To date, this Scottish variable rate (SVR) has not been used. From 2016–17, a new arrangement will apply instead. The basic, higher and additional rates of UK income tax will all be reduced by 10 percentage points (except on savings and dividend income) in Scotland and grant to the Scottish government will be correspondingly reduced. The Scottish government will then be able to decide whether to replace the lost revenue with a 10 percentage point Scottish rate of income tax (SRIT), applying to all taxable income (except savings and dividends) at the basic, higher and additional rates, or whether to set a higher or lower SRIT than that.

The SRIT is a genuinely large-scale tax-raising power, though the fact that the smaller-scale SVR has not been used suggests that the appetite for radical rebalancing of the Scottish budget might be limited. But while the SRIT is a forceful instrument, it is not a flexible one. There is no power to change the definition of taxable income or the tax-free personal allowance, and the SRIT must apply equally to basic, higher and additional rates. So while the Scottish parliament will be able to decide that income tax ought to be higher or lower overall, it will not be able to change the balance of liabilities between taxpayers at different income levels or with different types of income. This is in line with the recommendations of the Calman Commission on Scottish devolution, which argued that 'redistribution of

²⁰ See http://www.scottish.parliament.uk/S4_Bills/Landfill%20Tax%20Bill/b28s4-introd-pm.pdf.

²¹ <http://www.legislation.gov.uk/ukpga/1998/46/contents>.

resources across society ... should remain a function of national government, because it is an aspect of the social Union to which Scotland belongs.’²² The SRIT will also prevent Scotland from reducing just the higher or additional rate of income tax as a form of tax competition to attract high-income people (and the revenue that accompanies them) from the rest of the UK. The SRIT is far from giving Scotland full autonomy over income tax policy.

4. Tax design for a modern economy

Section 3 discussed the tax-setting powers that Scotland is already due to have even if it does not opt for independence. It is possible that further tax-raising powers could be devolved to Scotland if it remained within the UK. If Scotland opts for independence, however, it would gain almost complete autonomy in the design of its tax system (though EU membership would impose some restrictions, particularly over VAT policy).

This autonomy would provide an opportunity to design a tax system without some of the flaws of the current UK tax system. *Tax by Design*, the final report of the recent IFS-led Mirrlees Review of the tax system, proposed a range of reforms for the UK that would allow the government to raise the same amount of revenue and achieve the same amount of redistribution much more efficiently than it does at present.²³ For the most part, these would be sensible changes for an independent Scotland to introduce as well. In this section, we briefly review the conclusions of *Tax by Design*; the next section considers how the tax system appropriate for Scotland might be different from that appropriate for the UK as a whole.

The core – though not the entirety – of the recommendations in *Tax by Design* is the idea of a progressive, neutral tax system. Each of the three

²² Para. 30 of Commission on Scottish Devolution, *Serving Scotland Better: Scotland and the United Kingdom in the 21st Century*, 2009 (<http://www.commissiononscottishdevolution.org.uk/>).

²³ J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba, *Tax by Design: The Mirrlees Review*, Oxford: Oxford University Press for the Institute for Fiscal Studies, 2011 (<http://www.ifs.org.uk/mirrleesReview/design>).

key words of that formula – ‘progressive’, ‘neutral’ and ‘system’ – is important.

First, consider the tax system as precisely that: a whole system. We mean that in two main senses:

- Not all taxes need to address all objectives. Not every tax needs to be ‘greened’ to tackle climate change, as long as the system as a whole does so. And not all taxes need be progressive as long as the overall system is.
- The different taxes need to fit sensibly together. For example, personal and corporate taxes need to fit together such that the form in which income is received does not imply very different amounts of tax paid. Otherwise, some forms of activity are favoured over others and people are led to alter the legal form of their activity for tax reasons rather than underlying commercial considerations.

Second, seek neutrality – that is, treat similar activities similarly. In general, a system that treats similar economic activities in similar ways for tax purposes will tend to be simpler, avoid unjustifiable discrimination between people and economic activities, and help to minimise economic distortions.

Treating different sorts of saving differently results in much effort being put into choosing savings vehicles on the basis of tax treatment rather than on the basis of underlying merits. Treating different forms of corporate finance differently distorts companies’ choices over how to raise capital. Taxing different goods and services at different rates in the way the UK VAT does distorts the choices that consumers make.

Neutrality is a rule of thumb: it is not a good in itself, and is not always desirable. It can be efficient to discriminate between different activities for tax purposes. Higher taxes on alcohol and tobacco and on activities that damage the environment are justifiable. Similar exceptions apply to pension saving and research & development (R&D), where society wishes to encourage beneficial behaviour. There are somewhat subtler arguments applying to goods associated with work (such as childcare), where there is a case for a more lenient tax treatment in order to offset the disincentive to work created by the tax system as a whole.

But such arguments must be treated with healthy caution. Even if a theoretically compelling case can be made, the advantages of departing from neutrality must be weighed against the disadvantages of

complicating the system. Defining and policing boundaries between differently-taxed activities is fraught with difficulty: it increases administrative and compliance costs, and creates perverse incentives to dress up one kind of activity as another. Hence while departures from neutrality can occasionally be justified, the hurdle for departing from neutrality should be high, requiring a strong and clear justification. In practice, lack of neutrality is behind many of the problems with the current system. It can create unfairness, complexity, high administrative and compliance costs, inefficient behaviour change and significant welfare loss. It diverts resources away from their most productive uses.

Finally, the tax (and benefit) system needs to be progressive. Quite how progressive would, under independence, be a decision for the Scottish government and electorate. But however progressive they want the system to be, it is important that progressivity be achieved as efficiently as possible. Crucially, efficiency-enhancing reforms should not generally be eschewed because of their distributional impact. It is nearly always possible to offset, at least on average, any undesirable distributional effect of an efficiency-enhancing reform by adjusting personal tax and benefit rates.

There is an inevitable trade-off between redistribution and work incentives. One cannot tax the rich, or top up the incomes of the poor, without affecting incentives. But one can design the system carefully to minimise the efficiency loss associated with achieving progressivity. Any desired degree of progressivity is generally best achieved by adjusting the rate schedule for personal taxes and benefits. But the rate schedule still needs to be designed to minimise efficiency costs. This can be achieved by designing a rate schedule that reflects knowledge of the shape of the income distribution and the responsiveness of people to taxes and benefits at different income levels. It also implies taking into account decisions over both whether to be in paid work (including when to retire) and how much to work, in addition to other responses such as tax avoidance and migration.

There are ways in which we can achieve progressivity more efficiently in the tax system. For example, ending differential VAT rates and offsetting the regressive impact through changes in the personal tax and benefit system would achieve this.²⁴ Reforming the personal tax and benefit

²⁴ See chapter 9 of *Tax by Design* for a detailed analysis and discussion.

system to improve work incentives for mothers with school-age children and for those around typical retirement ages – two groups that are particularly responsive to incentives – is another route.

Set against these principles, *Tax by Design* identified seven major flaws in the UK tax system:

1. Despite improvements for some groups in recent years, the current system of income taxes and welfare benefits creates serious disincentives to work for many with relatively low potential earning power. The benefit system in particular is far too complex (though the proposed universal credit will help to some extent).
2. Many unnecessary complexities and inconsistencies are created by the fact that the various parts of the tax system are poorly joined up. These range from a lack of integration between income taxes and National Insurance contributions (NICs) to a lack of coherence between personal and corporate taxes.
3. The present treatment of savings and wealth transfers is inconsistent and inequitable. There is no consistent tax base identified, saving is discouraged, and different forms of savings are taxed differently.
4. We remain some way short of having a coherent system of environmental taxes to address imperatives around climate change and congestion. The effective tax on carbon varies dramatically according to its source, and fuel duties are a poor substitute for road pricing.
5. The current system of corporate taxes discourages business investment and favours debt finance over equity finance. Its lack of integration with other parts of the tax system also leads to distortions over choice of legal form.
6. Taxation of land and property is inefficient and inequitable. There is a tax on business property – a produced input – but not on land, the supply of which is fixed and therefore cannot be discouraged. Taxation of housing involves both a transactions tax and a tax based on 20-year-old valuations.
7. Distributional goals are pursued in inefficient and inconsistent ways. For example, zero and reduced rates of VAT help people with particular tastes rather than being targeted at those with low overall resources; and council tax is regressive for no obvious efficiency-improving reasons.

Table 3. A good tax system and the current UK tax system

A good tax system	The current UK tax system
Taxes on earnings	
A progressive income tax with a transparent and coherent rate structure	An opaque jumble of different effective rates as a result of tapered allowances and a separate National Insurance system
A single integrated benefit for those with low income and/or high needs	A highly complex array of benefits
A schedule of effective tax rates that reflects evidence on behavioural responses	A rate structure that reduces employment and earnings more than necessary
Indirect taxes	
A largely uniform VAT – with a small number of targeted exceptions on economic efficiency grounds – and with equivalent taxes on financial services and housing	A VAT with extensive zero-rating, reduced-rating, and exemption – financial services exempt; housing generally not subject to VAT but subject to a council tax not proportional to current property values
No transactions taxes	Stamp duties on transactions of property and of securities
Additional taxes on alcohol and tobacco	Additional taxes on alcohol and tobacco
Environmental taxes	
Consistent price on carbon emissions	Arbitrary and inconsistent prices on emissions from different sources, set at zero for some
Well-targeted tax on road congestion	Ill-targeted tax on fuel consumption
Taxation of savings and wealth	
No tax on the normal return to savings – with some additional incentive for retirement saving	Normal return taxed on many, but not all, forms of savings – additional but poorly designed incentives for retirement saving
Standard income tax schedule applied to income from all sources after an allowance for the normal rate of return on savings – with lower personal tax rates on income from company shares to reflect corporation tax already paid	Income tax, National Insurance contributions, and capital gains tax together imply different rates of tax on different types of income—wages, profits, capital gains, etc. – some recognition of corporation tax in dividend taxation but not in capital gains tax
A lifetime wealth transfer tax	An ineffective inheritance tax capturing only some assets transferred at or near death
Business taxes	
Single rate of corporation tax with no tax on the normal return on investment	Corporation tax differentiated by company profits and with no allowance for equity financing costs
Equal treatment of income derived from employment, self-employment, and running a small company	Preferential treatment of self-employment and distributed profits
No tax on intermediate inputs – but land value tax at least for business and agricultural land	An input tax on buildings (business rates) – no land value taxes

Source: Table 20.1 of *Tax by Design*.

Table 4. Main recommendations of *Tax by Design*

Taxes on earnings
Merge income tax with employee (and ideally employer) NICs
End the opaque practice of tapering personal allowances and move to a transparent, coherent rate schedule
Introduce a single integrated benefit, getting rid of the very highest effective marginal tax rates (90% and more) faced by some low earners
Strengthen work incentives for those whose youngest child is of school age and for 55- to 70-year-olds relative to others

Indirect taxes
Remove nearly all the current zero and reduced rates and, where possible, exemptions from VAT. Introduce a comprehensive package compensating the less well-off on average whilst maintaining work incentives.
Retain a destination basis for VAT while ending the zero-rating of exports
Introduce a tax equivalent to VAT on financial services
Replace council tax and stamp duty land tax on housing with a tax proportional to the current value of domestic property, to stand in place of VAT on housing

Environmental taxes
Introduce a consistent price on carbon emissions, through a combination of extended coverage of the EU Emissions Trading Scheme and a consistent tax on other emission sources. This would include a tax on domestic gas consumption.
Replace much of the current tax on petrol and diesel with a national system of congestion charging

Taxation of savings and wealth
Take interest on bank and building society accounts out of tax altogether
Introduce a rate-of-return allowance for substantial holdings of risky assets (e.g. equities held outside ISAs, unincorporated business assets, and rental property) so that only 'excess' returns are taxed
Tax capital income and capital gains above the rate-of-return allowance at the same rate schedule as earned income (including employee and employer NICs), with reduced rates for dividends and capital gains on shares to reflect corporation tax already paid
Maintain and simplify the current system of pensions taxation, ending the excessively generous treatment of employer contributions and replacing the tax-free lump sum with an incentive better targeted at the behaviour we want to encourage
At least remove the most obvious avoidance opportunities from inheritance tax and look to introduce a comprehensive lifetime wealth transfer tax

Business taxes
Introduce an allowance for corporate equity into the corporation tax to align treatment of debt and equity and ensure that only 'excess' returns to investment are taxed
Align tax treatment of employment, self-employment, and corporate-source income
Replace business rates and stamp duty land tax on business property with a land value tax for business and agricultural land, subject to confirming practical feasibility

Source: Table 20.2 of *Tax by Design*.

Table 3 summarises *Tax by Design's* vision of a good tax system and compares it with the current UK tax system. It is clear that the current system falls short of the ideal in many respects. A jumble of tax rates, a

lack of a coherent vision of the tax base, and arbitrary discrimination across different types of economic activities are hallmarks of the current system.

Table 4 summarises the main recommendations of *Tax by Design* for the long-run design of the UK tax system. We do not explain the details of, or rationale for, all of these recommendations here; interested readers are referred to *Tax by Design* for full discussion, and to its concluding chapter for a brief summary.

For the most part, these recommendations for the UK as a whole would apply equally to an independent Scotland. However, tax systems must be tailored to the countries in which they are applied, and in some ways the tax system appropriate for an independent Scotland might be different from that for the UK as a whole. It is to those differences that we now turn.

5. Tax design for an independent Scotland

The recommendations for reform of the UK tax system in *Tax by Design* make a good starting point for taxing an independent Scotland. Yet an independent Scotland would differ from the UK in a number of ways that have implications for tax design, and in this section we look in turn at direct personal taxes, corporate taxes, VAT and excise duties, environmental taxes and property taxes. Some of the issues that would arise in an independent Scotland reflect differences between the characteristics of Scotland and those of the UK as a whole which have implications for tax design. In addition to those, the Scotland and rUK having different tax systems, presumably with relatively free mobility between them, would raise two general issues that apply to varying extents across all taxes.

First, having separate tax regimes in Scotland and rUK would generally imply an increase in compliance costs for taxpayers. People and firms potentially touched by both Scottish and rUK tax systems would first have to work out which jurisdiction their activity falls under. If it fell under both jurisdictions, they might then have to fill in two tax returns, understand two systems, deal with two tax authorities, and so on. Obviously, this would be a much bigger burden on taxpayers if the Scottish and rUK tax regimes diverged than if they were virtually identical. We mention some specific examples of this below, but it applies more broadly.

Second, if tax bases (taxable income, profits, spending and so on) can move across the Scotland–rUK border in response to tax changes in one or other country – and, more generally, if international movements are more important relative to Scotland’s domestic tax base than they are for the UK as a whole – then there are consequences for the tax rates the Scottish (and indeed rUK) government might want to set. Other things equal, the optimal tax rates applied to mobile tax bases in an independent Scotland (and indeed rUK) will be lower than the optimal tax rates for the UK as a whole:

- Insofar as there is mobility across the Scotland–rUK border, the Scottish and rUK governments each have an incentive to engage in tax competition with each other to attract tax base across the border and thereby increase revenue. The tax rates chosen by two independent countries each acting in their own interest will generally be lower than the tax rate the countries would set if they were a single unified country (or if they cooperated for their collective good).
- Even disregarding mobility across the Scotland–rUK border itself, Scotland’s smaller size might give it a stronger reason to reduce tax rates if a given reduction in tax rate would attract more tax base from third countries, as a fraction of Scotland’s existing tax base, than would be the case for the UK as a whole.

Note that many of these issues would arise not only under independence but also if more tax-setting powers were devolved to Scotland within the UK (with revenues retained in the respective areas). With different tax regimes in two parts of the UK, people would still need to work out which applied to them, though under devolution dealing with two systems would probably be simpler: depending on how devolved tax setting was organised, there may or may not be two tax authorities, but in any case there are less likely to be conflicts of jurisdiction, scope for double taxation, and so on. And two different taxing authorities within the UK would still have an incentive to compete to attract mobile tax base, though devolution arrangements might be more likely to restrict the scope for such behaviour (by, for example, allowing variation in tax rates but not bases, or only limited variation in rate schedules – both of which are demonstrated with the SRIT). It is not the purpose of this paper, however, to examine possible devolution arrangements within the UK. Our focus is

on how taxation in an independent Scotland might differ from the current situation.

5.1 Direct personal taxes

A different income distribution

Taking the amount of net revenue to be raised for public services as given, the economically optimal rate schedule of income taxes and benefits in any country depends on three factors:

- the strength of society's preference for redistribution;
- the shape of the income distribution;
- the degree of responsiveness to taxation of people at different points in the distribution.

Scotland might decide to levy higher (or lower) rates of income tax than the UK does because its government has a stronger (or weaker) preference for redistribution: it simply cares more (or less) about reducing inequality. But even governments with the same underlying preferences might adopt different tax schedules in a different economic environment.

Incomes in Scotland are slightly more equally distributed than in the UK as a whole. We saw an indication of this for gross individual incomes in Table 2. It is also true for net equivalised household incomes: in 2010–11, median equivalised household income was 2% higher in Scotland than in the UK as a whole, while the mean was 2% lower.²⁵ The Gini coefficient, a summary measure of inequality that can take values between 0 (everyone has equal income) and 1 (one person has all the income in the economy), was slightly lower in Scotland (0.322) than in the UK as a whole (0.341).²⁶

Greater income equality generally means that there is less need for further redistribution in Scotland than in rUK: less is gained by imposing distortionary high tax rates, and (other things equal) optimal tax and benefit rates would be slightly lower in Scotland than in rUK (though that

²⁵ 'Equivalised' means adjusted for household size and composition: a couple with two children, say, clearly needs more money than a single person without children to achieve the same material living standard. The numbers in the text are calculated using the 'modified OECD' equivalence scale and data from the 2010–11 Family Resources Survey.

²⁶ Source: as above. The Gini coefficient is half the average income gap between all pairs of individuals, as a fraction of average income.

does not necessarily mean lower than the current UK tax rates: those rates might not be optimal anyway, or the Scottish government might have a stronger or weaker preference for redistribution).

As well as the income distribution being different, the responsiveness (or elasticity) of taxable incomes to taxation might be different in Scotland. This need not mean that human nature is different; rather, as well as the *number* of people at different income levels being different in Scotland, the *composition* of people at each income level might be different. To take one example: people with an annual income above £150,000 in Scotland might typically be different kinds of people, earning their money in different ways, from people with incomes above £150,000 in rUK, and might therefore be more or less willing and able to reduce their taxable incomes in response to high tax rates (whether by working less hard, retiring earlier, contributing more to a pension, converting their income to capital gains, failing to declare their income, emigrating, or a host of other possibilities). If those in Scotland are more (or less) responsive to taxation than their rUK counterparts then the optimal – and indeed the revenue-maximising – top rate of income tax would be lower (higher) in Scotland.

We are aware of no convincing evidence on the responsiveness of taxable incomes in Scotland compared with rUK. However, what is clear is that taxable income elasticities with respect to either Scottish or rUK income tax rates would be higher than taxable income elasticities with respect to the tax rates of a unified UK. If either Scotland or rUK changed its income tax rate, all the ways in which people can currently respond to an increased or reduced UK tax rate would still be available, *plus* people would also be able to respond by crossing the new Scotland–rUK border to the lower-tax country.²⁷ Other things equal, optimal tax rates for Scotland and for rUK would therefore be lower than for a unified UK. In addition to all the reasons the UK currently has for keeping tax rates low (offsetting the desire to keep them high in order to raise revenue), the separate countries that the UK split into would be competing to attract high-income people (or at least their incomes) from each other.

²⁷ This assumes that the current UK tax system were replicated in Scotland and rUK. Taxable income elasticities are not an immutable characteristic of people themselves, but a function of the tax system: either country might reduce taxable income elasticities by, for example, reducing avoidance opportunities and thereby closing down certain channels of response.

International aspects

The international dimension of personal taxation deserves further comment. The elasticity of Scottish taxable income would depend on exactly what income was deemed to fall within the Scottish tax base and therefore what exactly must move across borders to avoid tax.

Broadly speaking, UK income tax or CGT at present is charged on:

- the worldwide income and gains of UK-domiciled residents, but with credit (i.e. a UK tax deduction) given for tax paid abroad on foreign income;
- some UK income of non-UK residents: generally, UK earnings and rental income, but effectively not interest and dividends and not capital gains.²⁸

People who leave the UK for five years or less are taxed in the year they return on certain types of income received while abroad and on capital gains realised while abroad on assets acquired before leaving (with credit for foreign tax paid). Special rules apply to tax foreign income and gains of UK residents who are domiciled elsewhere (discussed in Box 1).

An independent Scotland would have to decide whether to adopt a similar approach or to do something different.²⁹ If it adopted the same approach, it would mean that, for example, someone living in Scotland and commuting to work in England would pay tax on their English earnings to the rUK government and claim credit for that tax paid against the income tax for which they would otherwise be liable in Scotland.³⁰ That could involve hassle for the individual: having not only to pay income tax in rUK (perhaps not a problem if their employer withholds it through PAYE) but

²⁸ An exception is that non-residents carrying on a trade in the UK are taxed on disposals of assets situated in the UK and used in the trade.

²⁹ The UK system is the result not just of unilateral choice but of a network of double tax treaties. Scotland would have to acquire its own network of double tax treaties. But the UK also has a system of unilateral double tax relief, which has the effect described in the text.

³⁰ Note that this is different from the position under the Scottish variable rate that could currently be introduced and the Scottish rate of income tax, which is due to replace it from 2016–17. Both of those apply essentially to the worldwide income of people who are resident in Scotland for more of the year than in any other part of the UK – regardless of where the income is earned.

also to deal with the paperwork of tax and offsetting credit in Scotland. Similarly, people living in one country but renting out a property in the other country might have to deal with both countries' tax authorities. For most other investment income and capital gains, people would only have to deal with the tax authority in their country of residence, though doing so might be more complicated than before now that they have foreign income: for example, some people might have to start filling in income tax returns for the first time.

If one country adopted lower income tax or CGT rates than the other, more than just hassle would be at stake. People with substantial savings, or who were happy to work in the lower-tax country, would have an incentive to move to the lower-tax country, though that would need to be for at least five years to benefit from the lower tax rate on most capital gains and a few types of income. And people already living in the lower-tax country would have an incentive to ensure they were working domestically in order to take advantage of the lower rate. To the extent that people and their incomes are mobile enough to take advantage of any differences in tax rates, each government would have an incentive to reduce income tax and CGT rates in order to attract – or keep – them and the revenue they generate (though there is of course also an offsetting cost to providing public services to more people). But this is clearly a much less serious issue than, for example, profit shifting in the case of corporation tax, discussed below.

Scotland could decide to follow the international norm, rather than mirroring the current UK rules, and extend CGT to gains realised by non-residents on Scottish assets, particularly real estate. If Scottish CGT rates were no higher than those in rUK (or, for that matter, a third country with the same basic rules) then the non-resident taxpayers themselves would be unaffected since their domestic government would give them credit for the tax levied in Scotland; the principal effect would be to transfer revenue from the foreign government to the Scottish government. However, if Scottish CGT rates exceeded those in rUK (or another country) then there would be an incentive for people not resident in Scotland to move their assets from Scotland to a lower-tax country and an incentive for the Scottish government to reduce its CGT rates.

There would also be enforcement issues. The Scottish government would need to find out when its residents received capital gains abroad, and

perhaps (depending on the rules adopted) when people resident elsewhere disposed of Scottish assets. This would put a premium on mechanisms such as information exchange between governments, especially if there were substantial cross-border asset holding between Scotland and rUK.

Particular complications arise in the case of trusts if the trust, its settlor, all the trustees and all the beneficiaries are not all resident in the same country. In some circumstances, there is potential for capital gains effectively to be taxed in both countries. In other circumstances, the location of the trust will affect which country's tax regime applies, so there may be temptation to situate trusts just over the border if one country has a lower tax rate than the other. These kinds of problem can already arise to some extent between the UK and third countries, but a separation between Scotland and rUK would make such cases far more common in practice, and thought would need to be given to new rules and transitional provisions for existing trusts.

This discussion is necessarily broad-brush: there are many complex nuances in the details of international taxation, ranging from variation in double tax treaties to the use of offshore vehicles to hold assets, which can be important in practice. And we have largely assumed that the Scottish government adopts a system that mirrors the current UK position, which it might not (though that would certainly be the simplest course at the outset of independence and might therefore be a reasonable presumption). The intention here is just to set out the basic position and give a flavour for the kinds of issues that can arise. One wrinkle in the current system that could become much more significant under Scottish independence is the distinction between residence and domicile, which is explored in Box 1. But the central message is that an independent Scotland would have to make careful decisions and negotiations as to the international scope of its taxes, and that these decisions could have significant implications for the government's enforcement costs, taxpayers' compliance costs, and the scope for taxpayers to avoid the tax, with consequences for tax competition between governments.

Box 1. Domicile

For both income tax and CGT, an exception to the rule that residents are taxed on their worldwide income/gains is that UK residents who are domiciled elsewhere can choose to be taxed on the 'remittance basis', whereby they are not taxed on their foreign income and gains unless they bring the proceeds (directly or indirectly) into the UK – though after being resident in the UK for seven years they must pay a £30,000 annual charge for this privilege, rising to £50,000 after 12 years of residence, and give up their tax-free income tax and CGT allowances. Those who do not choose the remittance basis are taxed in a similar way to UK-domiciled residents.

By default, a person's domicile is simply the domicile of his or her father (or mother if they were unmarried at the time of birth), though one can change domicile by settling permanently in another country. In fact, people are not strictly domiciled in the UK per se, but in either England and Wales, Scotland, or Northern Ireland. There could potentially be quite a lot of Scottish-domiciled people living in the UK, and vice versa. Statistics on domicile in different parts of the UK are not available, but to give a rough sense of scale, according to the 2011 census the residents of England and Wales included some 733,000 people born in Scotland – equivalent to 1.3% of the England and Wales population or 13.8% of Scotland's population – and 575,000 people who described themselves as Scottish (or 'Scottish and British', etc.) – equivalent to 1.0% of the England and Wales population or 10.8% of Scotland's population. Around half as many people were born in England or Wales but now live in Scotland as the other way round. Given that settling permanently in a country can result in being domiciled there, there could potentially be a large number of cases where it is difficult to establish whether someone originally domiciled in one of Scotland or rUK but now living in the other has changed their domicile.

If Scotland and rUK both adopted the current UK rules, there would be a potential CGT advantage to be gained from being resident in one of Scotland or rUK and domiciled in the other, since if a capital gain arose in the country of domicile rather than the country of residence then neither government would seek to tax it.

The potential income tax advantage is subtler. If resident in one of Scotland and rUK and domiciled in the other, there would be no advantage to income arising in the country of domicile (since that country would levy tax on the income as it arose) except insofar as the country of domicile had lower income tax rates than the country of residence. But income generated in a low-tax third country would be free of tax in the country of residence.

With both CGT and income tax, however, such strategies only generate a net saving if the individual does not choose to remit the money to the UK and, after 7/12 years of residence, if the tax saving is at least £30,000/£50,000 (plus the value of lost allowances).

Inheritance tax also has international aspects. Broadly speaking, it is levied on UK domiciliaries' worldwide assets, with limited credit for foreign taxes paid on death, and also on the UK assets of foreign domiciliaries.³¹

³¹ Domicile is defined as for income tax and CGT, except that non-UK-domiciled spouses and civil partners of UK domiciliaries can now elect to be domiciled in the UK for inheritance tax purposes. People also become 'deemed domiciled' in the UK – and thus their worldwide assets taxed – if they are resident in the UK for 17 out of 20 years, unless and until they then live elsewhere for four full years.

If an independent Scotland and rUK adopted a similar system, complications could arise where one spouse (or civil partner) is domiciled in Scotland and the other in rUK. In some cases, such couples could inadvertently incur an inheritance tax liability, since transfers to a foreign-domiciled spouse (unlike transfers to a domestically domiciled spouse) are not automatically tax-exempt.

If Scotland and rUK both adopted this approach but with different tax rates, people domiciled in the lower-tax country would have an incentive to ensure their assets were located there so as to benefit from the lower inheritance tax rate. For example, if Scotland had a lower inheritance tax rate than rUK then less inheritance tax would be levied on a Scottish-domiciled person bequeathing a Scottish house to their children than if they bequeathed an equally-valuable house in rUK. People domiciled in the higher-tax country would have no incentive to locate their assets in the lower-tax country unless they moved there themselves and became domiciled in the lower-tax country.

Some have suggested that the current inheritance tax regime is so unsatisfactory that it would be better to abolish it altogether. *Tax by Design* argued that a tax on lifetime receipts of both gifts and inheritance would be preferable if the formidable practical obstacles could be overcome. Cross-border asset holding would make enforcement of such a tax an even bigger challenge in the context of an independent Scotland, but the feasibility of a lifetime receipts tax deserves detailed practical investigation.

5.2 Corporation tax

Corporation tax applies to profits created from economic activities located in the UK. Under independence, firms operating in both Scotland and rUK would have to calculate how much profit was earned in each location and account for tax separately in each country. Calculating where corporate income is earned is conceptually difficult and administratively burdensome for both firms and revenue authorities.

Conceptually, there is often no right answer to the question of what shares of profits are generated by activities in different countries. Suppose, for example, that a multinational firm has research laboratories in several countries, each of which makes an essential contribution to developing the firm's unique product. Without any one of those subsidiaries, the product

would not exist and profits would be zero; there is no sense in which we could say that, say, 30% of profits are created in country A, 50% in country B and 20% in country C. When determining how much the company ultimately producing the product should pay each of these affiliates for its contribution (the 'transfer prices'), and therefore what taxable profits should be in each country, it would be hard to say that a particular decision made by the company was 'wrong'. The 'arm's-length pricing' that is supposed to be the guiding principle – the price that would be charged between unrelated parties – is of little help in this case, not only because the input in question is never traded between unrelated parties (so that the arm's-length price is unobservable), but because the individual contributions may have little or no value to an unrelated party despite making an important contribution to the firm in question. Indeed, more generally, an important reason why multinational companies exist is likely to be that they enjoy some advantage that cannot easily be replicated by arm's-length trade between unrelated parties.

Calculating how much profit was earned in each location would be difficult even if the corporation tax regimes in Scotland and rUK were identical. But it is if the two countries have different corporation tax regimes that it becomes really problematic, because then firms have an incentive to allocate as much of their profits as possible to the lower-tax jurisdiction, putting pressure on (amongst other things) the transfer pricing rules used for determining a fair price for intra-group transactions. Since the incentive is to shift profits to the lower-tax jurisdiction, this would mostly be a problem for the higher-tax country's government.

The statutory rate of corporation tax

Setting a corporation tax rate for Scotland involves a trade-off between, on the one hand, wanting more activity to take place (and/or be taxable) in Scotland – both domestic firms investing more and foreign firms bringing investment and profits into Scotland – and, on the other hand, wanting to raise revenue from profits that would be taxed in Scotland even with a higher rate.

To the extent that there are differences in the attractiveness of, and opportunities present in, a location for firm investment, we would expect some countries to be able to charge a higher rate of tax without deterring as much activity. For example, firms might be prepared to pay a higher tax

rate because they value being geographically close to a big city, or if the local population has a large stock of relevant skills. Put another way, there may be location-specific benefits that lead to a higher level of investment for a given tax rate. The City of London is an obvious example. Fewer location-specific benefits in Scotland might motivate a lower rate of corporation tax.

If location-specific profits could be identified and subjected to a separate tax regime, the ideal (from a unilateral Scottish perspective) would be to tax those heavily and to tax highly mobile profits more lightly. Arguably, this is what the UK currently does with its high tax rates on North Sea production and low tax rates on income associated with intellectual property. Clearly, taxation of North Sea oil and gas is an important consideration for Scotland; we discuss it further in Box 2.

Box 2. Taxing North Sea oil and gas production^a

Revenue from North Sea oil and gas is potentially vital to an independent Scotland. If North Sea revenues are allocated on a geographical basis, GERS estimates that they accounted for 19% of all Scottish revenue in 2011–12 (compared with just 2% in the UK as a whole), and even though, on OBR forecasts, this share will decline sharply by 2017–18, it will remain significant for a long time yet. Consequently, while there is no difference between Scotland and rUK in how North Sea production should be taxed, getting it right is clearly more important in Scotland.

The UK's current regime for taxing North Sea oil and gas has three layers: mainstream corporation tax (which operates slightly differently for North Sea profits), a supplementary corporation tax levied only on North Sea production, and a separate petroleum revenue tax that applies only to fields approved before 16 March 1993.^b While there are many complexities and important details in arrangements for taxing North Sea production – recently the tax treatment of the costs of decommissioning old fields has rightly been a focus of attention, for example – there are three broad principles that stand out.

First, as with corporation tax in general, it is preferable to tax only economic rents – that is, profits in excess of what the capital invested in production would be expected to yield if put to another (risk-free) use. Amongst other advantages (discussed in the main text), such a tax – if imposed at a stable rate – can avoid discouraging investments that would be viable in the absence of the tax, since as long as any rents remain after tax then the project will still be a better use of funds than the alternative. A tax on corporate rents can take the form of either an allowance for corporate equity (discussed in the text) or a cash-flow tax. Part of the current North Sea tax regime – petroleum revenue tax – broadly achieves the effect of a cash-flow tax by allowing full up-front deduction of investment costs. But the corporation tax element (including the supplementary charge) does not, though capital allowances are generous relative to those for most forms of onshore investment.

Second, set a high tax rate. North Sea oil and gas are a classic example of a source of location-specific rents. The rents arise because the oil and gas are in limited supply, so that, unlike in much of the economy, new entrants cannot replicate existing profitable activities until competition drives down profit margins; instead, returns that comfortably exceed the cost of investment can persist. And the oil and gas are in a fixed, readily identifiable location, so production cannot move to a lower-tax location and there is no need for the UK tax rate to be

internationally competitive as there is for corporation tax in general. This is one lesson that UK governments have heeded: the current three layers of taxation combine to tax offshore profits at a rate of 81% for fields approved before 16 March 1993. If the tax were based on economic rents as described above then the tax rate could be anywhere up to almost 100% with virtually no economic distortion created. With the current tax base, high tax rates still have the potential to discourage production, making offshore investments that would have been worthwhile in the absence of taxation unviable – as the government discovered from the adverse reaction to its increase in the tax rate in Budget 2011. (Interestingly, the government responded by introducing more generous investment allowances, moving closer to a tax on rents.) But the large rent component of profits and lack of international competitiveness concerns mean that the tax rate on North Sea profits should still be substantially higher than that on onshore profits.

Third, keep the regime stable and predictable. Tax rates that are expected to rise discourage investment since firms expect future profits to be taxed at a higher rate than their up-front investment costs are relieved: even cash-flow and ACE taxes are not neutral in such circumstances. More generally, uncertainty is consistently cited across all sectors of the economy as one of the biggest barriers to making long-run investments. North Sea production is an extreme example of an industry in which huge investments are made in the hope of returns many years later. It is therefore an area where long-run stability of policy is at a particular premium. Yet successive governments have been unable to resist constant reform. The tax regime for offshore production has been changed on an almost annual basis ever since North Sea production started in earnest in the 1970s.

As with tax policy in general, this is not an argument for keeping the status quo indefinitely regardless of how bad it may be. Rather, it is an argument for taking the time and care to design a sensible policy that is sustainable over the long term, and then sticking to it. There is clearly a tension between the value of stability and the merit of moving to an entirely rents-based tax. We would argue that a rents-based tax with a stable high rate would be the right long-run policy.

^a For further discussion, see H. Miller, 'Corporate tax, revenues and avoidance' in C. Emmerson, P. Johnson and H. Miller (eds), *The IFS Green Budget: February 2013* (<http://www.ifs.org.uk/publications/6562>). We do not consider here whether offshore revenues should simply go into the general pot or whether some or all should be set aside and used either to stabilise fluctuating revenues or to build up a fund for a future when North Sea revenues have disappeared, as recently proposed by the Scottish Fiscal Commission Working Group.

^b These taxes are described briefly in J. Browne and B. Roantree, 'A survey of the UK tax system', IFS Briefing Note BN9, 2012 (<http://www.ifs.org.uk/publications/1711>).

North Sea production aside, we assume that Scotland levies a single rate across all activities. There would be considerable practical difficulties in attempting to tax income from different activities at different rates, particularly where those activities may be undertaken by the same firm. The application of special low tax rates to highly mobile business activities is also discouraged by international agreements such as the EU Code of Conduct on business taxation and OECD initiatives on 'harmful tax competition'. Indeed, the European Commission has recently opined that

the UK's Patent Box, which is arguably designed to apply a lower rate to more mobile profits, breaches the Code of Conduct.³²

If a single tax rate applied to all activities – or for each set of activities to which a common tax rate applies – the Scottish government would face a trade-off between generating a bigger tax base and raising revenue from the tax base that would remain in any case.

First Minister Alex Salmond has said that, if the SNP were to retain power in an independent Scotland, it would reduce the headline rate of corporation tax to 3 percentage points below the rUK rate.³³ The UK's corporation tax rate, currently 23%, is due to fall to 20% from April 2015, so the SNP's proposal would imply a 17% rate for Scotland.

A lower corporation tax rate would act to increase the Scottish tax base via three routes:³⁴

1. making some investment opportunities worthwhile that would be unviable with a higher tax rate;
2. attracting real activity (foreign direct investment) to Scotland that would otherwise take place in rUK or elsewhere;
3. encouraging firms to shift reported profits (without moving real activities) to Scotland from rUK or elsewhere, through manipulation of transfer prices etc.

³² See H. Miller, 'EU Commission labels UK Patent Box harmful tax competition', IFS Observation, October 2013 (<http://www.ifs.org.uk/publications/6899>).

³³ See, for example, <http://www.scotsman.com/news/politics/top-stories/scottish-independence-corporate-tax-slash-pledge-1-2939285>.

³⁴ A fourth effect of a lower corporation tax rate would not be beneficial to Scotland, however. Reducing the rate of corporation tax would increase the incentive for people to set up companies in order to reduce their tax liabilities, and for owner-managers of companies to take dividends or capital gains rather than salary. If more of the income generated in Scotland were labelled as corporate profits, that would increase revenue from corporation tax, but reduce revenue from personal taxes by more. Whether a person runs their own business or is employed by someone else, the legal form a business takes, and the form in which income is extracted from it, should be decisions taken for underlying commercial and personal reasons, not to reduce tax liabilities. The UK already taxes salaries more heavily than corporate-source income (largely because employee and employer National Insurance contributions are paid only on labour earnings). On its own, reducing the corporation tax rate would undesirably exacerbate that distortion and put further pressure on the complex anti-avoidance rules designed to protect the tax base.

Offsetting these is the reduced revenue that would be collected from profits that would be taxable in Scotland even without the lower rate. A key question is therefore how big the behavioural response to a tax cut would be.

It is possible that a lower tax rate could create or attract so much extra taxable profit in Scotland that the resulting revenue would exceed the revenue forgone on profits that would have been generated and taxable in Scotland anyway. This would require a large behavioural response to the reform, especially when the tax rate is relatively low to start with: for a rate reduction from 20% to 17% to increase net revenue, it would have to increase taxable profits in Scotland by more than 17.6%.³⁵

But a corporation tax cut does not have to be self-financing to be a good idea: if the corporate tax burden on real investment activity could be significantly reduced (with correspondingly significant benefits to the Scottish economy) at only a very small net cost to the Scottish government, it would still be worthwhile as only small (and so not very damaging) increases in other taxes would be needed to replace the revenue.

Unfortunately, the likely size of behavioural responses – both real activity and profit-shifting – is highly uncertain.

In terms of real activity, initial modelling work by the Scottish government estimated that a Scottish corporation tax rate 3 percentage points lower than the UK rate (meeting the net cost through lower Scottish government spending) would in the long run increase investment in Scotland by 1.9%, employment by 1.1% (27,000 people) and output by 1.4%.³⁶ This is inevitably highly speculative, however.

³⁵ With a tax rate 17/20 as high, the tax base must be 20/17 as large – that is, 17.6% bigger – to yield the same revenue.

³⁶ This modelling was done using a computable general equilibrium (CGE) model of the Scottish economy developed at Strathclyde University: see box 2 of Scottish Government, *Devolving Corporation Tax in the Scotland Bill*, 2011 (<http://www.scotland.gov.uk/Resource/Doc/919/0120770.pdf>). The modelling was described there as ‘initial’ but is still being cited by the Scottish government. The reform analysed the effects of having a 20% rate in Scotland and a 23% rate in the UK – note that the UK rate is due to fall to 20% from 2015, so a 3 percentage point differential would require a rate of 17% in Scotland. 17% vs 20% rates might yield slightly different effects from 20% vs 23%, but this difference is dwarfed by other sources of uncertainty.

Fundamentally, any estimate at this stage requires strong assumptions and a large dose of guesswork, not least because there is little way of knowing how much investment a lower rate of corporation tax will attract from rUK: there has never been a different regime in Scotland before, so there is nothing to tell us how much firms will respond to incentives to invest in Scotland rather than the rest of the UK.³⁷ It is hard to predict how far the degree of mobility between Scotland and rUK would resemble that across other borders that have been subject to corporate tax differentials, such as those between Northern Ireland and the Republic of Ireland, between the UK and other countries, between different EU member states or between different states of the US.

The fact that Scotland will share many other features with rUK – a common language, similar legal system, common currency (if the current Scottish government gets its way) and presumably many similar policies (at least initially, before Scottish policy has time to diverge more fundamentally) – should make them relatively close substitutes, suggesting that a lower rate of corporation tax in Scotland might be quite effective in attracting businesses from rUK, and that much of any foreign direct investment (FDI) that is attracted to Scotland as a result of a lower corporation tax rate might come at the expense of rUK rather than from outside the UK.

Like Scotland, rUK would have an incentive to reduce its corporation tax rate, for the same reasons. Each would have an incentive to reduce its tax rate in order to attract real activity and paper profits from the other: a classic example of tax competition. rUK's incentive to reduce rates would be weaker than Scotland's if cross-border flows would be smaller relative to rUK's domestic tax base than relative to Scotland's domestic tax base, so that rUK would have more domestic revenue to lose and less foreign profits to attract than Scotland would. But the key point is that independence could potentially prompt harmful tax competition between Scotland and rUK (and perhaps other countries), reducing their combined revenues below what they would be if the countries cooperated to set rates at what would be best for them collectively.

³⁷ This is far from the only source of uncertainty: it is also hard to know how much domestic investment would increase and how that would affect employment, production and so on.

One possibility would be to avoid these problems by formula apportionment, whereby taxable profit would be calculated at the UK level (as it is now) and then apportioned between Scotland and rUK in accordance with a measure of how much of a firm's activity is in that location (as dictated by a formula). This would be akin to the method of formula apportionment used in the US to calculate the taxable income that accrues in each of the states. The US formula apportions the tax base according to a weighted average of the proportion of a firm's assets, employment and sales in each tax jurisdiction. It is also in line with proposals for a Common Consolidated Corporate Tax Base (CCCTB) in Europe, under which firms would calculate taxable profit at the European level and a formula would be used to allocate this to countries to tax at their own rates. This system would not place a great additional burden on companies, since it requires little more information than is currently required for UK tax purposes.

A profit allocation formula would mean that firms could not shift profits directly between jurisdictions. It could instead introduce new distortions as firms tried to minimise their tax liabilities by manipulating whatever components were included in the formula. The idea is that these elements – such as employment/wage costs, assets and sales – are less susceptible to manipulation than profits (which is why labour income taxes and sales taxes tend to cause fewer difficulties of this kind) and therefore these new distortions are less damaging than the alternative. However, implementing formula apportionment would require both governments to agree, and there is considerable scope for disagreement over the precise formula used to apportion the tax base.

Under formula apportionment, if an increase in tax rates reduces taxable profits without reducing the components of the formula (for example, if the formula is fixed based on historical components rather than actual components as they evolve over time), then each country would face only part – its formula percentage – of the revenue loss from reduced profits. Consequently, governments – and especially smaller governments – would have less reason to care about the disincentive effects of taxation, and thus an artificial incentive to set a high corporation tax rate. Crudely put, if Scotland is only a small part of the UK, increasing the Scottish corporation tax rate would deliver more of the (UK-wide) tax base to Scotland while the reduction in the (UK-wide) tax base would be negligible. This example,

in which the components of the formula are completely unchanged, is rather extreme, but distorted tax-setting incentives would still arise (albeit to a lesser degree) in more realistic settings where the components of the formula did not change one-for-one with taxable profits or took time to adjust.

An ACE for an independent Scotland?

Most policy discussion has focused on whether the headline corporation tax rate should be reduced. But the corporate tax base could also be changed – by changing capital allowances, for example, or restricting deductibility of debt interest costs. *Tax by Design* recommended introducing an allowance for corporate equity (ACE) – an allowance for the opportunity cost of equity finance (calculated as a risk-free interest rate multiplied by a measure of the stock of shareholders’ funds tied up in the company), similar to the deduction already given for the costs of debt finance (i.e. interest payments). An ACE taxes only ‘economic rents’: it levies no tax on business activities that break even in present-value terms, but taxes only profits in excess of a ‘normal’ (risk-free) rate of return on the funds invested in the company. As such – and provided the tax rate is stable – it avoids commercially viable investments being made unviable by taxation, and in the process largely or wholly resolves a number of other problems with conventional corporate taxes, such as the bias in favour of debt over equity finance and the sensitivity of effective tax rates to inflation. An ACE would not, however, prevent the headline rate of corporation tax from affecting Scotland’s attractiveness relative to other countries as a destination for mobile investment or profits, so the choice of statutory tax rate would still matter.

Like any other change to the way corporation tax works, introducing an ACE would increase compliance costs for companies operating in both Scotland and rUK, which would have to learn about and use the two different tax systems.

Compliance costs aside, there is no obvious reason why Scotland’s international openness would make an ACE more difficult or less attractive

for Scotland to adopt.³⁸ The unilateral adoption of an ACE in Scotland could erode the rUK tax base, however.

- Scotland's introducing an ACE would make it a more attractive location for mobile investment (much like reducing its headline rate would) insofar as those investments were equity-financed: it makes Scotland's corporate tax regime more competitive relative to rUK's (and other countries'), potentially costing the rUK exchequer money.
- Scotland's introducing an ACE would provide an incentive for companies operating in both Scotland and rUK to use more equity finance in Scotland and more debt finance in rUK, since debt interest would be deductible in either country whereas only Scotland provided a deduction for the opportunity cost of equity finance. This would have little impact on Scottish revenues (since Scotland would be providing similar deductions for either debt or equity finance), but companies' using more debt and less equity in rUK (with its less generous treatment of equity finance) would have a cost to the rUK exchequer, and put additional pressure on rUK's thin capitalisation rules, though it is not clear whether this would be quantitatively important.

Reducing the statutory tax rate and introducing an ACE are not mutually exclusive alternatives. Introducing an ACE would be a good idea irrespective of the statutory rate of corporation tax, though the imperative to do so is less urgent the lower the tax rate is, since with a lower tax rate the distortions that an ACE would alleviate are less severe.

With an ACE in place, the balance to be struck with the main rate would be simpler: between wanting a low tax rate to attract internationally mobile activities and wanting a high tax rate on highly-profitable activities that are stuck in the UK (which can be taxed heavily, since they will still be worthwhile as long as some 'excess' return is left over).

5.3 VAT and excise duties

VAT

Tax by Design argued that almost all zero and reduced rates of VAT and (more importantly) exemptions should be removed. The UK's zero and

³⁸ This point is developed more fully in section 18.3 of *Tax by Design* in the context of the UK and other countries. The same logic would apply to an independent Scotland.

reduced rates of VAT are an inefficient way to help poorer households. They favour people with particular tastes as much as people with low overall income – income-related taxes and benefits target the latter more directly and accurately – and in the process distort people’s spending patterns in undesirable ways as well as complicating the system by requiring boundaries to be drawn and policed between goods and services subject to different VAT rates. Exemptions – different from zero rates in that exempt producers cannot reclaim VAT paid on inputs they buy – are even more damaging. They share all the disadvantages of zero rates, but the inability to deduct input VAT also distorts production patterns in a host of ways, from encouraging vertical integration to distorting competition between exempt and non-exempt bodies and between exempt bodies in different countries. Moving to a more uniform VAT would, on its own, be regressive since zero and reduced rates apply predominantly to goods such as food and domestic fuel that take up a higher proportion of poorer households’ budgets. But *Tax by Design* argued that the large amount of revenue that would be raised could be used to cut income taxes and increase benefits in such a way as to make the overall package roughly distributionally neutral on average while also protecting work incentives.

Within the European Union, much of VAT policy is made at the EU level or constrained by EU rules. We assume here that an independent Scotland would successfully negotiate membership of the EU.

Within the EU, Scotland would not be allowed to remove most VAT exemptions – the most damaging aspect of VAT. However, it would certainly have the right to remove zero and reduced rates – and indeed it would be a matter of negotiation with the EU whether it even had the right to keep all of those currently applied in the UK.

At the international level, VAT operates on a ‘destination basis’: the VAT levied on goods and services depends on the country in which they are consumed. In contrast to corporation tax, therefore, in general it should not distort patterns of production and trade between an independent Scotland and rUK, since items are taxed at the same rate regardless of where they are produced.

Nevertheless, the creation of a new border between Scotland and rUK would bring some problems. Since Scotland's exports total around half its GDP and about 70% of them are to rUK, these problems matter.³⁹

Trading between EU member states involves very different VAT procedures from trading within a member state. ***The cost and hassle of trading across borders*** – indeed, even of finding out what the procedures would be – might well be enough to put off a small business that would have traded throughout a unified UK without a second thought. The size of this effect is very difficult to quantify, and it would probably be smaller than between many other EU member states because of the commonalities between Scotland and rUK – a shared language, familiarity with the institutions and culture, and the fact that Scotland would (at least initially) probably adopt a VAT regime very similar to that in rUK. Nevertheless, VAT compliance costs would reduce trade between Scotland and rUK, especially by small businesses.⁴⁰

Transactions between registered traders would now have to be zero-rated. This is much more administratively cumbersome for the firms involved.⁴¹ It also breaks the VAT 'chain' (the collection of VAT in parts from traders throughout the supply chain), thereby opening up ***greater scope for fraud*** (such as 'missing trader intra-community' (MTIC) fraud); and anti-fraud measures further increase compliance costs of doing business across borders. *Tax by Design* suggested that it would be worth considering moving away from the zero-rating of exports and implementing the destination principle in a different way, but any such change would have to be agreed at the EU level: it could not be implemented just for Scotland

³⁹ Source: authors' calculations from SNAP. Both of those figures are slightly higher for imports.

⁴⁰ Institute for Fiscal Studies et al., *A Retrospective Evaluation of Elements of the EU VAT System*, European Commission, 2011 (<http://www.ifs.org.uk/publications/5947>) provides tentative empirical estimates of the relationship between VAT regimes and trade. The EU is currently exploring possible measures to make trading across borders easier, such as greater standardisation of forms and procedures and a wide-ranging 'one-stop shop' approach whereby many traders would only need to deal with the tax authority of one member state (generally the country in which they are based). But as yet it is unclear what steps will be taken and how effective they will be.

⁴¹ Determining the 'place of supply' of services is also administratively cumbersome, though recent changes in these rules make it somewhat less difficult.

and rUK. In the meantime, much would depend on the extent of cooperation between HMRC and Revenue Scotland.

Exemption creates non-deductible input VAT, which feeds into the prices of exports, so that the zero-rating of the exports themselves no longer means that VAT is irrelevant to their price. If Scotland and rUK had different VAT rates, buyers in both countries would have an incentive to source VAT-exempt products such as financial services, and anything produced using them, from the lower-tax country.

The problems discussed above mostly (though not exclusively) concern business-to-business (B2B) trade. Cross-border business-to-consumer (B2C) trade can take two forms, both of which are problematic:

- **Cross-border shopping** is clearly an inefficient outcome, for several related reasons. First, journeys undertaken by individual consumers simply in order to save tax are wasteful in terms of time and transport resources. Second, competition between firms selling similar products in different places (particularly either side of the border) is distorted, and mobile firms' location decisions may be correspondingly distorted. And third, cross-border shopping puts pressure on each country to reduce the rate of tax – a form of 'race to the bottom'. How important this problem is depends on the extent to which cross-border shopping is actually a viable option for consumers. Clearly, the sheer inconvenience of travelling between Scotland and rUK to make small-scale purchases for personal use limits the relevance of concerns over cross-border shopping. There are some borders where VAT differentials may give rise to an appreciable level of cross-border shopping, particularly for small but valuable products and when the difference between VAT rates in the two countries is large.⁴² For example, in a 2006 study by the Danish tax authorities, cross-border shopping at the Danish-German border (with standard VAT rates then

⁴² For studies of cross-border shopping and examples of where it is significant, see the studies cited in footnote 42 of Institute for Fiscal Studies et al., op. cit., and also M. Asplund, R. Friberg and F. Wilander, 'Demand and distance: evidence on cross-border shopping', SSE/EFI Working Paper Series in Economics and Finance, no. 587, 2005; Copenhagen Economics, *Study on Reduced VAT Applied to Goods and Services in the Member States of the European Union: Final Report*, European Commission, Brussels, 2007; and Office of the Revenue Commissioners and the Central Statistics Office, *The Implications of Cross Border Shopping for the Irish Exchequer*, 2009.

25% and 16% respectively) was estimated at about 2% of total consumption in Denmark, even excluding alcohol and tobacco.⁴³

- ***Distance selling.*** Firms making sales above the distance-selling threshold (currently £70,000 in the UK) must register and account for VAT in both countries. Firms making sales below the threshold can also choose to do so, but if they want to avoid that hassle or if the country they are selling to has a higher VAT rate, they can choose to charge their own country's VAT rate – reintroducing similar problems to those of cross-border shopping described above. Some traders (those making distance sales of goods for more than £70,000, for example) will have to register for VAT in both Scotland and rUK, and charge each customer the appropriate rate of VAT (if the rate differs between the two countries). Others (those selling bookkeeping or legal advice, for example) will charge their home country's VAT to all customers – more administratively straightforward, but giving rise to the cross-border shopping problems.

Excise duties

Optimal excise duty rates in Scotland and rUK would be different if the harm that additional alcohol or tobacco consumption did to others (and arguably the harm it did to the person him/herself) were different in the two countries. (We discuss fuel duty and the damage caused by driving below.) We are not aware of any evidence on this – even evidence on the total or average harm caused by smoking/drinking in Scotland and rUK would give us limited information on whether the *reduction* in harm caused by a marginal change in excise duties differed between the two countries. In any case, it seems likely that any such differences are dwarfed when looking at how far the current structures of cigarette and (especially) alcohol duties are from anything that could be described as rational.

Once again, the other consideration in setting excise duties is the cross-border aspect. Revenue from excise duties is undermined by both legal and illegal cross-border activities. As discussed in the context of VAT above, cross-border shopping is inefficient and can lead to harmful tax competition.

⁴³ Danish Ministry of Taxation, 'Status over grænsehandel', Skatteministeriet, 2006, cited in Copenhagen Economics, op. cit.

Cross-border shopping in third countries might be less of a concern for Scotland than for rUK: Scotland does not have to worry about Channel-hopping between England and France or petrol-shopping trips across the border between Northern Ireland and the Republic of Ireland.

On the other hand, Scotland's smaller size relative to rUK gives it more reason to reduce duty rates, since it has more to gain by attracting (numerous) rUK consumers than it has to lose by reducing revenue from its (relatively few) domestic consumers.⁴⁴

EU minimum duty rates limit the scope for tax competition in this area, but UK duty rates are well above the EU minimum (indeed, the UK has the highest tobacco duties, and among the highest alcohol duties, in the EU), so this is not an issue for Scotland and rUK in practice.

5.4 Environmental taxes

If international cooperation could be achieved to put a price on greenhouse gas emissions, the globally optimal carbon price is a prime example of something that is the same across Scotland and rUK (and indeed the whole world), since the global damage done by greenhouse gases is virtually the same wherever they are emitted. In the absence of such coordination, each country has a disincentive to levy a high tax on carbon-intensive production, since such unilateral action can make a country's firms less competitive while the carbon emissions, rather than being diminished, simply move to another, lower-tax, country and do the same damage there. Under independence, mobility of production between Scotland and rUK would accentuate that problem. Each country would have a fiscal incentive to compete by imposing a lower price on emissions – much as they might compete to reduce corporate tax rates – resulting in higher emissions than in a unified UK.

Tax by Design argued that, if nothing else, carbon prices in the UK should be made much more consistent across different sources of energy and between household and business users, and that such a reform could make the system much simpler as well as achieving a given emissions reduction at much lower cost. That message would certainly apply to an independent Scotland too. But Scotland, even more than the UK as a whole, accounts for

⁴⁴ R. Kanbur and M. Keen, 'Jeux sans frontières: tax competition and tax coordination when countries differ in size', *American Economic Review*, 1993, 83, 877–92.

a negligible fraction of global greenhouse gas emissions, so any unilateral action an independent Scottish government could take would be even less important relative to working for international action.

As argued in *Tax by Design*, fuel duties in the UK are far too high to reflect emissions from motoring. But emissions are far from the only external cost of motoring: the costs of congestion are more than 10 times as high as the cost of emissions, according to the Department for Transport.

The level of fuel duties needed to reflect emissions is the same in Scotland as in the rest of the UK, since the damage done by burning petrol is the same whichever country it is bought in. But a levy appropriate to reflect congestion externalities would bring in much less revenue per kilometre driven in Scotland than in rUK, because Scotland's roads are less congested than those in England and Wales. Assuming the external cost per vehicle-kilometre is the same for cars as for other vehicles, driving an extra kilometre in Scotland imposes an average congestion cost on other motorists worth 6.3p, compared with 12.3p in England and Wales (or 9.0p if London is excluded).⁴⁵

Table 5. Congestion and its costs

Congestion band	2010			2035 (forecast)		
	% of km driven		Externality (p/km)	% of km driven		Externality (p/km)
	Scotland	England and Wales		Scotland	England and Wales	
1 (least)	59.4%	41.4%	1.2	50.2%	32.6%	1.8
2	25.8%	32.2%	2.9	26.7%	26.4%	4.6
3	9.3%	17.3%	10.2	14.3%	23.4%	14.8
4	4.2%	7.8%	90.3	6.0%	11.9%	67.6
5 (most)	1.3%	1.2%	159.9	2.6%	5.5%	346.4

Note: Distribution of journeys is for all vehicles except motorcycles; externality is the average marginal externality for car journeys only.

Source: Department for Transport guidance, August 2012

(<http://www.dft.gov.uk/webtag/documents/expert/unit3.9.5.php>).

⁴⁵ Source: authors' calculations using Department for Transport figures (<http://www.dft.gov.uk/webtag/documents/expert/unit3.9.5.php>). The numbers in the text are slightly different from what could be calculated from Table 5 as they take account of differences between Scotland and the rest of Britain in the type of roads used within each congestion band (which have different external costs).

And while congestion is forecast to increase across the whole of Britain, the forecast increase is much smaller in Scotland than in England and Wales (see Table 5).

So a well-designed system of road pricing would bring in less revenue in Scotland than in rUK.

The case for bearing the administrative and political cost of setting up a road pricing system is weaker in Scotland than it is in rUK, though the case for doing so is still strong and getting stronger as technological advances make road pricing more feasible and cars more fuel-efficient.

If, in the absence of road pricing, fuel duties are used as a (badly targeted) tool to reduce congestion, their rates should be lower in Scotland than in rUK. Tax revenues from motoring should be lower in less congested countries than in more congested countries. But Department for Transport figures suggest that current UK fuel duty rates are probably too low to reflect motoring externalities in rUK, rather than too high to reflect externalities in Scotland.

One disadvantage of having different fuel duty rates in England and Scotland is that it opens up scope for cross-border fuel shopping. The England–Scotland border is not as densely populated as the border between Northern Ireland and the Republic of Ireland, where rows of petrol stations at the border are an established phenomenon. Nevertheless, around 19 million vehicles cross the border between England and Scotland (in either direction) each year on a motorway or A road, with more crossing on minor roads.⁴⁶ It would be unfortunate if the drivers of these vehicles started choosing where to fill up their tanks on the basis of differential tax rates, and even more unfortunate if more vehicles started crossing the border purely for that purpose.

5.5 Property taxation

The design of property taxation is one area in which Scotland already has, or is getting, almost complete autonomy.

As discussed in Section 3, council tax and business rates have long been the responsibility of the Scottish parliament. Yet the Scottish parliament has so far failed to use these powers even to introduce the simplest and

⁴⁶ Source: Parliamentary Answer, 1 July 2013, Hansard col. 432W–433W.

most obviously desirable reform – a revaluation of properties for the purposes of council tax, which (as in England, though not Wales) is still based on what homes were worth in 1991 – let alone the more thoroughgoing rationalisation proposed in *Tax by Design*, which would involve making council tax a simple proportion of property value (bills are currently a much lower percentage of value for high-value properties and there is a 25% discount for single-occupancy properties) and replacing business rates with a land value tax on non-residential land. Judging by data on purchase prices,⁴⁷ property values in Scotland are lower and more equally distributed than in the UK as a whole, and so a tax proportional to property values would achieve less redistribution in Scotland than in the UK as a whole (although a more equal distribution might also suggest that there is less need for redistribution in Scotland).

The LBTT that will replace SDLT in April 2015 (see Section 3) is an improvement. A tax in which a £1 increase in price that pushes it over a threshold can trigger an increase in tax liability of up to £40,000 is clearly absurd, and the removal of such anomalies is welcome. But transaction taxes are more fundamentally flawed. There is no reason to impose a heavier tax charge on those properties that change hands more often. Assets should be held by the people who value them most: the effect of a transactions tax such as SDLT is to discourage mutually beneficial transactions. Thus while LBTT is an improvement on SDLT, it would be better still to abolish taxes on property transactions altogether, as *Tax by Design* recommended, and make up the revenue from (sensibly reformed) council tax and business rates.

Unlike in other areas of taxation, the natural immobility of land and property means that the opening up of a new border has few direct implications for the design of property taxation. However, the greater mobility of other tax bases means that an independent Scotland (and indeed rUK) should look to rely more on property taxes, and less on other taxes, than would be optimal for the UK as a whole. That is the opposite of the recent direction of travel in Scotland, where (as discussed in Section 2) council tax rates have been cut in real terms year on year since 2007.

⁴⁷ Source: the ‘annual transactions’ tables of HMRC Statistics (<http://www.hmrc.gov.uk/statistics/transactions.htm>).

While taxing property values has the advantage that property is immobile, it has the disadvantage that the tax – unlike most others – is not associated with a cash flow. So, in particular, people who are housing-rich but cash-poor may not have the cash with which to pay such a tax. This might partly explain the unpopularity of council tax (along with more prosaic factors such as the high visibility of the tax – few taxes are presented directly as a bill to households) and would need to be taken into account. But it is by no means clear that it is an insurmountable obstacle.⁴⁸

6. Options for raising revenue

The reforms proposed in *Tax by Design*, suitably adapted for the Scottish context as discussed in the previous section, provide a means to raise the same revenue as at present while improving the coherence and efficiency of the tax system over the long term. This section addresses a different question: how the Scottish government might raise revenue immediately while leaving the structure of the tax system more or less unchanged.

The UK government currently has a large structural budget deficit and only part of its planned fiscal consolidation has so far been introduced. If Scotland votes for independence in September 2014, the current plan is for it to become independent in April 2016 – almost two years before the planned end of the UK government’s fiscal consolidation. This means that an independent Scottish government might quickly have to announce its own plans for fiscal consolidation.

The UK government has pencilled in real-terms spending cuts of about 1.6% of GDP for 2016–17 and 2017–18. Previous IFS research has found that, if an independent Scottish government also felt the need to introduce measures of equivalent magnitude, that would require £2.5 billion (in today’s terms) of tax rises or spending cuts.⁴⁹

⁴⁸ The design of housing taxation, including possible approaches to alleviating cash-flow concerns, is discussed in S. Adam, ‘Housing taxation and support for housing costs’, in T. Callan (ed.), *Budget Perspectives 2014*, Economic and Social Research Institute, Dublin, 2013 (<http://www.ifs.org.uk/publications/6773>).

⁴⁹ B. Deaner and D. Phillips, ‘Government spending on public services in Scotland: current patterns and future issues’, IFS Briefing Note BN140, 2013 (<http://www.ifs.org.uk/publications/6858>).

Furthermore, as discussed in Section 2.2, the OBR's central forecast is for a sharp decline in North Sea revenues by 2017–18. If the Scottish government also wanted to offset that decline in North Sea revenues, that would require a further £3.4 billion, making £5.9 billion in total.⁵⁰ However, the path of offshore revenues is highly uncertain and the current Scottish government regards the OBR's central forecast as excessively pessimistic.

Suppose an independent Scotland started with the same tax system as the UK currently has, but needed to raise additional revenue. What are its options?

For the most part, there are no official estimates of how much revenue would be raised in Scotland by different tax reforms. An exception is the Scottish variable rate – the basic rate of income tax excluding savings and dividends – which HMRC forecasts would raise £365 million (in 2014–15) for each percentage point increase.⁵¹ In Table 6, we present our own estimates for other possible tax rises. These are based on HMRC estimates of the yield of these measures across the UK as a whole⁵² and using TAXBEN, the IFS tax and benefit microsimulation model, run on large-scale UK survey data sets to estimate what proportion of the UK yield is attributable to Scotland.⁵³

Owing to data limitations, TAXBEN does not model certain 'business taxes' (corporation tax and business rates) and capital taxes (capital gains tax, inheritance tax and stamp duties), so those are not considered further in this section. However, only two of those are large revenue-raisers; business rates are already devolved and the Scottish government has said that it will continue to set rates at the same level as England (constrained to increase by no more than inflation), while corporation tax would be a surprising place to look for additional revenue given the mobility of the tax

⁵⁰ Ibid.

⁵¹ See table 1.6 of HMRC Statistics (<http://www.hmrc.gov.uk/statistics/expenditures.htm>).

⁵² Ibid.

⁵³ Note, however, that we estimate Scotland's share based on the income, spending, etc. of its residents, while, as discussed in the previous section, the Scottish tax base under independence might be defined differently.

Table 6. Revenue yield of possible tax rises in Scotland

Reform	Revenue raised
Income tax: increase basic rate by 1 percentage point (ppt) ^{a,b}	£365 million
Income tax: increase higher rate by 1ppt ^b	£60 million
Income tax: reduce personal allowance by £500 p.a.	£280 million
Income tax: reduce basic-rate limit by £3,201 p.a. (10%)	£235 million
NICs: increase main employee and self-employed rates by 1ppt ^b	£330 million
NICs: increase employee and self-employed rates above UEL by 1ppt ^b	£50 million
NICs: increase employer rate by 1ppt ^b	£360 million
NICs: reduce employee and self-employed earnings thresholds by £10	£110 million
NICs: reduce employer earnings threshold by £10 p.w.	£125 million
NICs: increase UEL by £100 p.w.	£15 million
NICs: abolish UEL	£465 million
VAT: increase main rate by 1ppt ^b	£430 million
VAT: increase reduced rate by 1ppt ^b	£35 million
VAT: increase zero rate by 1ppt ^b	£165 million
Increase alcohol and specific tobacco duties by 10% ^b	£120 million
Increase fuel duties by 10% ^b	£215 million
Increase council tax rates by 10% ^b	£175 million
Abolish single occupants' council tax discount	£140 million

a. Excludes savings and dividend income.

b. Revenue estimates for these reforms can be scaled up (or down) to look at larger (or smaller) tax increases.

Note: Yields from different reforms are not necessarily additive. Some of the reforms interact with each other so that the yield from both is not the sum of its parts, and some of the options are mutually inconsistent.

Source: Authors' calculations using table 1.6 of HMRC Statistics

(<http://www.hmrc.gov.uk/statistics/expenditures.htm>) and the IFS tax and benefit microsimulation model, TAXBEN, run on data from the 2010–11 Family Resources Survey and the 2008 to 2010 Living Costs and Food Survey.

base and the fact that the SNP is committed to reducing the rate if it forms the government of an independent Scotland.

We look here at the full-year (2014–15) yield from changing the current (2013–14) tax system. The tax system in place by the time Scotland became independent would be slightly different. And independence might act to increase or reduce the sizes of tax bases, for example if people and firms were more or less attracted to Scotland or if an independent Scotland experienced faster or slower economic growth. Furthermore, the HMRC estimates on which Table 6 is based make an allowance for some, though not all, kinds of behavioural response. In practice, however, changes in tax rates will prompt different behavioural responses in an independent Scotland than in the UK as a whole – usually larger responses

(relative to the size of the tax base), because of the additional scope for avoiding the extra tax by moving activity across the new border into rUK, as described in Section 5. The yield from these measures in an independent Scotland might therefore be slightly lower than these estimates, to an extent that depends on the mobility of the tax base in question between Scotland and rUK.

Those caveats aside, the table shows that, for example, a 1 percentage point increase in the main rate of VAT, or in both the basic and higher rates of income tax,⁵⁴ would raise around £430 million.

Figure 5 shows what share of the revenue raised by these measures is contributed by each income decile, along with each decile's share of total income and total expenditure. We can see that, for example, the top half of the Scottish income distribution accounts for 68% of all Scottish income but would contribute 84% of the revenue from an increase in the basic rate of income tax.

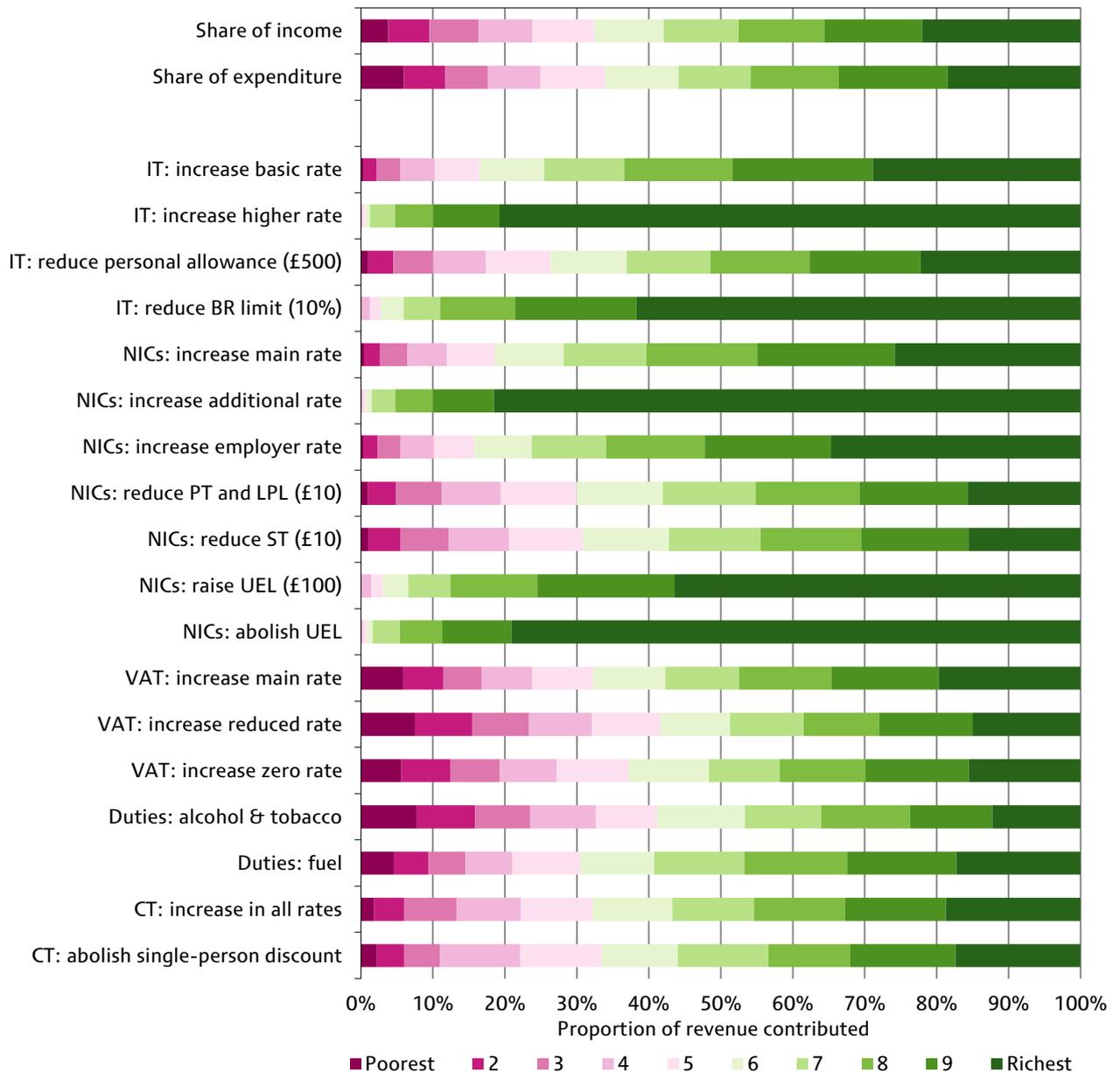
In all cases, the highest-income 10% of households provide more than 10% of the revenue and the higher-income half provide more than half the revenue. Almost all taxes and tax increases are paid predominantly by better-off households.

For all the income tax measures considered, the higher income deciles also contribute larger shares of the revenue than their shares of income: that is, all the income tax rises are progressive. Of course, they are not all equally

⁵⁴ We do not show revenue estimates for increasing the additional (45%) rate of income tax. The central estimates from both HMRC and IFS research suggest that 45% is around the revenue-maximising top rate of income tax for the UK, given the existing tax base: further increases are as likely to reduce revenue (as people reduce their taxable incomes in response) as to raise revenue (from incomes that remain to be taxed). See M. Brewer, J. Browne and P. Johnson, 'The 50p income tax rate: what is known and what will be known?', in *The IFS Green Budget: February 2012* (<http://www.ifs.org.uk/publications/6003>); HMRC, 'The exchequer effect of the 50 per cent additional rate of income tax', March 2012 (<http://www.hmrc.gov.uk/budget2012/excheq-income-tax-2042.pdf>); and J. Browne, 'The 50p income tax rate', IFS post-Budget presentation, March 2012 (<http://www.ifs.org.uk/budgets/budget2012/budget2012jamesbrowne.pdf>). There is huge uncertainty around the revenue-maximising rate, and even more uncertainty as to whether the revenue-maximising rate would be higher or lower in an independent Scotland. But if 45% is anywhere near the revenue-maximising rate, then any change in revenue from adjusting the rate would probably be small.

progressive: the highest-income fifth of households contribute 90% of the revenue from an increase in the higher rate but less than half of the revenue from an increase in the basic rate (though we must also bear in mind the scale of the reforms, shown in Table 6: the higher rate would need to rise by 6 percentage points to generate as much revenue as a 1 percentage point increase in the basic rate). Reducing the basic-rate limit,

Figure 5. Shares of revenue from tax increases in Scotland by income decile



Note: Income decile groups are derived by dividing all families into 10 equal-sized groups according to disposable income adjusted for family size using the McClements equivalence scale.

Source: Authors' calculations using the IFS tax and benefit microsimulation model, TAXBEN, run on data from the 2010–11 Family Resources Survey and the 2008 to 2010 Living Costs and Food Survey.

so that higher-rate tax became payable at a lower income level (and continuing the recent sharp upward trend in the number of higher-rate taxpayers), would be more progressive than increasing the basic rate and less progressive than increasing the higher rate. But even cutting the tax-free personal allowance takes a larger share of income from better-off households, on average. This might seem surprising, particularly since the UK coalition government's increase in the personal allowance towards £10,000 has sometimes been portrayed as a measure aimed at helping those on low incomes by taking them out of income tax. But in fact, as pointed out in previous IFS research,⁵⁵ increases in the personal allowance are regressive. About a quarter of households cannot benefit from income tax cuts as they include no-one with a high enough income to pay income tax, while two-earner couples, who tend to have higher household incomes, benefit twice over from increases in the personal allowance. Reversing some of the recent increase would therefore be a mildly progressive means of raising substantial amounts of revenue: an estimated £280 million for a £500 reduction in the allowance.

Income tax and NICs are similar and each income tax measure considered above has an analogue in the NICs system – increasing the main rate of NICs is rather like increasing the basic rate of income tax, for example. NICs increases are slightly less progressive, however, for two reasons. First, only the first £149 per week of earnings is free of NICs; the coalition's determination to raise the income tax allowance to £10,000 per year (£192 per week) apparently did not extend to NICs. And second, NICs apply only to earned income; income tax is levied on other forms of income as well, notably savings income, which is found disproportionately towards the top of the income distribution. A further difference is that those aged over the state pension age do not pay employee or self-employed NICs and so would not be directly affected by increases in them. These differences also mean that NICs increases raise a little less than their income tax equivalents.

The most obvious way to increase VAT revenue would be to increase the main rate, each percentage point raising £430 million. Increasing the main

⁵⁵ J. Browne, 'A £10,000 personal allowance: who would benefit, and would it boost the economy?', IFS Observation, March 2012 (<http://www.ifs.org.uk/publications/6045>).

rate of VAT looks regressive relative to income in Figure 5. That impression is misleading, however. It arises mainly because, at any given point in time, low-income households typically spend a lot (and therefore pay a lot of VAT) relative to their incomes. But households cannot spend more than their income indefinitely. Over a lifetime, income and expenditure must be equal (except for bequests given and received and the possibility of dying in debt); households spending a lot relative to their income at any given point in time are often those experiencing only temporarily low incomes and either borrowing or running down their savings in order to maintain their expenditure smoothly at a level more befitting their lifetime resources.⁵⁶ We can get a clearer picture of the distributional impact of VAT over a lifetime – abstracting from how much people are borrowing or saving at any point in time – by looking at whether VAT is a bigger percentage of expenditure, rather than income, for better-off households: in other words, comparing the share of total revenue contributed by richer deciles and their share of total expenditure.

Making that comparison on Figure 5 shows that an increase in the main rate of VAT looks slightly progressive, with the richest decile contributing 20% of the revenue compared with their 18% share of total expenditure. This is because the items that are zero- or reduced-rated for VAT, and therefore not affected by a rise in the main rate – food being by far the biggest – take up a larger share of the budgets of poorer households. Over a lifetime, we would expect richer households to devote a larger share of their resources to goods subject to VAT at the main rate and therefore to lose more from such a VAT increase than poorer households.⁵⁷

Nevertheless, while a rise in the main rate of VAT is best thought of as being slightly progressive, it is nowhere near as progressive as an income tax or NICs rise, because there is no VAT-free allowance on the first

⁵⁶ Such temporarily low incomes can arise for a variety of reasons – people who are temporarily unemployed, people with volatile income from self-employment, students, those taking time out of the labour market to raise children, retirees drawing on past savings, and so on.

⁵⁷ For more analysis of VAT by income and expenditure and their relationship to lifetime resources, see Institute for Fiscal Studies et al., *A Retrospective Evaluation of Elements of the EU VAT System*, European Commission, 2011 (<http://www.ifs.org.uk/publications/5947>).

tranche of household expenditure analogous to the allowances in income tax and NICs.

Distributional effects are not the only criteria for evaluating reforms. Increases to VAT, income tax and NICs would all weaken work incentives, reducing the reward for working in terms of the amount of goods and services that additional earnings can buy after tax. Of these three taxes, increases to NICs would typically be the most damaging to work incentives (per pound raised), then increases in income tax, with increases in VAT the least damaging. Increasing NICs weakens work incentives most because all of the revenue comes from taxing future earnings, whereas part of the revenue from increasing VAT or (to a lesser extent) income tax derives from wealth that has already been accumulated and will be payable regardless of future work behaviour. This is because income tax will be levied on the income derived from existing wealth, while VAT will be levied when the wealth comes to be spent. Furthermore, a VAT rise, unlike the others, would reduce the value of out-of-work incomes as well as in-work incomes, so the relative attractiveness of working would be reduced by less.⁵⁸

In addition, increases in income tax, NICs and VAT would each exacerbate other existing tax-induced economic distortions, in different ways:

- Increasing income tax rates would discourage saving and would increase the bias towards putting savings in relatively tax-favoured forms such as pensions, ISAs and owner-occupied housing.
- Increasing NICs would not have these effects since NICs are not levied on savings income, but for the same reason it would increase the existing incentive to shift the form in which income is taken away from earnings and towards capital income (for example, through setting up a company and taking income as dividends rather than earnings).

⁵⁸ Offsetting this reduction in the *reward* to work (the ‘substitution effect’) is an increase in the *need* to work (the ‘income effect’): people may decide to work harder in order to make up for the income they have lost through the tax rise. Theoretically, therefore, these tax rises could either increase or reduce the amount people work. However, empirically, income effects tend to be small; they will often be offset (at least roughly) by income effects going in the opposite direction when the revenue is used to make someone better off; and, strictly speaking, the economic inefficiency (or ‘deadweight loss’) caused by a tax depends only on substitution effects, not on income effects. We therefore ignore income effects in the remainder of this section.

- Increasing the main rate of VAT would increase the scale of the distortion towards buying zero- and reduced-rated goods and services instead of standard-rated ones.

This last distortion in the case of VAT could be alleviated rather than exacerbated if, instead of increasing the main rate, the Scottish government increased the rate that applies to some or all of the goods that are currently subject to the reduced 5% rate, or by extending VAT to goods that are currently zero-rated. Using the estimates in Table 6, we can calculate that removing all zero and reduced rates of VAT – that is, increasing the reduced rate from 5% to 20% and the zero rate to 20% – would raise sums approaching £4.0 billion, very large indeed in the context of the Scottish budget. This would also be a major simplification of the tax system.

The downside, of course, is that increasing the reduced or zero rate of VAT is clearly regressive, even when measured appropriately as a percentage of expenditure: zero- and reduced-rated items take up more of the budget of poorer households. And increasing zero and reduced rates of VAT still weakens work incentives by reducing the real value of wages. As discussed in Section 5.3, *Tax by Design* showed that it would be possible to use the revenue generated to compensate poorer households without a big expansion of means-testing and while protecting work incentives. But if the objective is to raise significant net revenue, then either some regressivity or (as with the other reforms considered above) some weakening of work incentives is inevitable. The size and shape of any compensation package would determine the overall effects on revenue, distributional outcomes and work incentives. But the efficiency and simplicity arguments for broadening the VAT base remain compelling.

Another option for increasing revenue from indirect taxes would be to increase excise duties levied on alcohol, tobacco and/or road fuels. Increasing alcohol and tobacco duties would be even more regressive than increasing zero and reduced rates of VAT: cigarettes in particular make up a much larger share of poorer households' budgets, on average. But alcohol taxation is a particularly promising area to look at given that Scotland has legislated for, but (because of legal challenge) not yet implemented, the imposition of a minimum price per unit of alcohol. Given powers over alcohol taxation, which it currently lacks, the Scottish parliament could abandon the minimum price in favour of a reformed

system of duties, which would have a similar effect for consumers (increasing the retail price of cheap, strong alcohol) while raising revenue for the Scottish exchequer rather than transferring money to large retailers and the drinks industry.⁵⁹

Increasing fuel duties is mildly progressive when measured as a percentage of expenditure, taking half as much from the lowest-spending households as from the highest. As discussed in Section 5.4, the case for increasing fuel duties is weaker in Scotland than in the UK as a whole, because lower congestion levels mean that driving in Scotland is a less damaging activity – though an argument could be made that on environmental grounds (and in the absence of widespread congestion charging) fuel duties should be increased in Scotland, and by even more in rUK.

For all these goods, though, higher excise duties (and, for that matter, a minimum alcohol price) risk provoking cross-border shopping, with people stocking up in England (or elsewhere) where taxes are lower, as discussed in Section 5.3. To the extent that this happened, such an outcome would be economically inefficient and also undermine the revenue estimates in Table 6.

The final options we consider for raising revenue in an independent Scotland concern council tax. As discussed in the previous section, there would be a strong case for relying more heavily on taxation of property, an immobile tax base, as the creation of a Scotland–rUK border made mobility of other tax bases more of a concern. Council tax rates are ultimately set by individual local authorities, but by making grants to local authorities dependent on the council tax they set, the Scottish government has engineered a cash freeze in rates since 2007–08. If instead it were to engineer (or facilitate) an increase in council tax rates, a 10% increase would raise approximately £175 million for local authorities (net of the resulting increase in council tax support for low-income families).

As discussed above, however, council tax as it stands is flawed. The most obvious problem is the need for a revaluation; that is not inherently revenue-raising or revenue-reducing, though it does inevitably

⁵⁹ See R. Griffith, A. Leicester and M. O’Connell, ‘Price-based measures to reduce alcohol consumption’, IFS Briefing Note BN138, 2013 (<http://www.ifs.org.uk/publications/6644>).

redistribute from those whose homes have risen in value by more than the average since 1991 to those whose property values have risen by less. Similarly, making rates (more) proportional to property values would inevitably involve redistribution but could be made to raise or cost as much as desired by adjusting the tax rate(s). The other major weakness in council tax is the single person's discount – the 25% reduction in council tax liability received by one-adult households. Removing this discount would raise £140 million from such one-adult households (again, net of the resulting increase in council tax support) and in the process remove a substantial distortion in the housing market which results in single adults occupying larger properties, and larger households smaller properties, than they otherwise would.

However, whether the distributional consequences of this reform, or any of the others discussed in this section, are considered acceptable would ultimately have to be a matter for debate among the policymakers and population of an independent Scotland.

7. Conclusions

Scottish independence would provide an opportunity to make sensible changes to the tax system in Scotland that successive UK governments have failed to make. And it would enable Scotland to make choices about its tax system that more closely reflect Scottish voters' preferences. Such choices should also reflect the different characteristics of the Scottish economy and society, such as less congested roads and a less unequal income distribution.

But independence would also pose challenges for the new Scottish tax system. The key new challenge is mobility of tax bases given the likely openness of the Scottish economy vis-à-vis rUK. If most of the major tax bases – people and personal income, goods and services, capital and profits – are mobile between Scotland and rUK (as well as wherever else they might already be mobile), then taxes on all of those would be harder to raise. This will create pressure to move towards more reliance on less mobile tax bases (notably property) and less reliance on the most mobile tax bases (notably corporate profits), and in the absence of cooperation in tax rate setting between Scotland and rUK, the optimal long-run level of taxation is likely to be lower than in a unified UK. The same will also apply to rUK, which will (to a lesser extent) be a more open economy by virtue of

having an independent Scotland next door. Tax competition between the two countries (as well as the existing competition vis-à-vis third countries) might lead them to raise less revenue between them than would be best for them collectively. There would therefore be a premium on cooperation and coordination to minimise potentially inefficient tax competition – as well as to minimise compliance costs for firms that trade (or hire etc.) across the border. Such concerns should not be overstated. The Scotland–rUK border is not densely populated and there are many reasons that people would not move between the two countries in a frictionless way to live, work or shop. But it is a factor that an independent Scottish government would need to take into account.

It would be up to the voters and governments of an independent Scotland to decide whether to take advantage of independence to institute a root-and-branch reform of the complex and inefficient tax system they will inherit. There may be no particular reason to believe that many of the changes recommended in *Tax by Design* would be, politically, much easier to implement in an independent Scotland than in the UK as a whole. And in this regard, the failure of the Scottish government to introduce politically difficult but much-needed reforms where it has had autonomy – notably the failure to revalue properties for council tax purposes – does not bode well. But the creation of a new state is surely the best opportunity that is ever likely to present itself for radical and rational tax reform, starting from first principles, which has the potential to unlock really significant economic benefits.

One focus for an independent Scotland should be to look at how tax policy is made. Setting up institutions in such a way as to facilitate a tax strategy to be coherently formulated and implemented and to promote high-quality debate and scrutiny would increase the chances of good policies being implemented and poor ones being reversed (or, better still, not being introduced in the first place). This should also help to bring about a more stable tax system over the longer term, which in itself would help enable individuals and firms to plan and boost prosperity.

Appendix. How GERS and HMRC identify Scottish revenue

The Office for National Statistics records total UK government revenue from each tax. However, tax revenues are difficult to identify as belonging to a certain location. Few taxes are as immediately attributable to Scotland

as council tax or business rates, and for most taxes Scotland's share must be estimated.

Table A1 shows GERS's estimate of revenue in 2011–12 by source and describes the methodology used in GERS to estimate Scotland's share of UK revenue from each source. It also shows how far HMRC estimates (where available) for Scotland's revenue from each tax differ from the GERS figures and explains the main methodological differences between the two.

Unlike in the main text, the figures in Table A1 are given in nominal 2011–12 terms to facilitate comparison with the original sources.

Table A1. Sources of Scottish revenue, 2011–12, and methodology used for apportioning tax revenues to Scotland

Component of revenue	GERS revenue estimate (£m)	GERS methodology	HMRC revenue estimate (£m)	Notable differences between GERS and HMRC
Income tax	10,790	Scottish share of UK income tax revenues estimated using data from HMRC's Survey of Personal Incomes (SPI), a sample of tax records covering 1.8% of UK income tax payers. Since the most recent SPI survey provided data for 2010–11, the change in Scotland's share in subsequent years was estimated using rates of change in income components published as a part of SNAP. The part of tax credits classified as negative income tax (rather than as public expenditure) in the National Accounts was then subtracted, taking Scotland's share of that to be the same as Scotland's (known) share of the total cost of tax credits. Additionally, negative expenditure relating to mortgage interest relief at source and life assurance premium relief at source was allocated on a population basis.	10,725	Similar, but Scotland's share in 2011–12 assumed to equal the average in the three years 2008–09 to 2010–11.
Onshore corporation tax	2,976	Scottish share approximated using the Scottish share of onshore profits (less holding gains) of all public and private corporations in the UK, based on ONS Regional Accounts data, which are in turn derived by allocating total UK gross trading profits to nations (and industries within nations) based on their share of wages and salaries (or, for firms in manufacturing industries, their share of profits as calculated from a survey of firms).	2,538	HMRC takes a more disaggregated approach, estimating the Scottish share of profits and tax for each individual company before aggregating up. Company tax returns were matched to the Inter-Departmental Business Register, which records information on the location of company branches and their employment level. Trading profits are allocated to countries according to the share of branch employment in different locations. Taxable profits arising from chargeable gains, gains on intangible assets and land and property, and overseas income, are allocated to the nation where the UK company is headquartered. Company-level tax liabilities are allocated according to the distribution of taxable profits. Individual companies' tax liabilities are aggregated to the national level and converted to a receipts basis to produce an estimate of corporate tax revenues arising in Scotland. Scotland's share in 2011–12 assumed to equal the average in the three years 2008–09 to 2010–11.
North Sea revenues (population shares)	942	Scotland's share of UK population.	942	Similar.

Component of revenue	GERS revenue estimate (£m)	GERS methodology	HMRC revenue estimate (£m)	Notable differences between GERS and HMRC
North Sea revenues (geographic shares)	10,573	Scottish oil and gas fields identified by location relative to the 'median line' boundary set out in the Scottish Adjacent Waters Boundaries Order 1999. Revenue from each field estimated using a model by Alex Kemp and Linda Stephen of the University of Aberdeen.	9,298	Uses same boundary as GERS, but HMRC's own North Sea Oil and Gas model allocates a different share of profits to each field.
Capital gains tax	246	HMRC out-turns.	278	Similar.
Other taxes on income and wealth	265	Allocation was usually done using the same method as the most similar tax (e.g. horserace betting levy treated in the same way as betting and gaming duties).	—	Not a separate category in HMRC breakdown.
National Insurance contributions	8,393	Scottish share of contributions from Classes 1, 2 and 3 provided by HMRC. Scottish share of Class 4 contributions assumed equal to the share of Class 2 contributions.	8,381	Similar, but Class 1 share applied to all contribution classes and Scotland's share in 2011–12 assumed to equal the average in the three years 2008–09 to 2010–11.
Inheritance tax	164	HMRC estimates.	225	Similar, but Scotland's share in 2011–12 assumed to equal the average in the three years 2008–09 to 2010–11.
VAT	9,554	Scotland's share of VAT payments based on Living Costs and Food Survey (LCFS), which provides survey data on weekly household expenditure on a number of goods and services. An appropriate VAT rate was applied to each item to arrive at an estimate of the proportion of household VAT payments made by Scottish households. Scotland's share of local government VAT refunds was estimated using Scottish share of local government current expenditure on goods and services. Estimates of the central government VAT refunds were based on Scotland's share of population (Ministry of Defence), expenditure on health services (NHS) and total expenditure on services (other government departments).	8,355	Broadly similar methodology for households (using the LCFS) but HMRC figures are not net of refunds to local and central government. Assuming the OBR figure for the share of VAT accounted for by these refunds was uniform across the UK, then on a comparable basis SPICe (Scottish Parliament Information Centre) calculate that the HMRC estimate of Scottish VAT revenues would be £9,334 million, around £200 million lower than the GERS estimate – significant in cash terms but only a small percentage difference.
Tobacco duties	1,129	Scotland's share based on tobacco expenditure recorded in the LCFS.	1,074	Similar.
Alcohol duties	981	Scotland's share based on expenditure on beer/cider, wine and spirits recorded in the LCFS.	984	Similar. Revenue from different forms of alcohol reported separately.
Betting and gaming duties	115	Scotland's share based on gambling expenditure recorded in the LCFS.	157	Similar.
Insurance premium tax	251	Scotland's share of UK population.	212	Scotland's share of household insurance expenditure recorded in the LCFS.

Component of revenue	GERS revenue estimate (£m)	GERS methodology	HMRC revenue estimate (£m)	Notable differences between GERS and HMRC
Fuel duties	2,296	Scotland's share based on share of UK fuel consumption, estimated using data on weighted traffic flows on a sample of UK roads published by the Department of Energy and Climate Change (DECC).	2,260	Similar.
Air passenger duty	213	Civil Aviation Authority survey data from 2005 and 2009 and passenger numbers from the Scottish Transport Statistics are used to estimate the number of Scottish passengers by duty band. HMRC figures for UK passengers by duty band are used to estimate the Scottish share of passengers in the intervening years and estimates for after 2009 are produced using the relative growth rates of Scottish and UK passengers.	213	Broadly similar, but based on confidential Civil Aviation Authority data right up to 2012 and calculated slightly differently.
Landfill tax	97	Estimate of Scotland's share of UK tonnage of waste sent to landfill, derived from data for parts of the UK from the Scottish Environment Protection Agency, Environment Agency and the Department of Environment in Northern Ireland	99	Similar.
Climate change levy	64	Shares calculated separately for electricity, gas, and solid and other fuels on the following basis, using data from DECC: electricity – electricity consumption by commercial and industrial users; gas – gas sales to commercial and industrial users; solid and other fuels – gross value added (GVA) (less extra-regio).	64	Similar.
Aggregates levy	52	Estimate of Scotland's share of UK's aggregates production from United Kingdom Minerals Yearbook 2010: British Geological Survey.	48	Similar.
Vehicle excise duty	475	Scotland's share of total value of UK vehicle licences issued (less refunds), calculated separately for households and businesses, using DVLA data.	—	Outside scope of HMRC estimates.
Non-domestic rates	1,933	Scottish revenue obtained directly from Scottish Local Government Finance Statistics (SLGFS) figures, adjusted to account for certain deductions such as refunds, reliefs, collection costs and payments by local government.	—	Outside scope of HMRC estimates.
Stamp duty land tax	275	HMRC out-turns.	275	Similar.
Stamp duties – stocks and shares	231	Scotland's share assumed to equal the proportion of share-owning UK adults that are resident in Scotland according to the Family Resources Survey.	139	Scotland's share estimated as the proportion of a sample of companies (the FTSE 100 companies and around 2,000 other companies) that are registered in Scotland (according to Companies House or the London Stock Exchange list), weighted by the value of share turnover from London Stock Exchange data.

Component of revenue	GERS revenue estimate (£m)	GERS methodology	HMRC revenue estimate (£m)	Notable differences between GERS and HMRC
Council tax	1,987	Scottish revenue obtained directly from SLGFS figures.	—	Outside scope of HMRC estimates.
Other taxes, royalties and adjustments	1,028	Fossil fuel levy – GVA; hydro benefit – 100% share; Consumer Credit Act fees, regulatory fees, boat licences, passport fees – population; milk super levy – agriculture GVA; renewable energy obligations – direct figures from ONS; rail franchise premiums – 20% of GNER revenue; TV licences – number of households; National Lottery – as for betting and gaming duty.	—	Outside scope of HMRC estimates.
Interest and dividends	237	Public corporations interest and dividends– public sector GVA from ONS Regional Accounts; local and central government interest and dividends – population.	—	Outside scope of HMRC estimates.
Gross operating surplus (GOS)	2,498	Central and local government GOS – Scotland’s share of UK non-market capital consumption. For public corporations, the method differed by element of GOS and by the area of operation (Scotland, non-Scotland, UK): gross trading surpluses, rental income and financial intermediation services indirectly measured were directly attributed to firms classified as operating only in Scotland and were allocated to UK firms on the basis of relevant industry GVA. Holding gains were apportioned on the basis of GVA. For the Housing Revenue Account, figures were obtained directly for local authority rents from the ONS. Underlying data from ONS Regional Accounts.	—	Outside scope of HMRC estimates.
Rent and other current transfers	47	Most items in this category were apportioned on the basis of public sector GVA.	—	Outside scope of HMRC estimates.

Source: Scottish Government, *Government Expenditure and Revenue Scotland 2013*, appendix A and the methodology note (<http://www.scotland.gov.uk/Topics/Statistics/Browse/Economy/GERS/Methodology/detrev2013>); HMRC, ‘A disaggregation of HMRC tax receipts between England, Wales, Scotland & Northern Ireland’, results and methodology note (<http://www.hmrc.gov.uk/statistics/receipts.htm>); R. Marsh and S. Nicol, *Tax revenue estimates: a comparison of GERS and HMRC*, Scottish Parliament Information Centre briefing 13/63, 2013 (<http://www.scottish.parliament.uk/parliamentarybusiness/68543.aspx>).