

# 10. Corporate tax setting

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## Summary

- Following a trend that has been seen across many developed countries, the UK government has pursued a corporate tax strategy of rate cutting and base broadening. One rationalisation of this is that it will lower the tax burden on mobile firms, thus reducing the disincentive for firms to locate in the UK without losing too much tax revenue.
- Tax avoidance, especially by companies, has attracted increasing attention in light of the large budget deficit. A first step towards countering avoidance is to minimise the boundaries between what is and is not taxed, which create opportunities for avoidance. The government is considering introducing a General Anti-Avoidance Rule (GAAR) – a broad set of principle-based rules designed to prevent tax avoidance; there are mixed opinions as to the usefulness of a GAAR.
- The taxation of intellectual property has been a key issue for policymakers. The government will introduce a Patent Box in 2013, which will provide a substantially lower tax rate for the income derived from patents. The policy design weakens the link between the size of the tax deduction and the amount of underlying innovation and increases the deadweight cost of the policy.
- The government is considering whether to devolve the power to set the main rate of corporation tax in Northern Ireland to the Northern Ireland Assembly. There are suggestions that Scotland and Wales should be granted equivalent powers.
- The key aim of devolving corporation tax rate setting power is to reduce rates and therefore boost private sector investment. It is hard to judge whether the benefits from greater levels of activity would be sufficient to outweigh the costs of the public spending cuts that would be needed to finance reductions in the rate of corporation tax and the additional compliance costs and distortions to corporate decision-making that would result.
- Implementing such a policy move would be difficult, and likely require a number of years of transition. A key challenge would be to determine how to allocate profits to each nation and ensure that firms could not artificially allocate profits to the lower-tax nation. There would be an important debate over how to adjust the block grant from Westminster appropriately.
- A concern is that allowing separate rates across the four nations could lead to harmful tax competition within the UK, which would reduce tax revenues for all nations.

## 10.1 Introduction

At the start of this Parliament, the government set out the *Corporate Tax Road Map* that paved the way for a number of corporate tax changes. These included a series of cuts to the main statutory tax rate, a cut to the small profits rate, reductions in capital

allowances, the introduction of a Patent Box, and modifications to the controlled foreign company (CFC) anti-avoidance rules. The aim of the government's package of corporate tax measures was to 'create the most competitive corporate tax regime in the G20'.<sup>1</sup>

Most of the planned corporate tax changes have been (or are likely to soon be) enacted. Going forward, one of the most significant changes that have been suggested is the devolution of corporation tax rate setting powers. At present, the government is considering a proposal to devolve the power to set the main rate of corporation tax in Northern Ireland to the Northern Ireland Assembly. Devolution to Scotland and Wales has been the subject of government commissions but is not a current policy proposal.

This chapter discusses the effects of corporation tax on firms' investment. It is worth noting, however, that the ultimate incidence of tax always lies with households and is borne either by the owners of capital (in the form of lower dividends), by workers (in the form of lower wages) or by consumers (in the form of higher prices). Since capital tends to be much more mobile than workers or consumers, corporation tax tends to get shifted to domestic factors – and specifically labour.

We start by discussing some of the recent trends in corporate tax policy, including the rationale for cutting the tax rate while broadening the tax base and the extent to which this will succeed in giving the UK a more internationally competitive corporate tax system (Section 10.2). Section 10.3 provides an update of the policies affecting the taxation of intellectual property and specifically highlights some of the main design features of the Patent Box. Section 10.4 considers the proposals for devolving the power to set corporation tax rates, including discussions of the likely effects on investment, revenues and tax competition. A final section summarises.

## 10.2 The taxation of corporate income

The policy focus of the government is indicative of one of the challenges faced by policymakers in developed countries in recent years: how best to tax mobile income. The location of firms' activities – both real production and paper profits – is influenced by the level of taxation.<sup>2</sup> As firms' activities have become more mobile, governments have grappled with decisions over which income should be taxed and at what rate.

Across developed countries, a number of governments have reduced corporation tax rates in the hope of remaining competitive. Research suggests that part of the fall in statutory rates that has been seen across OECD countries in recent decades can be attributed to governments lowering tax rates in response to lower rates elsewhere, in an attempt to attract and retain increasingly mobile capital.<sup>3</sup> There is an ongoing debate over the long-term viability of a source-based corporate income tax – that is, one that is levied on income earned from productive activity in a country – in an open economy and, in particular, whether levying such a tax will continue to be possible, especially if income continues to become more mobile.

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<sup>1</sup> See HM Treasury, *Corporate Tax Reform: Delivering a More Competitive System*, 2010 ([http://www.hm-treasury.gov.uk/corporate\\_tax\\_reform.htm](http://www.hm-treasury.gov.uk/corporate_tax_reform.htm)).

<sup>2</sup> For a discussion of corporate taxes in an open economy, see R. Griffith, J. Hines and P. Sørensen, 'International capital taxation', in J. Mirrlees et al. (eds), *Dimensions of Tax Design: The Mirrlees Review*, OUP for IFS, Oxford, 2010 (<http://www.ifs.org.uk/mirrleesreview/dimensions/ch10.pdf>).

<sup>3</sup> See, for example, M. Devereux, B. Lockwood and M. Redoano, 'Do countries compete over corporate tax rates?', *Journal of Public Economics*, 92, 1210–35, 2008.

Despite reductions in tax rates, UK corporation tax continues to raise significant revenue – around £43 billion, or just under 8% of total revenue in 2010–11.<sup>4</sup> One of the ways in which governments have attempted to be competitive while continuing to raise significant revenue is by accompanying rate cutting with base broadening, i.e. taxing a greater proportion of income but at a lower rate.

In recent years, there have been a number of other developments that affect which income is taxed. Since 2009, the UK has operated an exemption system for foreign-source income – UK firms can now remit most income earned offshore to the UK without being subject to UK tax. Associated with this move are modifications to the CFC regime – the anti-avoidance rules that apply to offshore income.<sup>5</sup> Explicit consideration has been given to the taxation of the income from intellectual property (which is particularly mobile), with a view to ensuring it is not artificially diverted offshore.<sup>6</sup> In 2013, the UK will introduce a Patent Box – a substantially reduced corporation tax rate for the income derived from patents. This can be viewed as a way in which to tax an important form of mobile income at a preferential and lower rate. (See Section 10.3.)

### Box 10.1. Tax avoidance

There are a range of ways in which firms seek to minimise their tax bill. We expect firms to take full advantage of allowances and provisions in the tax code such that they pay no more tax than is necessary. Some firms may be more aggressive in their tax planning and seek to exploit loopholes or favourable interpretations of uncertainty in tax legislation. While this type of tax avoidance is legal, many would argue that it is not in the spirit of the law. However, these activities are distinct from tax evasion, in which firms illegally manipulate their tax liability.

The precise characterisation of what counts as tax avoidance is subject to much debate and has many grey areas. The OECD defines tax avoidance as ‘the arrangement of a taxpayer’s affairs that is intended to reduce his tax liability and (...) is usually in contradiction with the intent of the law it purports to follow’.<sup>a</sup> Of course, not all parties will interpret the ‘intent of the law’ in the same way.

We do not have precise measures of which firms are avoiding tax or by how much. The tax gap – the difference between the amount of tax that firms ‘should’ and actually do pay – is not only hard to define conceptually but also extremely difficult to estimate accurately (largely due to the need to determine the correct amount of tax owed).

HM Revenue and Customs (HMRC) has produced an analysis of the UK tax gap that accounts for all HMRC-administered taxes, noting the many impediments to the exercise. Its estimate is that, in 2008–09, £6.9 billion of corporation tax revenue was not collected. This equates to 14% of the overall tax gap, i.e. 14% of the difference between total theoretical liabilities and all collected tax receipts.<sup>b</sup>

<sup>a</sup> See OECD, *Glossary of Tax Terms* (accessed January 2012)

([http://www.oecd.org/document/29/0,3343,en\\_2649\\_34897\\_33933853\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/29/0,3343,en_2649_34897_33933853_1_1_1_1,00.html)).

<sup>b</sup> HMRC, *Measuring Tax Gaps 2010* (<http://www.hmrc.gov.uk/stats/measuring-tax-gaps-2010.htm.pdf>).

<sup>4</sup> See chart 2 of HM Treasury, *Budget 2010* ([http://cdn.hm-treasury.gov.uk/junebudget\\_complete.pdf](http://cdn.hm-treasury.gov.uk/junebudget_complete.pdf)).

<sup>5</sup> See R. Griffith, H. Miller and M. O’Connell, ‘Business taxation’, in R. Chote, C. Emmerson, D. Miles and J. Shaw (eds), *The IFS Green Budget: January 2009* (<http://www.ifs.org.uk/budgets/gb2009/09chap12.pdf>).

<sup>6</sup> See section 10.5 of R. Griffith and H. Miller, ‘Corporate taxes and intellectual property’, in M. Brewer, C. Emmerson and H. Miller (eds), *The IFS Green Budget: February 2011* (<http://www.ifs.org.uk/budgets/gb2011/11chap10.pdf>).

As well as the modifications to the CFC regime, there has been a broader discussion about measures to counter tax avoidance.<sup>7</sup> (See Box 10.1 for a discussion of measuring tax avoidance.) Tax avoidance is an issue that has attracted increasing attention in light of the large budget deficit, with a number of groups calling for government action to increase the amount of tax collected from companies, and in particular large multinational companies.

The opportunities for avoidance result from the design of the tax system and, in particular, from the boundaries created between what is and is not taxed and through exemptions and reliefs. A first step towards countering avoidance is therefore to minimise such boundaries. The Mirrlees Review highlights the many benefits of a coherent and simplified tax system.<sup>8</sup>

The most significant government proposal is the possible introduction of a General Anti-Avoidance Rule (GAAR) – a broad set of principle-based rules designed to prevent tax avoidance.<sup>9</sup> Broadly, the idea would be to provide a generic defence against corporate tax avoidance that did not require constant legislation to tackle specific loopholes individually.

There are mixed opinions as to the potential usefulness of a GAAR. A report by the IFS Tax Law Review Committee notes that ‘principles-based drafting may be a useful tool, but only when there is a satisfactory underlying principle that can be formulated. A GAAR may have a role to play as a line in the sand and as an aid to construction by the courts, but overseas experience and the review in this paper ... suggest that a GAAR is no more the solution than any of the other approaches’.<sup>10</sup> In contrast, a recent report commissioned by the government to consider the merits of a GAAR concludes that a specific formulation of a GAAR would be beneficial. Specifically, ‘a moderate rule which does not apply to responsible tax planning, and is instead targeted at abusive arrangements, *would* be beneficial for the UK tax system’.<sup>11</sup> Of course, there would be much work to do in defining, in legislation, what an abusive arrangement is.

## Rate cutting and base broadening

At the centre of the UK package of reforms is a series of cuts to the statutory corporation tax rate. The main rate was reduced from 28% in 2010 to 26% in April 2011 and, on current plans, will fall by a percentage point each April until reaching 23% by April 2014. The revenue cost of these changes is broadly covered by a broadening of the tax base achieved by reducing allowances.<sup>12</sup> From April 2012, the main rate of capital allowances

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<sup>7</sup> For a discussion of government attempts to reduce avoidance, see HM Treasury, *Tackling Tax Avoidance*, March 2011 ([http://cdn.hm-treasury.gov.uk/2011budget\\_taxavoidance.pdf](http://cdn.hm-treasury.gov.uk/2011budget_taxavoidance.pdf)).

<sup>8</sup> See <http://www.ifs.org.uk/mirrleesReview>.

<sup>9</sup> Note that a GAAR would likely also apply to other direct taxes – for example, income tax and capital gains tax.

<sup>10</sup> Possible ways to address avoidance, including a GAAR, are reviewed in T. Bowler, *Countering Tax Avoidance in the UK: Which Way Forward?*, Tax Law Review Committee Discussion Paper 7, 2009 (<http://www.ifs.org.uk/comms/dp7.pdf>). Quote comes from paragraph 3.4.

<sup>11</sup> G. Aaronson, *GAAR Study*, November 2011 ([http://www.hm-treasury.gov.uk/d/gaar\\_final\\_report\\_111111.pdf](http://www.hm-treasury.gov.uk/d/gaar_final_report_111111.pdf)). Quote comes from paragraph 1.7.

<sup>12</sup> The Treasury estimates that, after accounting for some changes in behaviour, the 2014–15 revenue cost of cuts to the main rate will be £2.7 billion and the revenue gain from reducing allowances will be £2.8 billion. See pages 13 and 16 respectively of HM Treasury, *Budget 2010 Policy Costings* ([http://www.hm-treasury.gov.uk/d/junebudget\\_costings.pdf](http://www.hm-treasury.gov.uk/d/junebudget_costings.pdf)). Note, however, that before accounting for behavioural responses, the package reduces revenues. The main behavioural response that is included in the costing is the

will fall from 20% to 18%, the special rate from 10% to 8% and the Annual Investment Allowance from £100,000 to £25,000. These changes reduce the proportion of previous years' expenditure on certain types of capital that can be deducted from revenue to calculate taxable profits.

This is not the first time that the UK has undertaken a policy of rate cutting and base broadening; there were significant changes in this direction in the mid-1980s. The previous Labour government also cut the main corporation tax rate and reduced the value of some capital allowances (but also introduced the Annual Investment Allowance). Despite these developments, there have not been significant changes in the share of corporation tax receipts in total tax revenues or as a share of national income.<sup>13</sup> Corporate tax rate cutting alongside tax base broadening is also a policy mix that has been seen across a number of European countries in recent decades.<sup>14</sup>

### **When is rate cutting and base broadening the right policy?**

The rationale for cutting the tax rate is straightforward – it reduces the disincentives to invest and makes the UK a relatively more attractive location for earning income. In contrast, broadening of the tax base increases the cost of investment. Given that the package of measures is largely revenue neutral, what is the rationale for changing the tax burden in this way?

#### **Box 10.2. The tax base**

The UK operates a source-based corporation tax – a tax on income earned from productive activity in the UK. This is levied on the full return – that is, the normal rate of return plus any additional returns (pure profits) – to equity. Notably, the tax base provides an advantage to debt financing because interest payments are tax deductible while the costs associated with equity financing are not. It has long been noted that this creates an undesirable distortion to firms' activities.<sup>a</sup>

It is widely understood that, in a small open economy, a source-based corporation tax on the full return to capital located there inappropriately distorts investment decisions – it raises the pre-tax rate of return required by investors and therefore reduces the stock of capital.

Alternative systems have been designed, including those that would remove the distortion between debt and equity financing and exempt the normal rate of return from tax. One of the characteristics of a system that attempts to exempt the normal rate of return is that it provides allowances to account for the full depreciation of capital goods. Depreciation is essentially a capital loss on an asset.

<sup>a</sup> For a discussion of the issues considered in this box, see sections 9.5 and 9.6.1 of A. Auerbach, M. Devereux and H. Simpson, 'Taxing corporate income', in J. Mirrlees et al. (eds), *Dimensions of Tax Design: The Mirrlees Review*, OUP for IFS, Oxford, 2010 (<http://www.ifs.org.uk/mirrleesreview/dimensions/ch9.pdf>).

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effect of a reduction in the main rate on the incentives for multinationals to shift profits into the UK (which works to reduce the revenue impact).

<sup>13</sup> For details on changes in the UK tax base over time see box 9.1 and for trends in revenues see section 9.3 of A. Auerbach, M. Devereux and H. Simpson, 'Taxing corporate income', in J. Mirrlees et al. (eds), *Dimensions of Tax Design: The Mirrlees Review*, OUP for IFS, Oxford, 2010 (<http://www.ifs.org.uk/mirrleesreview/dimensions/ch9.pdf>).

<sup>14</sup> For international comparisons, see section 9.3 of Auerbach, Devereux and Simpson (2010, op. cit.).

At first glance, the move towards base broadening may be seen as somewhat of a puzzle. Broadly, one of the results from the academic literature on optimal corporate taxes is that a small open economy (such as the UK) should not levy a tax on the normal rate of return – the minimum return that a firm requires to make an investment viable (see Box 10.2). However, since the 1980s, the UK tax system has moved towards taxing the full return (which includes the normal rate of return as well as any pure profits) by a broadening of the tax base brought about by reducing the value of capital allowances. Other countries have enacted reforms with similar effects.

Of course, in implementing a (roughly) revenue-neutral reform, there is a trade-off between rate cutting and base broadening. It is not clear that designing policies that are revenue neutral within the corporate tax system is an appropriate goal.<sup>15</sup> However, conditional on the constraint that policy changes be broadly revenue neutral, research suggests that we can say something about when rate cutting alongside base broadening might be the right trade-off. The key to understanding the rate cutting, base broadening policy mix is the presence of mobile and immobile activities.

In general, a tax system that only taxes pure profits should not affect firms' decisions over the scale of investment. It can, however, affect where firms choose to locate specific investment projects. Therefore, moving towards a system that levies a tax only on pure profits reduces the distortions to the level of investment but may still have an impact on the composition of investment in a country, i.e. the share of mobile profits in a country.

To explain this, it is useful to introduce the notion of an effective tax rate – a measure that combines information on how both the tax rate and the tax base affect the burden of tax (see Box 10.3). The *effective marginal tax rate* (EMTR) is used to measure the tax burden on a project that just breaks even and is important in determining the level of investment firms undertake. The *effective average tax rate* (EATR) is used to measure the tax burden on a project that makes a profit and is important in determining where firms locate investment projects.

Taken together, the package of rate cutting and base broadening will reduce both measures, but will have a larger effect on the EATR than on the EMTR. The intuition for this is straightforward: as one moves from considering a project that breaks even to one that makes a positive profit, and as profit increases, the tax rate becomes more important and capital allowances less so. As a result, this policy mix will have a larger effect on the incentives for firms to locate new investment projects in the UK than on incentives to increase incrementally the level of investment currently taking place in the UK.

A policy of rate cutting and base broadening effectively redistributes the tax burden away from more profitable firms, which empirical evidence shows are also more mobile.<sup>16</sup> In so doing, it reduces the disincentive for firms to locate investments (and profits) in the UK. Recent research has set out the conditions under which a policy of rate cutting and base broadening may be beneficial. Specifically, it has been shown that if the marginal mobile firm (i.e. the firm that is just indifferent to locating its activities in the UK or not) is more productive than the average firm in the country, then a rate cutting, base broadening

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<sup>15</sup> For a discussion, see J. Mirrlees et al., *Tax by Design: The Mirrlees Review*, Oxford University Press for the Institute for Fiscal Studies, 2011 (<http://www.ifs.org.uk/mirrleesReview>).

<sup>16</sup> See M. Devereux, R. Griffith and A. Klemm, 'Corporate income tax reforms and international tax competition', *Economic Policy*, 17, 449–95, 2002. This paper presents evidence that capital has become more mobile and that more profitable firms are more mobile. The authors suggest that rate cutting and base broadening may be viewed as an attempt by governments to attract mobile investments.

policy can be appropriate.<sup>17</sup> That is, it may be beneficial to accept some of the distortion to investment created by cutting capital allowances if it works to retain more (mobile) capital in the UK. Whether this is the correct trade-off depends on a number of factors,

### Box 10.3. Effective tax rates

The statutory tax rate is only one aspect of the corporate tax system. The impact of the corporation tax system – including the tax base – on the incentives to invest is considered by comparing the value of an investment project in the presence and absence of tax. This is summarised by effective tax rates.

#### **Effective marginal tax rate (EMTR)**

An effective marginal tax rate (EMTR) is used to summarise the impact of tax on an investment project that just breaks even (a marginal investment for which the return just covers the cost of the project). Basically, this approach constructs a hypothetical marginal investment project and calculates the impact of taxes on the cost of capital – the minimum pre-tax rate of return on an investment required by the investor. The EMTR is simply the percentage difference between the cost of capital before and after taxes. The measure will depend on assumptions made about the hypothetical investment project, including how it is financed and which inputs are used in its creation.

This measure is designed to capture the incentives to invest in new capital and is used to consider the effect of taxes on the level of investment that firms undertake. Capital allowances, which work to reduce the tax burden, will be relatively important for a marginal project; therefore the EMTR will be lower than the statutory rate.

#### **Effective average tax rate (EATR)**

An effective average tax rate (EATR) is used to summarise the impact of tax on a hypothetical investment project that yields a real rate of return greater than the cost of capital, i.e. a project that makes a profit. Basically, this approach compares the net present value of such an investment in the presence and absence of tax.<sup>a</sup> Again, the measure will depend on assumptions made about the investment project, including the expected rate of return.

Measures of the EATR are used to consider the incentives firms face when they are deciding where to locate a project that they expect to earn a positive profit. Conditional on the choice of location, the size of investment will depend on the EMTR.

Capital allowances become relatively less important as profit increases. For a marginal project, the EATR is equal to the EMTR. For projects returning a positive profit, the EATR will be higher than the EMTR and approach the statutory rate as profits increase. Put another way, the EATR can be thought of as summarising the distribution of effective tax rates for investment projects over a range of profitability, with the EMTR representing the special case of a marginal investment.

<sup>a</sup> Most commonly, the difference between the net present value of an investment that makes a profit in the presence and absence of tax is scaled by the net present value of the pre-tax total income stream, net of depreciation. For details, see M. Devereux and R. Griffith, 'Evaluating tax policy for location decisions', *International Tax and Public Finance*, 10, 107–26, 2003.

<sup>17</sup> See C. Fuest and J. Becker, 'Optimal tax policy when firms are internationally mobile', Oxford University Centre for Business Taxation, Working Paper 09/07, 2009. In this context, *optimal* means domestic welfare maximising. The result that base broadening and rate cutting is optimal is compared with a position of investment neutrality; it is not the case that such a policy mix is always unambiguously better.

including the size of the distortion to investment and the benefits of attracting mobile capital.

One of the consequences of this policy is that the tax burden will be shifted towards firms that invest more in plant, machinery and buildings (which are subject to capital allowances). Note, however, that firms invest in many types of capital, importantly including intangible capital. Some of the relative winners will be those firms that make important long-term investments in skills and ideas, which benefit relatively less from current allowances.

### *A more competitive system?*

One of the key government aims has been to produce a more competitive corporate tax system, which can be taken to mean a corporate tax system with a favourable tax burden on investment relative to other countries.

Recent research by the Oxford University Centre for Business Taxation shows that by 2014, the competitiveness of the UK corporate tax system will have improved slightly relative to those currently operating in other G20 countries. The UK rate is due to be lower than that in most G20 countries (assuming that other countries don't make offsetting changes to their own rates).<sup>18</sup>

In the longer term, achieving significant reductions in effective tax rates (and therefore improvements in investment incentives) may mean raising less revenue from corporation tax – in the face of ever more mobile capital and potentially greater tax competition, it will likely be difficult to substantially increase the competitiveness of the UK tax system with revenue-neutral tax changes. There are a range of other ways in which the corporate tax system could be modified to make it more competitive. Importantly, as noted above, there are a number of distortions present in the current system that affect firms' behaviour. One possible reform would be the introduction of an Allowance for Corporate Equity, which would introduce a separate allowance for the cost of equity finance (see Chapter 8).<sup>19</sup>

## **10.3 The taxation of income from intellectual property**

Intangible assets represent an increasingly important input into production for many firms. There is evidence that, in the UK, knowledge investment – i.e. investment in research and development, design, software, skills development, etc. – overtook fixed capital investment in the mid-1990s and is now about 50% higher.<sup>20</sup> This has raised a number of questions relating to how to tax the income from intellectual property. One of

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<sup>18</sup> Recent work by the Oxford University Centre for Business Taxation shows that at the start of 2011 the UK's EMTR was just under 23%, giving it a rank of 15<sup>th</sup> out of the 19 independent G20 countries (excluding the European Union). This will fall to 20% in 2014 (after the package of rate cutting and base broadening) and move the UK to a rank of 14<sup>th</sup> (assuming no changes in other countries). The EATR was just over 26% at the start of 2011 and will fall to 22% in 2014, moving the UK from a rank of 9<sup>th</sup> to 5<sup>th</sup>. See K. Bilicka, M. Devereux and C. Fuest, *G20 Corporate Tax Ranking 2011*, Oxford University Centre for Business Taxation, 2011 ([http://www.sbs.ox.ac.uk/centres/tax/Documents/reports/G20\\_Corporate\\_Tax\\_Ranking\\_2011.pdf](http://www.sbs.ox.ac.uk/centres/tax/Documents/reports/G20_Corporate_Tax_Ranking_2011.pdf)).

<sup>19</sup> For a full discussion, see section 9.6.1 of A. Auerbach, M. Devereux and H. Simpson, 'Taxing corporate income', in J. Mirrlees et al. (eds), *Dimensions of Tax Design: The Mirrlees Review*, OUP for IFS, Oxford, 2010 (<http://www.ifs.org.uk/mirrleesreview/dimensions/ch9.pdf>).

<sup>20</sup> See Nesta, *Innovation, Knowledge Spending and Productivity Growth in the UK*, London, November 2009 (<http://www.nesta.org.uk/library/documents/growth-accounting.pdf>).

the key issues is that firms can and do locate such income offshore as a means to reduce tax liability, leading to a potential erosion of a government's tax base. Another key issue is that the way intellectual property is taxed can distort the location and organisation of firms' real activities.

In most ways, intellectual property can be thought of just like any other goods – firms can make and trade ideas in much the same way as they do cars, for example. A key difference is that the innovation underlying intellectual property is potentially associated with large spillovers – benefits that accrue to third parties in addition to those that are captured by the creator of a new idea. As a result, firms underinvest in innovative activities from society's point of view, providing a clear rationale for governments to enhance the

#### Box 10.4. R&D tax credits

The UK currently operates a system of R&D tax credits that reduce firms' tax liability by allowing them to deduct an amount greater than actual R&D expenditure from taxable profits (a super deduction) and thereby reduce their corporation tax bill. The main rate of tax relief is 130%; that is, for each £100 of qualifying costs, a company can reduce the income on which corporation tax is paid by £130. For small and medium-sized enterprises (SMEs),<sup>a</sup> the tax relief is more generous, at 200%. In addition, SMEs with insufficient taxable profits can claim a cash payment equal to 24.5% of eligible R&D expenditure.

R&D tax credits were part of the government's consultation on the taxation of innovation and intellectual property.<sup>b</sup> There will be a number of changes introduced in the 2012 Finance Bill.<sup>c</sup> Notably, the SMEs rate will be increased to 225%, while the rate of payable credit will be reduced to 11%.

In the 2011 Autumn Statement, the government announced that the R&D tax credit will become an 'above-the-line credit' from 2013; the government will consult on how to achieve this following the 2012 Budget. An above-the-line credit differs from the current system in that it will provide a credit to be offset against overall tax, rather than a super deduction for the tax base. That is, the credit will reduce a firm's final tax liability rather than its taxable profits.

The government highlights that during the consultation process there were three main arguments in favour of moving to an above-the-line credit: visibility (it would be easier to see the tax saving entailed in the credit); certainty (the benefit of the credit would not rely on a firm's level of profits and it would therefore be easier for firms to predict the timing and amount of benefit); and a benefit to loss-makers (who could benefit immediately from the credit).<sup>d</sup> The hope is that the move will increase the take-up of the R&D tax credit and that it will therefore provide a greater incentive to invest in innovation. However, any benefits are likely to be apparent only in the medium term once firms have had time to adjust to the operation of the new system.

<sup>a</sup> SMEs are defined as those with fewer than 500 employees and either an annual turnover not exceeding €100 million or a balance sheet not exceeding €86 million.

<sup>b</sup> See section 4 of HM Treasury, *Corporate Tax Reform Part 2B: Taxation of Innovation and Intellectual Property*, 2010 ([http://www.hm-treasury.gov.uk/consult\\_patent\\_box.htm](http://www.hm-treasury.gov.uk/consult_patent_box.htm)).

<sup>c</sup> See page A73 of HM Treasury and HMRC, *Overview of Legislation in Draft*, December 2011 ([http://www.hm-treasury.gov.uk/d/overview\\_draft\\_legislation\\_financebill2012.pdf](http://www.hm-treasury.gov.uk/d/overview_draft_legislation_financebill2012.pdf)).

<sup>d</sup> For discussion of responses to the consultation, see HM Treasury, *Research and Development Tax Credits: Response and Further Consultation*, 2011 ([http://www.hm-treasury.gov.uk/d/consult\\_r\\_d\\_tax\\_credits.pdf](http://www.hm-treasury.gov.uk/d/consult_r_d_tax_credits.pdf)).

incentives for firms to engage in research.<sup>21</sup> One of the main ways in which governments have pursued this is to operate R&D tax credits (see Box 10.4).

## Patent Box

In April 2013, the government will introduce a *Patent Box* – a reduced rate of corporation tax for the income derived from patents – at a rate of 10%.<sup>22</sup> This follows the introductions of similar policies by a number of European governments, including those of Belgium, Luxembourg, the Netherlands and Spain.

In previous publications, we have highlighted that one of the key features of a Patent Box is that it targets the income that results from the creation of an idea, and not the underlying research. For this reason, it is poorly targeted at spillovers and at promoting research activity.<sup>23</sup>

However, the Patent Box can also be seen as a way to tax differentially a more mobile form of income. In setting a single statutory tax rate for all income, governments face a trade-off between the desirability of raising corporate tax revenue and the danger of deterring and distorting mobile activities. In principle, there could be efficiency gains from taxing more mobile activities at a lower rate than those that are relatively immobile and, in so doing, reducing the incentives for mobile activities to relocate offshore. The Patent Box is expected to make the UK a more attractive location for patent holdings.

### Implementation

The draft legislation for the Patent Box, which will be introduced in the 2012 Finance Bill, was released in December 2011.<sup>24</sup> This provides further details on how the Patent Box will work. There are two notable changes to the policy as originally described. We summarise these here.

*a) The Patent Box will apply to profits earned from all patents*

The previous proposals set out that only profit (arising after 1 April 2013) from those patents commercialised after 29 November 2010 would be eligible for Patent Box treatment.<sup>25</sup> This has been extended to include the profits from all patents. As a result, the policy will cover more activity. To account for the increased cost of extending the policy in this way, the Patent Box will be phased in over five years.

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<sup>21</sup> For more information, see section 10.4 of R. Griffith and H. Miller, 'Support for research and innovation', in R. Chote, C. Emmerson and J. Shaw (eds), *The IFS Green Budget: February 2010* (<http://www.ifs.org.uk/budgets/gb2010/10chap10.pdf>).

<sup>22</sup> For the government's most recent consultation document, see HM Treasury, *Consultation on the Patent Box*, June 2011 ([http://www.hm-treasury.gov.uk/d/consult\\_patent\\_box.pdf](http://www.hm-treasury.gov.uk/d/consult_patent_box.pdf)). For the responses to the consultation, see HM Treasury, *The Patent Box: A Response to Consultation*, December 2011 ([http://www.hm-treasury.gov.uk/d/condoc\\_responses\\_patent\\_box.pdf](http://www.hm-treasury.gov.uk/d/condoc_responses_patent_box.pdf)).

<sup>23</sup> For a discussion, see section 10.4 of R. Griffith and H. Miller, 'Corporate taxes and intellectual property', in M. Brewer, C. Emmerson and H. Miller (eds), *The IFS Green Budget: February 2011* (<http://www.ifs.org.uk/budgets/gb2011/11chap10.pdf>). Our response to the proposed Patent Box design can be found in R. Griffith and H. Miller, *Consultation on the UK Patent Box Proposal: A Response*, 2012 (<http://www.ifs.org.uk/publications/5976>).

<sup>24</sup> See page A69 of HM Treasury and HMRC, *Overview of Legislation in Draft*, December 2011 ([http://www.hm-treasury.gov.uk/d/overview\\_draft\\_legislation\\_financebill2012.pdf](http://www.hm-treasury.gov.uk/d/overview_draft_legislation_financebill2012.pdf)).

<sup>25</sup> See paragraph 3.12 of HM Treasury, *Corporate Tax Reform Part 2B: Taxation of Innovation and Intellectual Property*, 2010 ([http://www.hm-treasury.gov.uk/consult\\_patent\\_box.htm](http://www.hm-treasury.gov.uk/consult_patent_box.htm)).

This approach will increase the deadweight cost of the policy (i.e. the revenue lost from providing a tax break to activity that would have occurred in the absence of the policy). The five-year period of phased-in benefits will also increase complexity.

The change will increase the incentives to create more income from currently patented products. However, there is little justification for using tax policy to incentivise commercialisation activities – firms capture all of the returns to such activities (indeed, patents are designed to ensure this) and will therefore carry out the appropriate level of commercialisation. The Patent Box may increase the incentives for firms to retain current patents in the UK.

*b) Qualifying income will be based on patented products*

One of the key challenges in designing a Patent Box lies in defining and identifying the income derived from patents. Broadly, there are two possible approaches. The government could employ an arm's length principle that aims to measure patent income by determining the value a patent would have if licensed to a third party. Instead, the government has chosen to adopt a formulaic approach, in which all firms will use a standardised procedure to calculate the amount of income eligible for Patent Box treatment.

Importantly, the proposals put forward in the draft legislation define *qualifying income* as all income accruing to a product (or service) that incorporates at least one qualifying patent. That is, there will be no direct link to the amount of income that can be directly attributable to an individual patent. In most cases, this will mean the amount of qualifying income is much greater than the implicit value of a patent. The formula that will be used to calculate the eligible income from patented products and services will be complicated.

This definition of qualifying income reduces the incentives to invest in additional patentable technologies – an additional patent does not necessarily affect how much income can be included as qualifying income. It also increases the deadweight cost associated with the policy by extending the scope of the tax break to a greater proportion of activities that would have occurred in the absence of the policy. Firms will face incentives to incorporate a patented technology into the production of a good even if it could be done more cost-effectively using a non-patented technology (because doing so can reduce the corporation tax due on the resulting income). The government is likely to take steps to try to prevent firms artificially including patents or manipulating income with a view to obtaining a tax deduction.<sup>26</sup> In other words, the need to define which income can and cannot be included will create another 'boundary' in the tax system that will require policing.

## 10.4 Devolution of corporate tax setting powers

In March 2011, the government issued a consultation document (from now on *the consultation document*) – *Rebalancing the Northern Ireland Economy* – in which the possibility of devolving the power to set the corporation tax rate was raised.<sup>27</sup> The key aim behind the suggestion is to boost private sector investment; Northern Ireland has a particularly small private sector relative to the overall size of its economy. At this stage,

<sup>26</sup> See paragraph 5.12 of HM Treasury, *Consultation on the Patent Box*, June 2011 ([http://www.hm-treasury.gov.uk/d/consult\\_patent\\_box.pdf](http://www.hm-treasury.gov.uk/d/consult_patent_box.pdf)).

<sup>27</sup> HM Treasury, *Rebalancing the Northern Ireland Economy*, March 2011 ([http://www.hm-treasury.gov.uk/d/rebalancing\\_the\\_northern\\_ireland\\_economy\\_consultation.pdf](http://www.hm-treasury.gov.uk/d/rebalancing_the_northern_ireland_economy_consultation.pdf)).

no decision has been taken on whether to devolve corporate tax setting power to Northern Ireland. A decision is expected in 2012.

This is not the first time that the possibility of devolving corporate tax setting powers has been discussed. The Varney Review (2007),<sup>28</sup> commissioned by the last Labour government, has previously considered and rejected the case for devolution of corporation tax to Northern Ireland. The Calman Commission (2009), in reference to Scotland, also rejected the proposal, concluding that it would distort competition within the UK and entail significant administrative burdens.<sup>29</sup> However, in June 2011, the Scottish National Party (SNP) government proposed that the Scotland Bill – which was initiated by the UK government to implement recommendations from the Calman Commission – be amended to include the devolution of corporate tax setting (including, but not exclusively, the headline rate).<sup>30</sup> The Holtham Commission (2010) considered the equivalent proposition for Wales, concluding the ‘issues to be worthy of further consideration’ and recommending further discussion with the UK Treasury over the feasibility of such a move.<sup>31</sup> At present, the devolution of the main rate of corporation tax to Northern Ireland is the only proposal being actively considered by the UK government. However, the issues and general principles are common across the three nations.

Importantly, most discussions over whether to devolve corporate tax setting have focused on whether to allow devolved administrations to set a separate rate of corporation tax. The tax base – that is, the definition of which income is taxable and specification of any allowances – would continue to be determined in Westminster for the UK as a whole. Note that in order to comply with the EU rules on State Aid, the UK government cannot set a rate that varies across the four nations – this would be deemed to be providing preferential treatment for different areas. Differential rates can only therefore be achieved by devolving tax rate setting power.<sup>32</sup>

In principle, the devolution of the corporation tax rate could see the devolved administrations choosing a higher tax rate (and higher public spending). However, in all cases, one of the key aims is to use a lower rate of corporation tax to boost private sector investment.<sup>33</sup> There are potentially other aims underlying the proposals to devolve tax setting powers. It is also argued that it might increase the accountability of the devolved administrations. We do not discuss these issues here.

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<sup>28</sup> D. Varney, *Review of Tax Policy in Northern Ireland*, 2007 (<http://www.hm-treasury.gov.uk/d/varney171207.pdf>).

<sup>29</sup> K. Calman, *Serving Scotland Better: Scotland and the United Kingdom in the 21st Century*, 2009 (<http://www.commissiononscottishdevolution.org.uk/>).

<sup>30</sup> The Scotland Bill (<http://services.parliament.uk/bills/2010-11/scotland.html>) sets out amendments to the Scotland Act 1998, with the aim of devolving further powers to Scotland, including a new Scottish rate of income tax. For the SNP proposal, which includes a desire to devolve tax base setting powers, see Scottish Government, *Corporation Tax: Discussion Paper – Options for Reform*, 2011 (<http://www.scotland.gov.uk/Resource/Doc/919/0120786.pdf>).

<sup>31</sup> G. Holtham, *Fairness and Accountability: A New Funding Settlement for Wales*, 2010 (<http://wales.gov.uk/docs/icffw/report/100705fundingsettlementfullen.pdf>). Quote comes from paragraph 7.16.

<sup>32</sup> To be compliant with EU law, and not subject to State Aid rules, the proposal would have to meet the set of criteria set out following the European Court of Justice’s 2006 Azores Case (case C88/03). There are three criteria: institutional autonomy, procedural autonomy and fiscal autonomy.

<sup>33</sup> Each of the commissions suggests setting a lower rate than the main UK rate. There is evidence suggesting that small countries (and, by extension, nations) are more likely to find it beneficial to offer lower corporate taxes: they have smaller domestic tax bases so have less to lose in revenue from the current tax base and proportionately more to gain from increased foreign investment.

A key question is to what extent a lower headline rate of corporation tax would increase activity, and do so sufficiently to compensate for any revenue losses (which would necessitate cuts in public spending) and administrative costs. In the world in which all devolved administrations choose substantially lower rates, one might question why the same policy is not also right for England. That is, if there are deemed to be substantial benefits from a lower corporation tax rate that outweigh the reduction in tax revenues, then are these not also attainable by England? And, if that is the case, the same benefits could presumably be achieved through a reduction in a common rate.

There remain some compelling reasons to maintain a single rate of corporation tax across the UK: it is administratively much simpler (and cheaper) and reduces the potential for harmful tax competition. Devolving the corporate tax rate would – if the powers were used – likely lead to a reduction in the total amount of corporate tax collected in the UK as a whole. In the face of mobile income and a desire to remain competitive, we expect to see a fall in corporate tax revenues in the UK over time. Devolution may quicken this process.

## Differences between the four nations

### *The public vs private sector*

There are notable differences between the four nations, in both the private and public sectors. The public sector (measured per head of the population) is larger in Northern Ireland, Scotland and Wales than in England. It is particularly large in Northern Ireland: public spending is around £2,000 per head higher in Northern Ireland than in England (see Table 10.1).

One possible consequence of having a large public sector is that the state may be employing resources that would otherwise be used in the private sector and, in so doing, is crowding out private investment.

**Table 10.1. Comparisons between nations**

	<b>UK</b>	<b>England</b>	<b>Northern Ireland</b>	<b>Scotland</b>	<b>Wales</b>
<b>Public spending per head<sup>a</sup> (£)</b>	8,766	8,531	10,564	9,940	9,709
<b>Output – GVA per head<sup>b</sup> (£)</b>	20,849	20,974	15,651	20,220	15,145
<b>Total employment<sup>c</sup> (% of 16–64)</b>	70%	71%	66%	71%	68%
<b>Private sector employment<sup>d</sup> (% of 16–64)</b>	58%	61%	45%	47%	40%
<b>Productivity – GVA per hour worked<sup>e</sup> (index)</b>	100.0	101.5	81.0	99.3	83.9

<sup>a</sup> Public spending: identifiable expenditure on services, per head, 2009–10. Source: Table 9.2 of *Public Expenditure Statistical Analyses*, 2011 ([http://www.hm-treasury.gov.uk/d/pesa2011\\_chapter9.xlsx](http://www.hm-treasury.gov.uk/d/pesa2011_chapter9.xlsx)).

<sup>b</sup> GVA: headline workplace-based (i.e. allocated to regions according to where economic activity takes place) GVA in £ per head at current basic prices, 2010. Source: Table 1.1 of *NUTS1 Regional Gross Value Added 1997–2010*, Office for National Statistics, December 2011 (<http://www.ons.gov.uk/ons/rel/regional-accounts/regional-gross-value-added--income-approach-/december-2011/rft-nuts1.xls>).

<sup>c</sup> Total employment scaled by the working-age population (16–64), November 2010 – January 2011. Source: Table 1 for each relevant region from Office for National Statistics, *Regional Labour Market Statistics, December 2011* (<http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-226770>).

<sup>d</sup> Employment in the private sector at the start of 2011, scaled by the working-age population (16–64). Source: Author's calculation using Department for Business, Innovation and Skills, *Business Population Estimates for the UK and Regions*, 2011 (<http://www.bis.gov.uk/analysis/statistics/business-population-estimates>) and Office for National Statistics, *Regional Labour Market Statistics, December 2011* (<http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-226770>).

<sup>e</sup> Nominal GVA per hour worked, 2010. Source: Table 9 of Office for National Statistics, *Labour Productivity Statistical Bulletin Q3 2011*, December 2011 (<http://www.ons.gov.uk/ons/rel/productivity/labour-productivity/q3-2011/rft-labour-productivity.xls>).

Table 10.1 includes a measure of output – gross valued added (GVA) per head – that captures the amount of value created in each nation. GVA per head is notably lower (by around £5,000 per head) in Northern Ireland and Wales than in either Scotland or England. The level of output is a function of both how many resources are employed and how productively they are used.

The total employment rate – the proportion of the population aged 16–64 working in the private or public sector – does not vary greatly across the nations. There are greater differences when comparing the private sector separately: the private sector employment rate is significantly lower in Northern Ireland, Scotland and Wales than in England. There are also differences in the composition of employment across the nations. For example, large firms (those with over 250 employees) account for a greater share of employment in England and Scotland than in Northern Ireland and Wales.<sup>34</sup>

In Northern Ireland and Wales, lower levels of output are also driven by lower levels of productivity – the amount of output (GVA) produced on average by each worker in each hour worked. In 2010, workers in Northern Ireland produced 19% less per hour worked, and those in Wales 16% less, than the UK average.<sup>35</sup>

Note that there are a number of caveats related to making these comparisons across nations. GVA is measured in basic prices – it does not take account of different price levels across countries. As a result, correctly accounting for the fact that prices are lower in Wales, for example, would likely lead real GVA to be less different across nations. Similarly, a lower level of GVA per head (or per hour worked) would translate into a relatively higher level of living standards when prices are lower.<sup>36</sup> There are also differences in the industrial composition of economies in the nations that contribute to different output levels.

### *Differences in attractiveness*

We do not know the optimal rate of corporation tax in each of the four nations. There are some differences that may support the suggestion of levying a lower rate in Northern Ireland, Scotland or Wales than in England. The case is likely to be stronger in some nations than others.

To the extent that there are differences in the attractiveness of, and opportunities present in, a location for firm investment, we would expect some nations 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 a region 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. For example, England benefits from the City of London. Fewer location-specific benefits in Northern Ireland, Scotland or Wales might motivate a lower rate of corporation tax.

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<sup>34</sup> See table 9 of Department for Business, Innovation and Skills, *Business Population Estimates for the UK and Regions*, 2011 (<http://www.bis.gov.uk/analysis/statistics/business-population-estimates>).

<sup>35</sup> For further comparisons between the four nations, see chapter 2 of R. Barnett, *Independent Review of Economic Policy (DETI and Invest NI)*, 2009 ([http://www.deti.gov.uk/independent\\_review\\_of\\_economic\\_policy-2.pdf](http://www.deti.gov.uk/independent_review_of_economic_policy-2.pdf)).

<sup>36</sup> Regional consumer price levels were most recently constructed for 2010. These showed that prices in UK regions outside of England (and outside of London and the South East specifically) are lower. See Office for National Statistics, *UK Relative Regional Consumer Price Levels for Goods and Services for 2010, 2011* (<http://www.ons.gov.uk/ons/rel/cpi/regional-consumer-price-levels/2010/uk-relative-regional-consumer-price-levels-for-goods-and-services-for-2010.pdf>).

Moreover, the presence (or relative absence) of such location-specific benefits can lead a tax base to be less (more) internationally mobile. That is, the corporate tax base in Northern Ireland, Scotland and Wales may be more mobile than that in England in the presence of greater location specific benefits associated with locating in England. This would also be the case if the non-English economies of the UK were more open than England. As mentioned above in the context of the Patent Box, it can be more efficient to tax more mobile activities more lightly than less mobile activities. However, it is important to note that activity that looks mobile from the point of view of one nation may be much less mobile between the UK as a whole and the rest of the world. In this case, coordination (to set the same tax rate) leads to higher government revenues for a given level of activity.

Northern Ireland faces the specific challenge that it has a land border with a country with a much lower rate of corporation tax (and which also has English as the first language). In April 2012, the main rate in the UK will be 25%, compared with 12.5% in the Republic of Ireland. This may lead activity in Northern Ireland to be more mobile – firms may find it easy to locate in the Republic of Ireland rather than in Northern Ireland. It has been proposed that a lower rate of corporation tax in Northern Ireland (and, specifically, a rate of 12.5%) would allow the nation to compete with the Republic of Ireland to attract foreign direct investment (FDI).<sup>37</sup> Northern Ireland actually already attracts a relatively large share (given its population) of UK FDI and associated employment.<sup>38</sup> The extent to which matching the Northern Ireland corporation tax rate to that in the Republic of Ireland would succeed in incentivising firms to alter the location of their FDI would depend on how attractive marginal firms view the two locations on other dimensions.

### A boost to national investment?

An important question is the extent to which a lower rate of corporation tax could help to boost private sector output in each nation. Corporate tax affects investment in a country: a lower rate can increase investment by existing firms and attract FDI. However, there are a number of uncertainties around the extent to which a lower corporate tax rate in Northern Ireland, Scotland or Wales would boost private sector investment.

There are three steps to estimating the likely effect of corporate tax devolution on investment. First, how does a lower tax rate affect the incentives to invest? This is readily calculated – it is the effect of a specific tax rate in one of the devolved nations on the EMTR and EATR (see Box 10.3).

Second, how will investment respond to the changed incentives? This is measured by considering the elasticity of investment with respect to the corporate tax burden, i.e. the percentage change in investment for a percentage fall in the effective tax rate. Doing this is problematic. We do not have measures of these elasticities for each nation within the UK, so we do not know precisely how responsive investment in Northern Ireland, Scotland or Wales is to corporation tax changes.

There is a body of academic literature that estimates elasticities, but these tend to be for a specific type of activity (for example, manufacturing activity) in a specific country (often

<sup>37</sup> See, for example, <http://www.parliament.uk/business/committees/committees-a-z/commons-select/northern-ireland-affairs-committee/news/corporation-tax-report-substantive/>.

<sup>38</sup> See page 10 of *Ernst & Young's 2011 UK Attractiveness Survey, 2011* ([http://www.ey.com/Publication/vwLUAssets/2011\\_UK\\_Attractiveness\\_Survey/\\$FILE/2011\\_UK\\_Attractiveness\\_Survey.pdf](http://www.ey.com/Publication/vwLUAssets/2011_UK_Attractiveness_Survey/$FILE/2011_UK_Attractiveness_Survey.pdf)).

the US). It is difficult to extrapolate these results to other countries (and even more difficult to use them for nations within countries). In particular, there are many factors that affect whether a firm will invest in a country and, if so, how much it will invest, including the skills base, infrastructure and regulatory environment. These factors (which are implicitly captured in elasticities) will differ greatly across countries (and within countries across nations).

Third, what is the overall effect on the level of investment? Given an estimate of the expected percentage change in investment in response to a lower tax rate, we can combine this with information on the current level of investment in a nation to produce an estimate of the overall change in investment. This too poses a challenge, as we do not have exact measures of the current levels of investment in each nation – the UK collects tax at the UK level and does not require firms to identify separately how much income is earned in each nation.

There is also interest in considering the origin of increased investment. Some of the increase would inevitably be directed from other countries, including the Republic of Ireland. This underlies the aim of the policy to increase FDI. However, the move would also attract activity from other parts of the UK: some firms would likely substitute away from England to Northern Ireland, for example.

The extent to which the gains in activity in one nation would come at the expense of activity in the others would depend on how substitutable firms see the nations as being. If firms place a high value on other factors, aside from corporate tax, associated with operating in a specific nation, they may continue to locate there even when tax rates are reduced in the other nations. For instance, some firms will want to be close to the City of London and might be more likely to substitute to other global financial centres – for example, New York or Frankfurt – than to other UK cities. If, however, firms are relatively indifferent as to where in the UK they locate, we would expect to see a greater movement of activity across borders in response to lower corporate tax rates. That the four UK nations are similar in many dimensions – including a common legal system, language and currency – might make substitution within the UK more likely than it is between the UK and other countries. Equivalently, similarity in such factors may lead firms to substitute more readily between Northern Ireland and the Republic of Ireland.

### *Estimates of the effect of investment in Northern Ireland*

The consultation document provides estimates of the effect on investment in Northern Ireland of the introduction of a 12.5% rate of corporation tax.

The approach used follows that outlined above. Measures of the EMTR (which can be used to assess the effect of tax on the level of domestic investment) and the EATR (which can be used to assess the effect of tax on FDI) are combined with estimates from the academic literature of the responsiveness of domestic investment and FDI respectively to calculate an expected response of investment in Northern Ireland. This is then applied to a measure of the current level of investment in Northern Ireland. The consultation document highlights that there are a number of uncertainties surrounding these estimates and that they should be used as an illustration only.

Domestic investment is estimated to increase by £50–65 million in the first year after devolution (approximately 2% of total investment in Northern Ireland). FDI is estimated to increase by £120–200 million, with about £15–25 million of this coming from a displacement of FDI from the rest of the UK. Excluding the displacement of FDI from the rest of the UK, this represents an increase in current FDI in Northern Ireland of

approximately 50%. Both figures are estimated to be significantly higher when considering investment in 10 years' time. As a central estimate, the Treasury predicts that investment in Northern Ireland would be 6% higher each year as a result of devolution of the corporate tax rate.<sup>39</sup>

The consultation document presents estimates suggesting that corporate tax revenues in Northern Ireland would be £110 million lower in year 1 and £270 million lower in year 5 as a direct result of Northern Ireland instituting a 12.5% rate.<sup>40</sup> There would be an additional fall in revenue of £30 million in year 1 rising to £85 million in year 5 after accounting for profit shifting and tax-motivated incorporations (discussed below).<sup>41</sup>

These figures are based on calculations that between 2002–03 and 2007–08, 1.5% of the UK's corporation tax receipts arose from Northern Ireland. As mentioned above, the government does not have precise measures of how much corporate tax revenue comes from Northern Ireland. There are different methodologies for estimating this, with each giving significantly different answers. This produces additional uncertainty over the exact scale of the revenue loss.<sup>42</sup>

The key point is that, while these estimates may be as good as any given current knowledge, there is enormous uncertainty around them and revenue losses could be larger or smaller than forecast by the Treasury.

Given the expected revenue loss, a move to a lower corporation tax rate would necessitate cuts in public spending. As a point of comparison, a revenue loss of £270 million represents 2.3% of the 2010–11 departmental spending in Northern Ireland.<sup>43</sup> How the Northern Ireland Assembly chooses to make such cuts would likely affect the impact of the policy on investment. For example, cutting public spending would be more likely to boost private investment if the cuts fell on activities that the private sector would be expected to replace – such as leisure centres – and more likely to reduce private investment if the cuts fell on activities that were complementary to private sector activity – such as transport spending or education spending.

### *Lessons from the Republic of Ireland?*

The Republic of Ireland is an obvious point of comparison in considering the devolution of corporation tax rates. Eire has a main corporation tax rate (applicable to trading income) of 12.5% – one of the lowest in Europe. This has been highlighted as one of the drivers behind the strong economic growth experienced from the mid-1990s until the recent recession. In particular, the relatively low corporation tax rate is thought to have helped attract large amounts of FDI.

<sup>39</sup> See paragraphs 4.17–4.20 of the consultation document.

<sup>40</sup> For estimates, see table 4.A of the consultation document. The tax liabilities of companies with a Northern Ireland postcode are used to proxy for the size of the corporate tax base there. This excludes the branches of UK firms.

<sup>41</sup> For estimates, see table 4.C of the consultation document.

<sup>42</sup> One alternative to using firms' postcodes would be to assign corporation tax according to the gross operating surplus used in the regional GVA estimates, as is done in the *Government Expenditure and Revenue Scotland* publication (<http://www.scotland.gov.uk/Topics/Statistics/Browse/Economy/GERS>). This depends largely on the location of employees' income. The Holtham Commission compared three measures and showed that estimated corporate tax revenues in Wales vary by almost £600 million (compared with a maximum estimate of £1.2 billion); see chart 7.2 of G. Holtham, *Fairness and Accountability: A New Funding Settlement for Wales*, 2010 (<http://wales.gov.uk/docs/icffw/report/100705fundingsettlementfullen.pdf>).

<sup>43</sup> Departmental spending was £11,804.2 million, and is due to be lower than that in each year up to and including 2013–14; see tables 3.1 and 3.2 of Northern Ireland Executive, *Revised Budget 2011–15*, March 2011 (<http://www.northernireland.gov.uk/index/budget2010.htm>).

However, some caution is required in making such a comparison. First, the Republic of Ireland's corporate tax system is different from that of the UK in dimensions other than the statutory rate. These include differences in the tax base, the tax treatment of offshore income and the taxation of dividends. Second, Eire differs from the nations within the UK along many non-tax dimensions, which are important factors in creating a dynamic private sector. Being part of the Euro zone might also have helped the Republic of Ireland attract some FDI that it would not otherwise have had. As the discussion on measuring the responsiveness to taxes suggested, observing that firms responded to a corporation tax rate (that was part of a package of policies) in Ireland in a certain way does not mean that we will observe the same response in other places.

## **A relabelling of activity?**

As well as undertaking additional investment, firms would be expected to respond to a lower corporate rate in any of the nations by changing their organisational form or the location of their profits with a view to reducing their tax burden. Moving to a system in which profits were taxed differently in different parts of the UK would therefore distort some behaviour and entail important efficiency costs.

### ***Tax-motivated incorporations***

Devolution would apply only to the main statutory rate of corporation tax; there would be no small profits rate as exists in the UK. In all cases, it is assumed that the devolved administrations would choose to set a corporate tax rate that was substantially lower than the current UK small profits rate (which is 20% in 2011) and the personal income tax rates (in 2011, the basic income tax rate is 20% and the higher rate 40%). One implication of this would be an increase in the difference between the tax on incorporated businesses (i.e. the corporate tax rate) and unincorporated businesses (i.e. the personal income tax rate). This would increase the incentive to incorporate for tax purposes and, in so doing, increase the distortion to the choice of organisational form.<sup>44</sup>

The ability and willingness of individuals to exploit differences between personal and corporate rates were starkly demonstrated in the UK in 2002 when the introduction of a 0% 'starting rate' of corporation tax on profits up to £10,000 led to a spike in new incorporations, many of which seem to have been purely for tax purposes. In response, the previous Labour government abolished the starting rate in 2006.<sup>45</sup>

The consultation document highlights that an increase in incorporations would increase corporation tax receipts in the given nation, but would be more than offset by lower income tax and National Insurance payments. The reduction in other tax revenues would be directly felt by the UK exchequer. It is likely, however, that these indirect effects would be factored into the adjustment of the grant provided to the nations from Westminster (discussed below).

### ***Profit shifting***

One concern with implementing a lower rate of corporation tax in one of the UK nations would be profit shifting – firm artificially moving profits (but not the associated real

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<sup>44</sup> For a discussion of tax incentives for incorporations and the distortions these create, see C. Crawford and J. Freedman, 'Small business taxation', in J. Mirrlees et al. (eds), *Dimensions of Tax Design: The Mirrlees Review*, OUP for IFS, Oxford, 2010 (<http://www.ifs.org.uk/mirrleesreview/dimensions/ch11.pdf>).

<sup>45</sup> For details on the 0% starting rate, see section 9.4 of S. Bond, 'Company taxation', in R. Chote, C. Emmerson, R. Harrison and D. Miles (eds), *The IFS Green Budget: January 2006* (<http://www.ifs.org.uk/budgets/gb2006/06chap9.pdf>).

activities) to benefit from a lower tax rate. It is likely that the move to devolution would be accompanied by safeguards that aim to prevent wholly tax-motivated profit shifting within the UK.

The consultation document estimates that profit shifting from the rest of the world to Northern Ireland (a benefit to Northern Ireland tax revenues) would amount to £35 million in year 5. Profit shifting from Great Britain is expected to be substantially higher, at £70 million in year 5.<sup>46</sup> This is large in comparison with both the expected increase in investment in Northern Ireland and the size of corporate tax receipts in Northern Ireland, which the Treasury estimates as £465 million in 2009–10.<sup>47</sup> It is expected that there would be an adjustment in Northern Ireland's block grant such that Great Britain did not bear this revenue loss.

## A road to tax competition?

Under devolution, the tax rate decisions of one UK nation would have an effect on the outcomes of the others. This is a spillover effect that has been widely acknowledged in contexts such as the European Union. When countries set rates without considering these spillovers, the rates are lower than if they had been set cooperatively. The extent to which a devolved administration would consider such spillovers is likely to depend in part on whether the block grant adjustment factored in any possibly negative effects on revenues in the rest of the UK.

One of the key risks to devolving corporate tax setting is that it could lead to harmful tax competition within the UK – this has been noted by all of the commissions. In particular, a lower rate in at least one nation of the UK would likely result in pressure for a lower rate in the other nations. It is difficult to ascertain a priori what the scale of tax competition would likely be, precisely because we do not know how firms would substitute between nations within the UK.

One way to limit the extent of tax competition would be to set a minimum tax rate that the devolved administrations could revise upwards. The consultation on Northern Ireland discusses such a possibility. However, it seems likely that the minimum rate – which could be 0 or 12.5 or some other number – would still be substantially below the UK main rate.

Tax competition is not an inevitable outcome of devolving the corporate tax rate. There are examples of countries that have corporation tax rates that differ at the sub-national level, and which have not experienced obvious tax competition. Notably, the US does not have a harmonised corporate tax across states; state-level corporate taxes vary greatly.<sup>48</sup> Recent evidence suggests that US states do not compete with capital taxes, although there is some disagreement over this.<sup>49</sup>

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<sup>46</sup> For estimates, see table 4.C of the consultation document.

<sup>47</sup> See paragraph 4.35 of the consultation document.

<sup>48</sup> In the US, income, property, sales and excise taxes also vary across states. For the most recent state-level corporate tax rates, see <http://www.taxfoundation.org/taxdata/show/230.html>.

<sup>49</sup> See, for example, R. Chirinko and D. Wilson, 'Tax competition among U.S. states: racing to the bottom or riding on a seesaw?', CESifo Working Paper 3535, 2011. Section VI on page 33 discusses the results of other papers, some of which find evidence of tax competition.

## Implementation and administration

There are a number of implementation issues associated with devolving corporation tax setting powers, which would need further development before such a policy could be enacted.

The consultation document works on the assumption that HM Revenue and Customs (HMRC) would continue to administer corporate tax payments on behalf of the Northern Ireland Assembly. It highlights that Northern Ireland would be responsible for any costs arising from operating the new system, including the cost of operating additional anti-avoidance rules to prevent profit shifting across UK borders. In its recent discussion paper, the SNP Scottish government raises the possibility that devolution of corporate tax setting powers to Scotland would be accompanied by the establishment of a new organisation (distinct from HMRC) to administer corporate tax. A key consideration in determining how to administer separate rates of corporate tax would be the relative costs.

### *Defining where income should be taxed*

One of the largest issues lies in determining which income should be taxed in which jurisdiction. In moving to a devolved system, it would be necessary to define where corporate income was earned.<sup>50</sup> For a business that has all its activities in one nation, this would be relatively straightforward. For a business that earns profits from operations in both England and Scotland, for example, it would be more difficult, both conceptually and practically. Broadly, there are two ways that the split could be achieved: formula apportionment or separate accounting. Both would increase the administrative and compliance costs faced by businesses.

Under formula apportionment, taxable profit would be calculated at the UK level (as it is now) and then apportioned to each nation 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. This is also in line with proposals for a Common Consolidated Corporate Tax Base (CCCTB) in Europe, in 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 firms since it requires little more information than is currently required for UK tax purposes. However, there is scope for disagreement over the precise formula used to apportion the tax base.

Under separate accounting, firms would be required to calculate how much profit is earned in each location. As is the case for multinationals currently operating in multiple jurisdictions, making such a calculation can be conceptually difficult. Effectively, profits and losses would be allocated to different areas, with UK-owned entities in Northern Ireland, say, being treated like foreign branches. This would likely be the most accurate way of assessing which profits arose in a nation. However, operating separate accounting carries practical difficulties and is administratively more burdensome. In particular, firms would face an incentive to over-report the amount of income earned in the lower-tax nation. Such a system would therefore require a set of anti-avoidance rules. Notably (and

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<sup>50</sup> If the reduced rate were applied only to trading profits (rather than all profits), it would also be necessary for firms to distinguish between types of income-generating activities.

as is the case between the UK and foreign countries), this would include a system to price intra-group transactions, and specifically the operation of transfer pricing rules.

### *Managing the revenue implications*

The devolved administrations would directly receive any corporation tax revenues and bear the fiscal consequences of them being lower as a result of a lower rate. That is, their spending power would be directly affected by the level of corporation tax revenue raised. Indeed, this is one of the requirements of EU law – the consequences of lower (or higher) tax revenue must be borne by the authority that has the tax setting power and cannot be offset by transfers from central government. Importantly, this means that devolution of corporate tax rate setting cannot be seen as a UK policy to encourage development in different areas. To comply with EU law, devolution of the corporate tax rate would be accompanied by an offsetting adjustment to the block grant that is provided by the Treasury to the devolved administrations in Scotland, Wales and Northern Ireland and forms the majority of their funding.<sup>51</sup>

There is not widespread agreement on how or by how much the block grants would be adjusted. Broadly, the grants would be reduced to a degree that reflected the size of corporate tax revenues plus any costs that the UK was subjected to as a result of the move (for example, administrative costs or costs from firms shifting profits). There would likely be disagreements over the exact size of the adjustment (as evidenced by the disagreements over how much revenue is currently raised in each location). One possibility is to have an initial transitional period in which the adjustment was subject to debate and potentially revised. This would facilitate the collection of more out-turn data and allow HMRC to bear some of the risk of corporate revenues in the nations being lower than expected.

One concern in devolving corporate tax setting relates to the associated volatility of revenues. Corporate tax receipts are among the most volatile form of government revenue.<sup>52</sup> At present, the devolved administrations do not have the power to borrow to smooth current expenditure. As a result, they would experience a shortfall in their ability to complete spending plans if corporate tax revenues turned out to be lower than expected. In the short run, this could be an issue dealt with during a period of transition. In the long run, the administrations would be expected to bear this risk. Importantly, without the ability to smooth out the ups-and-downs in corporation tax receipts over the economic cycle, there would be pro-cyclical public spending in the devolved nations. The Scotland Bill currently includes a provision to allow Scotland to borrow a limited amount.

## 10.5 Summary and conclusions

The current government has pursued a number of policies that change both which corporate income is taxed and at what rate. The package of reforms introduced in the *Corporate Tax Road Map* will increase the competitiveness of the UK corporate tax system compared with those currently operated in other G20 countries. Notably, the UK will have

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<sup>51</sup> For a discussion of funding arrangements within the UK, see HM Treasury, *Funding the Scottish Parliament, National Assembly for Wales and Northern Ireland Assembly: Statement of Funding Policy*, October 2010 ([http://cdn.hm-treasury.gov.uk/sr2010\\_fundingpolicy.pdf](http://cdn.hm-treasury.gov.uk/sr2010_fundingpolicy.pdf)).

<sup>52</sup> Note that, because the nations have smaller financial sectors, devolved revenues may be somewhat less volatile than they are for the UK as a whole. For UK corporate tax revenues, see HMRC statistics, table 11.1 ([http://www.hmrc.gov.uk/stats/corporate\\_tax/table11\\_1.xls](http://www.hmrc.gov.uk/stats/corporate_tax/table11_1.xls)).

a relatively lower headline rate. However, cuts to capital allowances, which work to broaden the tax base, will dampen the overall improvement in investment incentives that firms face.

The policy of rate cutting and base broadening has a larger effect on the incentives to locate an investment project in the UK (rather than abroad) than on the incentives to undertake an additional pound of investment in the UK. This policy mix can be seen as shifting the distribution of the formal tax burden away from mobile firms. The move may therefore be an attempt to reduce the deterrent to mobile activities (which are more profitable on average) from locating in the UK.

The government will proceed with earlier plans to implement a Patent Box in April 2013. Notably, the policy has been designed in a way that substantially increases how much income will be eligible for the lower tax treatment. As a result, the link between the size of the tax deduction and the amount of underlying innovation has been weakened and the deadweight cost of the policy increased.

Perhaps the most significant corporate tax policy change on the horizon is the possibility of devolving the power to set the main corporation tax rate. At present, the UK government is considering whether to devolve this power to the Northern Ireland Assembly, with a decision expected in 2012. In the middle of last year, the SNP Scottish government called for the power to set corporate taxes (including, but not exclusively, the headline rate) to be granted to Scotland. Were Northern Ireland to be given this power, it seems likely that Scotland and Wales would want the option to follow suit.

The key aim of allowing the devolved administrations to set lower rates of corporation tax is to boost private sector investment, and therefore jobs and growth. We do not know a priori how large an effect a corporate tax rate cut would have on investment in each nation. As a result, it is hard to judge whether the benefits from greater levels of activity would be sufficient to outweigh substantial reductions in (and increased risk to) the devolved administrations' revenues. Importantly, any reductions in revenues would need to be matched with public spending cuts.

Implementing such a policy move would be difficult, and likely require a number of years of transition. A key decision would be how to adjust appropriately the block grant from Westminster. An increase in complexity and compliance costs is guaranteed. There are some compelling reasons to maintain a single rate of corporation tax across the UK: it is administratively much simpler (and cheaper) and reduces the potential for harmful tax competition, which could reduce the revenues of all administrations within the UK. Implementing devolution would at best be a calculated risk, with unknown long-term consequences for the UK tax system.